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Useful for:

 JRF, SRF and NET Examinations of ICAR
 M.Sc. and Ph.D. Examinations of IGKV, BHU, GBPUAT and various Indian Agricultural Universities
 ADA and Bank AO Examinations

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Preface

Agriculture plays an important role to cover primary aims of mankind like food, fibre, fuel etc by optimum use of terrestrial resources. The Indian Council of Agricultural Research (ICAR), New Delhi is conducting All India Competitive Examination every year for awarding JRF, SRF, NET, ARS etc. in addition to that Common Entrance Test for competitive examinations for post-graduate degree, Doctor of Philosophy courses of various State Agricultural Universities, RAEO, ADO, SEDO, ADA of State Boards, Administrative and Banking AO Services are being conducted for selection of suitable candidates. All theses examinations are mostly objective based and students always look for study material that is ready to use and easy to grasp.

It is facing that there is hardly any book available in the market on agriculture which completely satisfy the requirement of the students particularly for those who are preparing for competitive examinations.

Keeping in view, the prevailing situation, it was deeply felt to publish such a book which could serve the basic and innovative knowledge of various fields of agriculture.

The present book "*Question Bank For Agricultural Competitions*" has been prepared in most simple, clean and appropriate manner which covers all courses of competitive made with the students, teachers and scientists. We hope that the book will fulfill your need on agriculture.

The cooperation and encouragement extended by our family members during the completion of this book is highly appreciable.

We are heartily thanks to all our friends who have taken sincere efforts to do creative works like this.

We humbly welcome the valuable suggestions from reader for further improvement of this book.

Rakesh Sharma

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many journals. He has well known in teaching and extension activity in the field of his specialization.

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Chapter 1

Current Agricultural Trends

Quest.Total Geographical Area (TGA) of India Ans.329 Mha

Quest.Net cultivated/sown area of India. *Ans*.143 Mha

Quest.Net Irrigated area in India *Ans*.56.3 Mha

Quest.Per Capita Agril. land availability *Ans*.0.16 ha

Quest.Cropping Intensity of India Ans.136%

Quest. Total degraded land of India *Ans*. 174 Mha

Quest. Area threatened by land degradation *Ans*.50% of TGA

Quest.Area potential for biological production Ans.256 Mha

Quest.% geographical area of India used for agricultural activity Ans.43%

Quest.India's position on world's total population

Ans.2nd (1st - China)

Quest.India's support on forest area over world *Ans*.1.5%

Quest.As per National Forest Policy, the forest cover of the country should be on *Ans*.33%

Quest.India's support on world's total livestock *Ans*.15%

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Quest.India's support on world's TGA Ans.2%
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Quest.India's support on world's total water resources Ans.4%
```

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Quest.India's position on world's total agricultural area (2009-10)
Ans.7<sup>th</sup>
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Quest.India's position on world's total arable land (2009-10)
Ans.2<sup>nd</sup> (159 Mha)
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Quest.India's position on world's total irrigated area (2009-10)
Ans.1<sup>st</sup>
```

Quest.India's position in world's total cereal production (2009-10)

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Ans.3<sup>rd</sup> (China > USA > India)
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Quest.India's position on world's total rice production (2009-10)
```

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Ans.2<sup>nd</sup> (1<sup>st</sup> - China)
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Quest.India's position on world's total wheat production (2009-10)

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Ans.2<sup>nd</sup> (1<sup>st</sup> - China)
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Quest.India's position on world's total coarse grains production (2009-10)
Ans.4<sup>th</sup>
```

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Quest.India's position on world's pulse production (2009-10)
Ans.1<sup>st</sup> Tologram mo/2
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Telegram.me/agricoss

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Quest.India's position on world's total oilseed production (2009-10)
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Ans.2<sup>nd</sup> (1<sup>st</sup> - China)
```

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Quest.India's position on world's total cotton production (2009-10)
Ans.2<sup>nd</sup> (1<sup>st</sup> - China)
```

Quest.India's position on world's sugarcane production (2009-10) *Ans*.2nd (1st - Brazil)

Quest.India's position on world's total fruit area and production (2009-10)

Ans.2nd (1st - China)

Quest.Rank of India on world's total vegetable production (2009-10) *Ans*.2nd (1st - China)

Quest.India's rank on world's total milk production (2009-10)

Ans.1st (108.5 Mt., 2009)

Quest.India's rank on world's total egg production (2009-10)

Ans.3rd (55 Billion)

Quest.India's position on livestock population in world (2009-10) *Ans*.1st

Quest.Rank of India for transgenic plant in world (2009-10) *Ans*.4th (1st-USA)

Quest.India's rank on world's total fertilizer consumption (2009-10) *Ans*.3rd

Quest.India gets 1st position in world's agriculture on

Ans. Production of Pulse Jute, Buffalo population, milk, irrigated area

Quest.India gets 2nd position in world agriculture on

Ans.Rice, Wheat, Groundnut, Sugarcane, Cotton, Fruits and Vegetables, Potato, Onion, Arable land, total population, Cattle and Goats, Tractor in-use

Quest.India gets 3rd position on world's agriculture on *Ans*.Production of Total cereals, Rapseed, Tea, Tobacco leaves, Sheep, Egg

Quest.Irrigation potential of India (March, 2010)

Ans.108.2 Mha

Quest.State having maximum area under irrigation Ans.Punjab

Quest.Major source of irrigation in India *Ans*.Canal

Quest.State having highest Net Irrigation Potential in India under canal and tubewell *Ans*.UP

Quest.Area under Micro irrigation system in India (2008-09)

Ans.3.96 Mha

Quest.Area under Drip irrigation in India (2008-09) *Ans*.1.42 Mha

Quest.State having highest area under Drip irrigation in India *Ans*.Maharashtra

Quest.Area under Sprinkler irrigation in India (2008-09) *Ans*.2.54 Mha

Quest.State having highest area under Sprinkler irrigation in India *Ans*.Haryana

Quest.% National water use efficiency *Ans*.40%

Quest.% growth rate in production of Indian agriculture Ans.5.7%

Quest. Which crop having highest acreage in the world? *Ans*. Wheat > Rice > Maize

Quest. Which crop having highest acreage in India?

Ans.Rice > Wheat > Maize > Sorghum

Quest.Leading crops in total acreage and production in India *Ans*.Rice > Wheat > Maize

Quest.Crop having the maximum yield potential in the world *Ans*.Maize

Quest.Crop having the maximum yield potential in India *Ans*.Wheat

Quest.Crop having highest Net sown Irrigated area *Ans*.Sugarcane

Quest.Crop having highest Grass cropped Irrigated area Ans.Wheat

Quest.Irrigated area under sugarcane in India (2008-09) Ans.4.5 Mha (93.7%)

Quest.Irrigated area under wheat in India (2008-09) Ans.25.5 Mha (91.3%)

Quest.Irrigated area under rice in India (2008-09) *Ans*.26.5 Mha (58.7%)

Quest.Production of total food grains in India (2009-10) *Ans*.218.20 Mt.

Quest.Production of Rice in India (2009-10) *Ans*.89.13 Mt.

Quest.Leading state in production of Rice in India (2008-09) *Ans*.WB > AP > UP

Quest.Production of Wheat in India (2009-10) *Ans*.80.71 Mt.

Quest.Leading state in production of Wheat in India (2008-09) *Ans*.UP > Punjab > Haryana

Quest.Production of Maize in India (2009-10) *Ans*.19.73 Mt.

Quest.Leading state in production of Maize in India (2008-09) *Ans*.AP > Karnataka > Rjs

Quest.Production of total course cereals in India (2009-10) Ans.33.77 Mt.

Quest.Leading state in total course cereals in India (2009-10)

Ans.Rjs > Karnataka > Maharashtra

Quest.Production of total pulse in India (2009-10) *Ans*.14.66 Mt.

Quest.Leading state in production of total pulses in India (2008-09) *Ans*.MP > UP > Rjs

Quest.Leading state in production of Groundnut in India (2008-09) *Ans*.Gujarat > AP > TN

Quest.Leading state in production of Rapseed and Mustard in India (2008-09) *Ans*.**Rjs** > **UP** > **Haryana**

Quest.Leading state in production of Soybean in India (2008-09) *Ans*.MP > Maharashtra > Rjs

Quest.Leading state in production of Sunflower in India (2008-09) *Ans*.Karnataka > AP > Maharashtra

Quest.Production of total oilseeds in India (2009-10) *Ans*.24.93 Mt.

Quest.Leading state in production of total oilseeds in India (2008-09) *Ans*.MP > Rjs > Gujarat

```
Quest.Production of Cotton (2009-10) Ans.24.22 Mt.
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Quest.Leading state in production of Cotton in India (2008-09)

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Ans.Gujarat > Maharashtra > AP
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Quest.Production of Sugarcane in India (2009-10) *Ans*.292.30 Mt.

```
Quest.Leading state in production of Sugarcane in India (2008-09)
Ans.UP > Maharashtra > TN
```

Quest.Production of Jute and Mesta in India (2009-10) *Ans*.11.82 Mt.

Quest.Leading state in production of Potato in India (2008-09) *Ans*.UP > WB > Punjab

Quest.Area under Bt-cotton in India (2009) *Ans*.8.4 Mha

Quest.% Share of crops in Total Horticultural area of India (2009-10) *Ans.*Vegt. (40%) < fruits (30%) < Plantation (15%)

Quest.Leading fruits in area in India (2009-10) *Ans*.Mango > Citrus > Banana

Quest.Leading state in fruits crop area in India (2009-10) *Ans*.MH > AP > UP

Quest.Leading fruits in production in India (2009-10) *Ans*.Banana > Mango > Citrus

Quest.Leading states in fruits crop production in India (2009-10) *Ans*.AP > MH > TN

Quest.Leading fruits in productivity in India (2009-10) *Ans*.Papaya > Banana > Grape

Quest.Leading vegetable in area in India (2009-10) *Ans*.Potato > Tomato > Onion

Quest.Leading state in vegetable crop area in India (2009-10) *Ans*.WB > UP > Bihar

Quest.Leading states in vegetable production in India (2009-10) *Ans*.WB > UP > Bihar

Quest.Leading vegetables in productivity in India (2009-10)

Ans.Tapioca > Cabbage > Potato

Quest. Which two crops together constituted 78 % of total foodgrains production in India (2009-10)

Ans.Rice and Wheat

Quest. Which two crops are the major contributors to the total pulse production?

Ans.Gram and Arhar

Quest.Contribution of Indian agriculture to livelihood *Ans*.65%

Quest.Share of agriculture and allied sectors to the National GDP (2009-10) *Ans*.14.6%

Quest.Share of livestock and fisheries to the National GDP (2009-10) *Ans*.4.07%

Quest.Share of agriculture to National exports *Ans*.10.23% (2008-09)

Quest.Share of agriculture to National imports Ans.2.74% (2008-09)

Quest.Annual export of high quality basmati rice from India *Ans*.0.5-0.7 Mt.

Quest.Export of non-basmati rice has been prohibited since

Ans.15 October 2007

Quest.Export of wheat has been prohibited since *Ans*.8 October 2007

Quest.All India avg. fertilizer consumption is Ans.128.8 Kg/ha (2008-09)

Quest.Highest avg. fertilizer consumption is found in Ans.Punjab (212Kg/ha)

Quest.Nutrient consumption ratio of India (2009) *Ans*.6.5 : 2.5 : 1

Quest.100% imported fertilizer in India *Ans*.Potash (K₂O)

Quest.% Govt subsidy provided to farmers on fertilizers prices *Ans.*60-75%

Quest.Net availability of cereals per capita/day (2009-10) *Ans*.407 gm

Quest.Net availability of pulses per capita/day (2009-10)

Ans.37 gm

Quest.Net availability of Fruits per capita/day (2009-10) *Ans*.120 gm

Quest.Net availability of Vegetables per capita/day (2009-10)

Ans.140 gm

Quest.Net availability of Milk per capita/day (2009-10)

Ans.263 gm

Quest.Net availability of Egg per capita/day (2009-10)

Ans.45 (no)

Quest. The annual rate of interest received by the farmers on crop loans from govt. *Ans*.5%

Quest. To be self reliant in agriculture, the necessary growth rate per year is Ans.4%

Quest.ICAR day is celebrated every year on

Ans.16th July

Quest.World Food Prize (2009) was awarded to

Ans.Gebisa Ejeta (Ethiopia) for 1st sorghum hybrid for drought and Striga weed.

Quest.Indian scientist shared World Food Prize for Miracle Maize *Ans*.Dr. Sruinder K. Vasal

Quest.Nobel Peace Prize was awarded to Dr. Norman Borlaug in *Ans*.1972

Quest.National Rural Employment Scheme was started on Ans.2006

Quest.National Agriculture Policy was started on Ans.2000

Quest.National Seed Policy was started on *Ans*.2002

Quest.National Food Security Mission (NFSM) was launched on Ans.Rabi, 2007-08

Quest.Rashtriya Krishi Vikas Yojana (RKVY) was launched on Ans.2007-08

Quest.National Horticulture Mission (NHM) was launched on *Ans*.2005-06

Quest.Integrated Scheme on Oilseeds, Pulses, Oil Palm and Maize (ISOPOM) started since *Ans*.1 April, 2004

Quest.National Mission on Micro Irrigation (NMMI) was launched on Ans.June, 2010

Quest.National Bamboo Mission (NBM) is implemented from *Ans*.2006-07

Quest.Kishan Credit Card Scheme was launcedengram.me/agricoss Ans.1998-99

Quest.National Agricultural Insurance Scheme was launched on Ans.1999-2000

Quest.Green revolution is mainly related with the crops *Ans*.Wheat and Rice

Quest. 'Rainbow revolution' refers to *Ans*.Overall development of agril. sectors

Quest.Yellow revolution is associated with *Ans*.Oilseeds production

Quest.Operation Flood denotes *Ans.***3 fold increase in milk production in India**

Quest.FCI is specially launched for *Ans*.**Rice**, **Wheat and Course millets**

Quest.Hybrid rice for commercial production was first evolved at *Ans*.China

Quest.Minimum support price of Paddy (2011-12) *Ans*.1080 Rs/qt

Quest.Minimum support price of Grade A-Paddy (2011-12)

Ans.1110 Rs/qt

Quest.Minimum support price of Wheat (2011-12)

Ans.1285 Rs/qt

Quest.Minimum support price of Maize, Hybrid Jowar and Barley (2011-12) *Ans*.980 Rs/qt

Quest.Minimum support price of Gram and Lentil (2011-12) *Ans*.2800 Rs/qt

Quest.Minimum support price of Arhar (2011-12)

Ans.3200 Rs/qt

Quest.Minimum support price of Moong (2011-12) *Ans*.3500 Rs/qt

Quest.Minimum support price of Urd (2011-12)

Ans.3300 Rs/qt

Quest.Minimum support price of Cotton (2011-12) *Ans*.2800 Rs/qt (F-414/H-777, J34) and 3300 Rs/qt (H-4)

Quest.Minimum support price of Soybean (2011-12) *Ans*.1650 Rs/qt (Black) and 1690 Rs/qt (Yellow)

Quest.Minimum support price of Mustard and Sunflower (2011-12) Ans.2500 Rs/qt

Quest.Minimum support price of Safflower (2011-12) Ans.1800 Rs/qt

Quest.Minimum support price of Jute (2011-12) *Ans*.1600 Rs/qt

Quest.Minimum support price of Sesamum (2011-12) Ans.3400 Rs/qt

Quest.Minimum support price of Groundnut in shell (2011-12) *Ans*.2700 Rs/qt

Quest.Minimum support price of Sugarcane (2011-12) *Ans*.139.12 Rs/qt

Quest.First agriculture census in India conducted in Ans.1970

Quest.First livestock census in India conducted in *Ans*.1919

Quest.First All-India Co-ordinate Research Project (ACRIP) on *Ans*.Maize (1957)

Quest.First State Agricultural University of India *Ans*.GBPAUT, Pantnagar (1960)

Quest.First Krishi Vigyan Kendra (KVK) was established at *Ans*.Puducherry (Pondicherry, 1974)

Quest.Total no. of KVK in India Ans.568 (Dec.2009)

Quest.Union Minister of Agriculture (2010-11) *Ans*.Sharad Pawar

Quest.New Director-General of ICAR (2010-11) *Ans*.Dr. S. Ayyappan

Quest.Chairman of Agricultural Scientists' Recruitment Board (ASRB) of ICAR *Ans*.C. D. Mayee

Quest.Insecticidal Act was passed by the Government of India in *Ans*.1968

Quest.Pesticides restricted for use in India Ans.13

Quest.No. of Insecticides approved to control household pests *Ans.***39**

Quest. The rice having richness in beta-carotene and also contain vitamin A *Ans*. Golden rice

Quest. The rice which can alleviate anaemia problem through dietary intake *Ans*. Ferritin rice

Quest. The genetic modified egg with medicinal values is *Ans*. Golden egg (developed in Australia in 1999)

Quest.Irritation of eye due to cutting onion is corrected by *Ans*.Super Sweet Onion (developed in UK)

Quest. 'Indian farming' is a publication from *Ans*.ICAR

Chapter 2 Agronomy

(I) Basic Principles of Crop Production

Quest. A very broad term encompassing all aspects of crop production, livestock farming, fisheries, forestry etc.

Ans.Agriculture

Quest.'*Agriculture*' word is derived from *Ans.Latin word (agri+culture)*

Quest. A branch of agricultural science which deals with principles and practices of soil, water and crop management.

Ans.Agronomy

Quest." Agronomy" word is derived from words?

Ans.Greek (agros+nomos)

Quest.Crops which are cultivated on ploughed land?

Ans.Arable crops

Quest. An agroforestry practice in which perennial, preferably leguminous trees or shrubs are grown simultaneously with arable crop?

Ans.Alley crops or hedge-row intercrops

Quest.Crops which are grown to supplement the yield of the main crops?

Ans.Augment Crops

Quest.Crops, which protect another crops from trespassing of animals or restrict the speed of wind and are mainly grown as border

Ans.Border/Guard Crops

Quest. A crop, grown for direct sale rather than for livestock feed or a crop grown by a farmer primarily for sale to others rather than for his or her own use?

Ans.Cash Crops

Quest. Two major commercial crops are

Ans.(i) Cotton (ii) Sugarcane

Quest.Crops which are cultivated to catch the forthcoming season when main crop is failed?

Ans.Catch/Contingent Crops

Quest. A close-growing crop, grown primarily to improve and protect the soil from erosion through their ground covering foliage and/or rootmats between periods of regular crop production?

Ans.Cover Crops

Quest. When both main and intercrop is benefited to each other?

Ans.Complementary Crops

Quest. The crops leave the field exhaustive after growing?

Ans. Exhaustive Crops

Quest. Any crop or combination of crops is grown for grazing or harvesting for immediate or future feeding to livestock?

Ans.Ley Crops

Quest.Such crops are grown to conserve the soil moisture through their ground covering foliage? *Ans*.Mulch Crops

Quest. The seed of succeeding crops is sown broadcast at 10 to 15 days before harvesting rice crop?

Ans.Paira/Utera Crops

Quest.Generally, the third row of crop is removed or growing of crop in pair row and the third row is escaped with an object to conserve the soil moisture in Dryland areas?

Ans.Paired row Crops

Quest.Such cops are neither complementary nor competitive?

Ans.Supplementary Crops

Quest.Crops, those are grown to protect the main cash crop from a certain pest or several pests? *Ans*.Trap Crops

Quest.Cereals are botanically

Ans.Caryopsis

Quest. The more nutrient exhaustive family is

Ans.Poaceae (Graminae)

Quest. The non-conventional oilseed crop is

Ans.Sunflower

Quest. The non-edible oilseed crops are *Ans*. Castor and Linseed

Quest. The Indian originated field crops are *Ans*. **Arhar, Mung, Urd, Cotton, Jute, Kodo, Kutki, Oat etc.**

Quest.Kharif crops are generally denoted as *Ans*.Short day plants

Quest.Rabi crops are generally denoted as *Ans*.Long day plants

Quest.Day neutral Plants are *Ans*.Cotton, maize, sunflower, safflower, groundnut, buck wheat, tomato.

Quest.Optimum time of sowing for Kharif crop *Ans.June-July*

Quest.Optimum time for Rabi crop

Ans.Last week of October to first week of November

Quest.Optimum depth of sowing for most of field crops *Ans*.**3-5 cm**

Quest. The recommended fertilizer dose (N:P:K) for cereal crops are *Ans*.4:2:1

Quest. The recommended fertilizer dose (N:P:K) for pulse crops are *Ans*.1:2:1 or 1:2:2

Quest. The recommended fertilizer dose (N:P:K) for oilseed crops are *Ans*.3:2:1

Quest. The recommended fertilizer dose (N:P:K) for fodder and fibre crops are *Ans*.2:1:4

Quest. The C₃ Plants are

Ans.Rice, Wheat, Barley, Pea, Gram, Mustard and Rye, Cotton, Arhar, Soybean, Sunflower, Lentil, Sugarbeet, Tomato etc.

Quest. The C_4 Plants are

Ans.Maize, Sorghum, Bajra, Sugarcane, Millets.

Quest. The CAM Plants are

Ans.Pineapple, khajur, cactus, sisal.

Quest. The optimum temperature for better crop production is between Ans.18 - 240 C

Quest. The weight of 1000 seeds of a crop? *Ans*. Test weight

Quest. The weight of 100 seeds of a crop?

Ans.Seed Index

Quest. The net assimilation rate is express in terms of

Ans.g cm⁻² day⁻¹

Quest. Which of the following crop geometry ensures uniform solar radiation availability to crop?

Ans.Square

Quest. Wavelength longer than _____ m/ μ is not visible to the eye, and are called infrared *Ans*.750

Quest. The development stage of a plant after which no further increase in dry matter occurs in the economic part is known as

Ans.Physiological maturity

(II) Modern Concepts of Tillage

Quest. The mechanical manipulation of the soil is k/s as *Ans*. Tillage

Quest. The good physical condition of soil after tillage is *Ans*. Tilth

Quest. Who is the father of tillage?

Ans.Jethro Tull

Quest. The tillage operation mainly aims to break, open and turn the soil *Ans*. Primary/tillage

Quest. The primary tillage implements are

Ans.Deshi plough, MB plough, Ridge plough, Disk plough etc.

Quest. The tillage operation, done to create a good seedbed for proper seeding/planting

Ans.Secondary tillage

Quest. The secondary tillage implements are *Ans*. Cultivator, Harrows, Hoe, Planker, Roller etc.

Quest. The optimum range of available soil moisture for convenient and effective ploughing *Ans*.50-75%

Quest.An ideal condition of soil for crop growth?

Ans.Seed-bed

Quest.Conventional tillage involves

Ans.Minimum tillage, Zero tillage and Conservation tillage.

Quest. The tillage aims to reduce tillage to the minimum necessary for ensuring a good seed-bed, rapid germination, satisfactory stands and favourable growing condition?

Ans.Minimum tillage

Quest. The tillage referred as no tillage in which the crop is planted in unprepared soil *Ans*.**Zero tillage**

Quest. The word 'Zero tillage' was termed by

Ans.Jethro Tull

Quest. A system of tillage in which organic residues are not inverted into the soil and used as a protective cover against erosion and evaporational losses of soil moisture?

Ans.Conservation tillage or stubble mulch tillage

Quest.Conservation tillage tends to encourage

Ans.Higher microbial population

Quest. The tillage implement used to break subsoil is

Ans.Chisel plough

Quest.Ridge plough is used for *Ans*.Earthing-up and form ridges and furrows.

Quest.Star weeder is used for

Ans.Weeding in dry lands and groundnut fields

Quest.Disc plough is used for

Ans.Deep ploughing in grassed field

Quest.Rotary plough is used for

Ans.Cut and pulverizes the light soil.

Quest.Harrows are used for *Ans*.**Preparation of seedbed, destroy weeds**

Quest.Mechanization index is found highest in *Ans*.Wheat crop

(III) Cultivation of Field Crops

1. Paddy

Quest. The botanical name and family of paddy *Ans.Oryza sativa*, Poaceae

Quest. The chromosome number of paddy Ans.2n = 24.

Quest. The cultivated spp. of paddy *Ans*. **O. sativa and O. glaberima**

Quest. The protein (Oryzein) content in paddy *Ans*.6-7%

Quest.Indica rice is grown in *Ans*.India

Quest.Japonica rice is grown in *Ans.Japan*

Quest.Javanica rice is grown in *Ans*.Indonesia

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Quest.Rice inflorescence is called as *Ans*.Panicle

Quest.Optimum temperature for good rice crop growth is *Ans*.30-320C

Quest.Best pH for cultivation of rice is *Ans*.4-6 pH

Quest.Sowing of paddy in April-May and harvesting in August-Sept. is called as *Ans*.Aus/Autumn/Pre kharif paddy

Quest.Sowing of paddy in June-July and harvesting in October is called as *Ans*.Aman/Kharif/Aghani

Quest.Sowing of paddy in January-Feb and harvesting in April-May is called as *Ans*.Boro/Summer/Spring

Quest. The best system of rice culture is *Ans*. Transplanting

Quest. The tillage implement, most suitable for rice cultivation is *Ans*. Power tiller

Quest.Hulling percentage of rice is *Ans*.70-75%

Quest. The gene responsible for dwarfness in rice is

Ans.Dee-gee-woo-gene

Quest.First intervarietal cross variety of rice? *Ans*.Jaya (TN1 = T141)

Quest. The rice variety called 'miracle rice' is *Ans*.IR-8

Quest.Normally rice plant is transplanted at *Ans*.21-25 days after sowing (3-4 leaf stage)

Quest.Under SRI method, rice plant is transplanted at *Ans*.10-12 DAS (Days After Sowing)

Quest.SRI denotes *Ans*.System of Rice Intensification

Quest.In rice 'Dapog seedlings' are ready for transplanting *Ans*.11-14 DAS

Quest.Dapog method is most commonly prevalent in *Ans*.Philippines

Quest. The nursery area required for providing seedlings for transplanting 1 ha rice field *Ans*.1000 m² (1/10 ha)

Quest.Most prominent cropping pattern of rice in India? *Ans*.Rice-Wheat

Quest.Rice prefer nitrogen uptake in *Ans*.Ammonical form (NH₄).

Quest. The best fertilizer for top dressing in rice? *Ans*. Ammonium sulphate

Quest. The recommended dose of N, P and K for rice crop *Ans*.100:60:40 kg ha–1

Quest.For correction of iron chlorosis in rice, following spray is recommended *Ans*.1% solution of ferrous sulphate

Quest. The nitrogen fixing bacterium found on root surface of rice *Ans*. Azospirillum

Quest. The most important critical stage of rice for irrigation *Ans*. Tillering to flowering stage

Quest.In low land rice, fertilizer is applied in *Ans*.Reduced zone only

Quest.Nitrogen use efficiency in rice is around *Ans*.30-40%

Quest.Aroma in rice is due to presence of Ans."Di-acetyl 1 propaline" chemical

Quest.Anaerobic environment in rice soil is responsible for gaseous loss of fertilizer nitrogen by

Ans.Denitrification

Quest. The Gall midge resistance varieties of rice is

Ans.Phalguna, Surekha, Suraksha

Quest. The Blast resistance varieties of rice is *Ans*. Tulsi, IR₆₄

Quest. The deep water rice are

Ans.Punkaj, Jagannath

Quest.Rice varieties suitable for Saline-alkaline soil are *Ans*.CSR-10, CSR-13, CSR-27

Quest.Super rice variety is

Ans.Lunishree

Quest.Gas emitted from rice field is *Ans*.CH₄ (Methan).

Quest.Weed caused relatively more loss in rice productivity, when it is *Ans*.Direct seeded

Quest.Most dominated weed species in rice field is *Ans.Echinochloa spp.*

Quest.Common herbicide used in rice crop field? *Ans*.Anilophos and Butachlor.

Quest.Polish percentage of rice is Ans.2%

Quest.Khaira disease is caused by *Ans*.Zn deficiency.

Quest.Akiochi disease is caused by *Ans*.H₂S toxicity.

Quest. White eye of rice is caused by *Ans*. Fe deficiency.

Quest.Dead heart and white ear of rice is caused by *Ans*.Yellow stem borer

Quest.Killer disease of rice are *Ans*.Bacterial Leaf Blight (BLB) and Tungro virus

Quest Hydrothermal process of rice which saves vitamin R

Quest.Hydrothermal process of rice which saves vitamin B_{12} ?

Ans.Parboiling

2. Wheat

Quest. The botanical name and family of wheat *Ans.Triticum spp.*, Poaceae

Quest. Wheat is a *Ans*. Hexaploid plant. (2n = 42).

Quest. The Mexican dwarf wheat is

Ans.T. aestivum (2n = 42).

Quest. The bred wheat is *Ans.T. vulgare* (2n= 42)

Quest.Marconi wheat is *Ans.T. durum* (2n= 28)

Quest.Emmer wheat is *Ans.T. dicocum* (2n= 28)

Quest.Indian dwarf/Club wheat is *Ans.T. spherococum* (2n= 28)

Quest. The highest grown wheat species in India *Ans*.**T. aestivum**

Quest. The optimum temperature range for sowing of wheat crop *Ans*.20 to 25°C

Quest. Wheat protein is called as *Ans*. Gluten

Quest. The protein content in wheat Ans.8-11%

Quest. The flowering portion of wheat *Ans*. Head/Ear/Spike

Quest.Permanent roots of wheat, appeared after 20-22 days of sowing?

Ans.Crown roots

Quest. The shelling percentage of wheat *Ans*.60%.

Quest.Pearling index in wheat measures *Ans*.Kernel hardness

Quest.Gene responsible for dwarfness in wheat? *Ans*.Norin

Quest.Sowing depth of dwarf wheat is directly depend upon *Ans.Length of coleoptyle*

Quest.Triple gene dwarf wheat varieties were released during? Ans.1970

Quest. The Row to row spacing of wheat *Ans*.22.5 - 23.0 cm

Quest. The seed rate of timely sown wheat Ans.100 -125 kg/ha

Quest. The seed rate of Late sown wheat *Ans*.125 -150 kg/ha

Quest. The most important critical stage of wheat is *Ans*. Crown root initiation (CRI 20-25 DAS)

Quest.Single gene dwarf varieties are Ans.Sonalika, UP-262, WL-711, Girja

Quest.Double gene dwarf varieties are Ans.Kalyansona, UP-215, Arjun, Pratap, Janak

Quest. Triple gene dwarf varieties are

Ans.Jawahar, Jyoti, Hira, Moti, Sangam, UP-301, UP-319

Quest. The variety best suited for sowing in Rainfed areas? *Ans*.C-306, Sujata, Shera, Mukta

Quest.Marconi wheat varieties are *Ans*.Jayraj, Meghdoot, Malvika, HD-4530 etc.

Quest.Both blight and Rust resistant varieties are *Ans*.UP 2425, PBW 273, WH 291

Quest.Most important crop variety during green revolution *Ans*.HD 2329

Quest.Zinc and sulphates deficiency in wheat field reported in Ans.Punjab

Quest.Most suitable cropping system for wheat crop *Ans*.Mixed cropping

Quest.Objectionable weed of wheat *Ans*.Convolvulus arvensis

Quest.Associated weeds of wheat

Ans.Phalaris minor, Avena fatua and Chenopodium album

Quest.Common herbicide used to control weeds in wheat *Ans.***2**, **4**-**D**

Quest.Initial distinguishing character for identification of *Phalaris minor Ans*.It is basal node is pink upto 50 days

Quest. The moisture content at harvesting stage of wheat *Ans*.25-30%

3. Maize

Quest. The botanical name of maize is *Ans.Zea mays*

Quest.Maize crop is also referred as *Ans*.Queen of cereals

Quest. The maize protein is known as *Ans*. Zein

Quest.Protein and oil per cent in Maize grain *Ans*.8–10 per cent and 4–5 per cent

Quest.Most widely grown maize spp. in India? *Ans.Zea mays indurate* (Flint corn)

Quest.Leading state of rabi maize? *Ans*.**Bihar**

Quest.Maize variety widely grown in USA? *Ans.Zea mays identata* (Dent corn)

Quest. The sweetest maize species Ans.Zea mays sacchrata (Sweet corn)

Quest.Maize species produce starch similar to tapioca *Ans.Zea mays ceretina* (Waxy corn)

Quest.Seed rate of Hybrid maize *Ans*.20 to 25 kg/ha

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Quest.Seed rate of Composite maize is *Ans*.15 to 20 kg/ha

Quest.First maize hybrid released in India? Ans.1961

Quest.Single cross technology of maize is given by *Ans*.East and Shull (1910)

Quest.Double cross technique of maize is given by *Ans*.D.F. Jones (1920)

Quest.Fodder crop maize varieties are *Ans*.African tall, J1006

Quest.Pop corn maize varieties are *Ans*.Amber pop, V L Amber. Pop, Pearl pop corn

Quest.Quality Protein Maize (QPM) varieties released by using *Ans*.Opaqua-2 genes

Quest.QPM varieties are Ans.Sakti, Shaktiman 1 & 2, HQPM

Quest.Hybrid varieties of maize Ans.Ganga-1, 3, 5, 101, Ganga safed-2, Ranjit, Ganga-4

Quest.Composite varieties of maize Ans.Jawahar, Vikram, Kishan, Ambar, Sona, Vijay.

Quest. The most critical stages for irrigation in maize *Ans*. Silking stage.

Quest.Maize crop leaves show red and purple colour due to deficiency of *Ans*.Phosphorus (P)

4. Sorghum/Jowar

Quest.Botanical name of sorghum is *Ans*.Sorghum bicolor

Quest.Sorghum crop is also referred as *Ans*.Camel crop

Quest. The seed rate of sorghum *Ans*.12-15 kg/ha

Quest.1st Hybrid variety of sorghum *Ans*.CSH-1 (released in 1965)

Quest.Alkaloid content present in sorghum leaves *Ans*.HCN (Dhurin alkaloid)

Quest.Sweet sorghum varieties *Ans*.RSSV 46, 53, 59, 84, 96, NSS 216

Quest.Varieties suitable for both grain and fodder purpose *Ans*.CSH 13 and CSV 15

5. Pearlmillet/Bajra

Quest.Botanical name of Pearlmillet *Ans*.Pennisetum glaucum

Quest.Pearlmillet is also known as *Ans*.Bulrush millet

Quest. The seed rate of Pearlmillet *Ans.***5 kg/ha**

Quest.1st Hybrid variety of Pearlmillet *Ans*.HB-1 in 1965

Quest.Hybrids varieties of Pearlmillet *Ans*.HB- 1 to 5 and Pusa 23.

Quest.80 per cent phosphorus in bajra grains stored in the form of *Ans*.Phytate

Quest.Productivity of Bajra is highest at *Ans*.UP

6. Barley

Quest.Botanical name of two rowed barley Ans.Hardium distichoum

Quest.Six rowed barley is
Ans.Hardium vulgare

Quest. The seed rate of barley is *Ans*.75-80 kg/ha

Quest.Critical stage for irrigation in barley *Ans*.Active Tiplering Stage (30–35 DAS)

Quest.'Pearl Barley' is suited for *Ans*.Kidney disorders

Quest.Molya disease resistant variety of barley is *Ans*.RD 2052

Quest.Melting quality is high in variety *Ans*.Rekha

Quest.Grassy weed in barley field can be effectively controlled by *Ans*.Both Isoproturon and 2,4-D

Quest.Lugri is a fermented drink developed from *Ans*.Hull less barley grains

7. Chickpea/Gram

Quest.Botanical name of Desi/Brown Chickpea? *Ans.Cicer aeritinum*

Quest.Botanical name of Kabuli/White Chickpea? *Ans.Cicer kabulium*

Quest. The most frost affected crop among all field crops?

Ans.Gram

Quest. The sour taste in leaf of chickpea is due to presence of? *Ans*. Maleic and Oxalic acid

Quest. The type of root system in chickpea is

Ans.Tape root system

Quest. The requirement of seedbed for better cultivation of chickpea is? *Ans*. Rough seedbed

Quest.Best soil for cultivation of chickpea?

Ans.Light alluvial soil (a loose and well aerated soil)

Quest. The optimum time of sowing of chickpea is? *Ans*.15th to 20th October

Quest. The seed rate for early sown chickpea is *Ans*.75-80 kg/ha

Quest.Chickpea variety suitable for rainfed condition? *Ans*.Vishal, Anubhav

Quest. The early maturing variety of gram is? *Ans*. Chaff chaff, JG-62

Quest.Chickpea variety resistant to Wilt? Ans.JG-74, JG-315, BG-256, Awarodhi

Quest.Most suitable variety of chickpea to drought resistant? *Ans*.NP-58

Quest.Late planting of chickpea is done to protect the seedlings from? *Ans*.Wilt disease

Quest.A process of removal/tipping of apical buds of Chickpea is termed as *Ans*.Nipping

Quest. The average yield of chickpea in irrigated condition in India *Ans*.12-15 qt/ha.

8. Pigeonpea/Arhar

Quest.Early maturing pigeonpea is *Ans.Cajanus cajan flavus*

Quest.Late maturing pigeonpea is *Ans*.Cajanus cajan bicolor

Quest.Pigeonpea belongs to the family of *Ans*.Papilionaceae

Quest. The type of seed germination in pigeonpea is *Ans*. Hypogeal

Quest. The sowing time of late maturing pigeonpea is

Ans.1st week of July

Quest. The normal seed rate of pigeonpea? *Ans*.10-15 kg/ha

Quest.Zn deficiency in Pigeonpea is rectified by spraying of *Ans*.5 kg ZnSO₄ + 2.5 kg Lime ha⁻¹

Quest.Extra-short-duration variety of pigeonpea Ans.UPAS-120

Quest.Short duration varieties of pigeonpea? *Ans*.Pusa Ageti, T₂₁, HY₂, Pusa 84

Quest.Sterility mosaic and wilt resistant variety of pigeonpea *Ans*.Amar, Narendra Arhar 1, Azad

Quest.World's first hybrid variety of Pigeonpea is *Ans*.ICPH-8

Quest.Harvest index (HI) of Pigeonpea is *Ans*.0.19 (lowest among pulses).

9. Fieldpea

Quest.Botanical name of Fieldpea *Ans.Pisum sativum var. arvense*

Quest.Botanical name of Garden pea *Ans.Pisum sativum var. hartense*

Quest.Fieldpea/Grainpea is used for *Ans*.Dal/pulse purpose

Quest.Gardenpea/Table pea is used for *Ans*.Green pods used for vegetable

Quest.Seed treatment in pea is done by

Ans.Captan/Thirum 2.5 gm + Rhizobium leguminosarum 10 gm/kg seed

Quest. The spacing maintained in Fieldpea is *Ans*.30 cm x 5-7 cm

Quest. The common varieties of Fieldpea

Ans.Rachana, Arpana, Ambika, T-65,163, Hans, KP-885, Pant C-5

Quest.Leafless variety of Fieldpea? *Ans*.Arpana

Quest. The recommended NPK dose for Fieldpeas *Ans*.20:50:30 kg

10. Mungbean/Greengram

Quest.Latest botanical name of mung is *Ans.Phasiolus aureus*.

Quest. The seed rate/ha of mungbean is *Ans*.12-15 kg

Quest.Early maturing varieties of mungbean is *Ans*.Pusa baisakhi, PS_{16} , K_{851}

Quest.Yellow Vein Mosaic resistant varieties of mungbean *Ans*.Pant mung 3, Sumrat, Basanti

Quest. The average yield of mung in India Ans.12-15 qt/ha

11. Urdbean/Blackgram

Quest.Latest botanical name of Urd is *Ans.Phasiolus mungo*.

Quest. The seed rate/ha of mungbean is *Ans*.20-25 kg

Quest. The normal recommended spacing of urdbean *Ans*.40 cm=10 cm

Quest.Common varieties of urdbean Ans.Pant U-30, JU-2, Type-9, Barkha, Gwalior-2

Quest. The average yield of Urd in India Ans.10-12 qt/ha

12. Groundnut

Quest.Bunch/Spanish/Erect type groundnut is *Ans.Arachis hypogea fastigate*

Quest.Spreading/Verginia runner type groundnut is *Ans.Arachis hypogea procumbens*

Quest.Groundnut is a *Ans*.Modified fruit

Quest.Fruit of groundnut is called *Ans*.Nut

Quest. The oil and protein content of groundnut Ans. 45 and 26 %

Quest.Technology Mission on Pulses and Oilseeds (TEMPO) was started in *Ans*.1986

Quest.Most suitable soil for groundnut cultivation *Ans*.Sandy loam soil

Quest. The seed rate of bunch type groundnut varieties *Ans*.100-120 kg/ha

Quest. The seed rate of Spreading type groundnut varieties *Ans*.100-120 kg/ha

Quest. The main critical stage of groundnut for irrigation *Ans*. Flowering stage, Pegging stage and Pod formation stage

Quest. The most suitable irrigation method for groundnut *Ans*. Check basin method

Quest. The common varieties of bunch type groundnut *Ans.*Jyoti, Kishan, TMV-11, 12, AK-12, 24, Junagarh-11, ICGS-1, 10, 11, 44.

Quest. The common varieties of Spreading type groundnut Ans.Chandra, Type-28, 64, TMV-1, 3, M- 13, 37, Vikram, Verginia, Gangapuri, Godheri-2, 3

Quest.Earthing-up is done in groundnut crop at

Ans.35 to 45 DAS

Quest.Interculture operation in groundnut crop should be avoided at

Ans.Pegging stage

Quest.Strain used for biological N₂ fixation in groundnut is *Ans.Rhizobium japonicum*

Quest.Vector of virus in groundnut is *Ans*.Aphid

Quest.Early leaf spot disease of groundnut is caused by *Ans.Cercospora arachidicola*

Quest.Late leaf spot disease of groundnut is caused by *Ans.Cercospora personata*

13. Sunflower

Quest. The botanical name of sunflower *Ans.Helianthus annus*

Quest.Sunflower is also known as *Ans*.Non-conventional oilseed crop

Quest.Sunflower has high quality edible oil content of *Ans*.45-50%

Quest. The head of sunflower is called as *Ans.Capitulai*

Quest.Best sowing time of rabi sunflower is

Ans.November 1st to 2nd week

Quest. The recommended seed rate of sunflower per hectare is *Ans*.5-7.5 kg/ha

Quest. The recommended spacing between row to row and plant to plant of sunflower? *Ans*.50 cm x 20 cm

Quest. The most common varieties of sunflower are *Ans*. Modern, MSFH-8, 17, Jwalamukhi, KBSH-1, JS-1, Sunrise selection.

Quest. The average yield of sunflower in India *Ans*.20-30 qt/ha

14. Soybean

Quest. The botanical name of soybean is *Ans.Glycine max*

Quest.Soybean crop designated as *Ans.*"*Boneless meat*"

Quest. The protein and oil content in soybean seeds Ans.40-42%, and 20-22%

Quest.Soybean is popularly known as *Ans*.Wonder crop

Quest.Nodule formation in soybean is done by *Ans.Rhizobium japonicum*

Quest. The nitrogen fixation per hectare by soybean *Ans*.40 kg

Quest. The recommended seed rate of soybean *Ans*.75-80 kg/ha

Quest. The most common varieties of soybean are Ans.JS-2, 335, Indira Soya-9, PK-472, 1024, Gaurav, Ankur, Brag, Clark

Quest.Manturian classified the soybean varieties based on *Ans*.Seed colour

Quest.Most commonly cultivated soybean in India *Ans*.Yellow coloured soybean

Quest. The average yield of soybean in India *Ans*.20-25 qt/ha

15. Rapeseed and Mustard

Quest. The botanical name of Brown/Indian mustard *Ans.Brassica juncea*

Quest. The botanical name of sarson is *Ans.Brassica compestris*

Quest. The fruit of mustard is known as *Ans*. **Siliqua**

Quest. The recommended seed rate of mustard as main crop is *Ans*.4-6 kg/ha

Quest. The common varieties of brown sarson *Ans*. Pusa kalyani, Sufla, BSH-1

Quest.Varieties of mustard are *Ans*.Kranti, Varuna, Krishna, Pusa bold, Vardan, Rohni

Quest.Hybrid variety Pusa Jai Kisan is also called *Ans*.Bio 902

Quest.Mustard crop planted at a spacing of 50 x 20 cm will have _____ plants/ha. *Ans*.1,00,000

Quest.Optimum moisture content for safe storage of mustard is *Ans*.7-8%

Quest. The critical stages for irrigation in Rapseed and mustard are *Ans*. Rosette stage and Siliqua formation stage

16. Safflower

Quest. The botanical name of safflower *Ans.Carthamus tinctorius*

Quest.Safflower crop is known as *Ans*.Fencing crop/Border crop

Quest. The oil content in safflower *Ans*.32-36%

Quest.Fruit of safflower is called

Ans.Achene

Quest. The recommended seed rate of safflower *Ans*.15-20 kg/ha

Quest. The common varieties of brown sarson are *Ans*.JSF-1,2,5, JSI-7, EB-7, JSH-129

Quest. The average yield of safflower in India *Ans*.18-20 qt/ha

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17. Linseed

Quest.Linseed crop is also known as *Ans*.Flex

Quest. The botanical name and family of linseed is *Ans.Linum usitatisium*, Linaceae

Quest. The oil percentage in linseed is *Ans*.40-42% oil

Quest. The linolinic acid present in linseed oil *Ans*.50-60%

Quest. The recommended seed rate of linseed is *Ans*.25-30 kg/ha

Quest. The most common varieties of linseed Ans. Jawahar-7, 17, 18, 552, Kiran, Mukta, Sweta, Gourav, Shital

Quest.Linseed crop require NPK dose of *Ans*.60:40:20 kg ha

Quest. A process of treatment of stalks for final fibre extraction is termed as *Ans*. Retting

18. Cotton

Quest.Cotton is popular in America as *Ans*.White gold

Quest.Indian/old world cottons are Ans.Gossipium arborium, G. herbacium

Quest.American/new world cotton is *Ans.G. hirsutum*

Quest.Egyptian cotton/sea island cotton is *Ans.G. barbadence*

Quest. The best soil for cultivation of cotton *Ans*. Black cotton soil

Quest. The fibre colour of American cotton

Ans.Creamy White

Quest. The formulae to calculate ginning percentage

Ans.Ginning $\% = \frac{\text{Wt.of lint}}{\text{Wt.of seed cotton}} \times 100$

Quest. The percent of lint in seed cotton is Ans.33%

Quest.Interspecific varieties of cotton

Ans.Varalaxmi, DCH-32 (hybrid), HB-224, DHB-105

Quest.Intraspecific varieties of cotton

Ans.H-4, 6, Savita, Surya (hybrid), JKHY-1

Quest.Minimum Support Price is fixed by govt. for cotton varieties of *Ans*.H-4, H 777, F 414

Quest.G-777 is a

Ans.Indian cotton variety

Quest.Nitrogenous fertilizer can be top dressed in the cotton up to

Ans.First flowering

Quest. The chemical used for delinting of cotton $Ans.H_2SO_4$

Quest. Which part of the cotton plant contains lint and fuzz? *Ans*.**Hemp**

Quest.1 bale of cotton is equal to *Ans*.170 kg

Quest. The average wt. of Very fine fibre

Ans.< 3.0 mg

Quest. If the fiber length of a cotton hybrid variety is 25 mm, it classified under *Ans*.Long staple cotton

Quest.Less number of knots in cotton is termed as *Ans*.Superior quality cotton

Quest.Fibre of cotton contains *Ans*.Cellulose

Quest.Bt cotton is resistant against the pest *Ans.Helicoverpa* (Spotted bollworm)

19. Jute

Quest. The botanical name of white jute *Ans.Corchorus capsularis*

Quest.Jute crop is planted in the month of *Ans*.Feb-March

Quest. The seed rate of jute per ha *Ans*.8-10 kg/ha

Quest.Bitterness in jute is due to *Ans.Corchorin*

Quest.Low quality of jute fibre attributed to *Ans*.Discolouration of fibre

Quest. The most common varieties of jute are Ans.JRC-321 (Sonali), JRC-212 (Sabuj sona), JRC 7447 (Shyamli), Hybrid C (Padma), KC₁ (Joydev) etc.

Quest.Ideal stage of jute harvesting for fibre purpose *Ans*.Small pod stage/initiation of pod formation (135-140 DAS)

Quest.Retting of jute fibre is a *Ans*.Biochemical process

20. Sugarcane

Quest. The botanical name of tropical cane *Ans.Saccharum officinarum*

Quest.Saccharum barberi and *Saccharum sinensis* are termed as *Ans.Indian cane*

Quest.Leading state of India in sugarcane production is *Ans*.U.P. (45% of total Prodtn.)

Quest.Indian Institute of Sugarcane Research (IISR) is situated at *Ans*.Lucknow, Uttar Pradesh

Quest.Sugarcane Breeding Institute (SBI) is situated at *Ans*.Coimbatore, Tamil Nadu

Quest.Optimum temperature for sugarcane growth *Ans*.21-27°C

Quest.Inflorescence of sugarcane is called as *Ans*.Arrow

Quest. The permanent type root of sugarcane is *Ans*. Shoot roots

Quest.Adsali sugarcane crop planted during the months Ans.July-August

Quest. The requirement of 3 budded sett rate for planting in one hectare land is *Ans*.35,000-40,000 setts

Quest.Planting material used for sugarcane planting is *Ans*.Upper 1/3 to half part of cane

Quest.Flat bed method of sugarcane planting is most common in *Ans*.North India

Quest.Ridge and furrow method is mostly used in *Ans*.South India

Quest. The chemicals used for sett treatment of sugarcane *Ans*. Agallal and Areton

Quest. The most critical stage of sugarcane for irrigation is *Ans*. Formative stage (60-130 days after planting)

Quest. Which bacterium is used for nitrogen fixation in sugarcane field? *Ans.Acetobactor diazotrophicus*

Quest.Varieties of sugarcane termed as "Wonder cane" *Ans*.COC-671 and CO-419

Quest.Earthing up in sugarcane is done at

Ans.4 month after planting

Quest.Most commonly used herbicides in sugarcane are *Ans*.Simazine, Atrazine and Alachlor

Quest. A method of plant analysis for assessing nutrient requirement in sugarcane is *Ans*. Crop Logging

Quest.Nutrient, responsible for translocation of sugar in sugarcane *Ans*.Potassium (K)

Quest. The most common symptoms to judge the maturity of sugarcane are *Ans*. Cane become brittle, produces metallic sound and breaks easily at nodes.

Quest.Sugarcane is considered as mature, when Brix reading is between *Ans*.18-20%

Quest.Brix reading of juice indicates *Ans*.Total soluble solids

Quest.Sugar yield from sugarcane is *Ans*.6-10% from juice

Quest. The sugar content/recovery is more in the cane produced at *Ans*.Southern India

Quest.By-product of S'cane *Ans*.Molllasses and Baggasses

Quest. The most dangers disease of sugarcane is *Ans*. Red rot disease

21. Berseem

Quest.Berseem is also known as *Ans*.Egyptian clover

Quest. The botanical name of berseem is *Ans. Trifolium alexandrinum*

Quest.Sowing of berseem crop is done by *Ans*.Broadcasting

Quest. The seed rate of berseem is *Ans*.25-30 kg/ha

Quest.Seed treatment of berseem seed is done by *Ans.Rhizobium trifolium* culture

Quest.First cutting in berseem is done at *Ans*.50-55 days after sowing

Quest. The popular varieties of berseem Ans. Vardan, chindwara, BL-1, 11, 22, 52, C-10 (Maskavi), IGFRI 99-1

Quest. The objectionable weed of berseem is Ans. Kasini (Chicorium intybus)

Quest.Forage yield of berseem crop is *Ans*.800 - 1000 qt/ha

22. Lucerne/Alfalfa

Quest. The botanical name of lucerne is *Ans.Medicago sativa*

Quest. The seed rate of lucerne is *Ans*.20-25 kg/ha

Quest.Seed treatment of lucerne seeds is done by Ans.Rhizobium meliloti culture

Quest.Stem parasitic weed of lucerne is *Ans.Cuscuta reflexa* (Doddar)

Quest. The popular varieties of lucerne *Ans*. **Moopa, Rambler, Anand-2, 3, Sirsa 1, 8, 9, Type - 8,9, IGFRI-5,54,244**

Quest.Forage yield of berseem crop is *Ans*.800 - 1100 qt/ha

Quest. The physiological disorder "Lucerne yellowing" is cause due to the deficiency of *Ans*.Boron (B)

23. Oat

Quest. The botanical name of oat crop is *Ans. Avena sativa*

Quest. The seed rate of oat crop is *Ans*.80 -90 kg/ha

Quest.Recommended NPK dose for oat

Ans.80:30:20 kg/ha

Quest.Best stage for harvesting of oat is *Ans*.Dough stage

Quest. The popular varieties of oat are *Ans*. Kent, Algerian, UPO 50, Craig, Afterlee, Fulgham, Fleming gold, HFO-114.

Quest.Total number of cutting taken in oat crop are *Ans*.2-3 cuttings

Quest.Forage yield of oat crop is *Ans*.400 - 450 qt/ha

24. Potato

Quest. The botanical name of potato is *Ans.Solanum tuberosum*

Quest. The origin place of potato is *Ans*. **South America (Peru)**

Quest. The solanin content present in potato is

Ans.5 mg/100 gm of potato

Quest.Protein content in potato is *Ans*.1.6%

Quest.Potato is an *Ans*.Underground stem

Quest.Potato crop requires an average temperature for tuberization is of *Ans*.17-200C

Quest.Potato crop favours the soil for best growth *Ans*.Sandy loam soil

Quest.Tuber for selected for potato sowing should have *Ans*.At least 3 buds, 2.5-3 cm diameter with 25-30 gm weight.

Quest. To break the tuber dormancy, the tuber should be treated with *Ans*.1% thiourea + 1 ppm GA_3 for 1 hour

Quest. The normal seed rate of potato for one hectare land is

Ans.20-25 qt/ha

Quest.True potato seed (TPS) enough for planting one ha. crop. *Ans*.40-45 gm

Quest. The most popular method for potato planting is *Ans*. **Ridge and Furrow**

Quest.Earthing-up in potato is done at *Ans*.30 – 45 DAS

Quest. The short duration varieties of potato is *Ans*. Kufri alankar, Kufri chandramukhi, Kufri bahar, Kufri Jyoti etc.

Quest. The varieties suitable for late planting of potato is *Ans*. Kufri sinduri, Kufri dewa, Kufri jeevan etc.

Quest.Most critical stage for irrigation in potato is *Ans*.25% tuber formation stage

Quest.Dehulming of potato is used to Ans.Obtain quality seed tuber by using the chemical CuSO₄

Quest.Seed plot technique (SPT) in potato is used for

Ans.Producing virus free seed tubers

Quest.Special size (superior grade tubers) of potato should have *Ans*.8 cm diameter

Quest.Potato tubers should be stored in ventilated closed room with maintenance of *Ans*.4-50C temperature and 90-95% RH

25. Tobacco

Quest. The botanical name of tobacco is *Ans*. Nicotiana tabacum

Quest.Nicotiana tabacum is growing for the purpose of *Ans*.Smoking and chewing

Quest.Nicotiana rustica is growing for the purpose of *Ans*.Hookah, chewing and snuff

Quest. Transplanting age of tobacco is

Ans.7 to 9 weeks (4-5 leaf stage)

Quest.Nicotine content (%) of tobacco is *Ans*.0.5 to 5.5 (*N. tabacum*) and 3.5 to 8.0 (*N. rustica*)

Quest.Cigarette tobacco is prominent growing in states of *Ans*.Andhra Pradesh and Karnataka

Quest. The seed rate of tobacco is *Ans*.2.5 to 3.0 kg/ha

Quest.Mutant varieties of tobacco are *Ans*.Jayashri, Bhavya

Quest.Most critical stages for irrigation of tobacco is *Ans*.Topping

Quest.As a source of N, potato crop require fertilizer of *Ans*.Potassium nitrate

Quest.Desuckering of tobacco is done by *Ans*.Melaic Hydracids (2%)

Quest.Priming method of harvesting is popular in *Ans*.Cigarette, Wrapper and Chewing type

Quest.Flue curing is done for *Ans*.Cigarette tobacco

Quest.Fire curing is done for *Ans*.Bidi, Snuff, Chewing, Hookah tobacco

Quest.Nicotine content accumulates in which part of tobacco? *Ans*.Leaves

(IV) Cropping and Farming system

Quest. The repetitive cultivation of an ordered succession of crops or crops and fallow on the same land is called as

Ans.Crop rotation

Quest. Which of the following rotations is likely to leave soil richer in organic matter? *Ans*.Maize – Oats - Clovers

Quest.Crop rotation practiced by the majority of the farmers in a given area or locality is called as

Ans.Cropping Pattern

Quest. The most prominent and adopted cropping pattern in India

Ans.Rice - Wheat.

Quest. The cropping pattern used on a farm and its interactions with farm resources, other farm enterprises and available technology which determine their makeup is called as

Ans.Cropping system

Quest.An appropriate combination of farm enterprises *viz*., cropping system, livestock, poultry, fisheries and the means available to the farmer to raise them for increasing profitability is called as

Ans.Farming system

Quest. The raising of animals along with crop production is

Ans.Mixed farming

Quest.Growing of two or more crops simultaneously and intermingled without row arrangements, where there is significant amount of intercrop competition is called as

Ans.Mixed cropping

Quest.Growing of two or more crops simultaneously in alternate rows or otherwise in the same area, where there is significant amount of inter crop competition is called as

Ans.Intercropping

Quest. One crop variety grown alone in pure stands at normal density in a field

Ans.Sole cropping

Quest. The repetitive growing of the same sole crop on the same land is termed as

Ans.Monoculture

Quest. The growing of more than one crop on the same land in one year is termed as

Ans.Multiple cropping

Quest.Growing of two or more crops in quick succession on the same piece of land in a farming year is termed as

Ans.Sequential/non-overlapping cropping

Quest.A cropping system where the land is hands over the succeeding crop before the harvest of standing crop.

Ans.Relay or overlapping cropping

Quest. Two or more than two crops of different heights cultivated simultaneously on the same field is called as

Ans.Multistoreyed/Multitired/Multi-level cropping

Quest.Such crops have different growth habits and zero competition to each other. *Ans*.Parallel cropping

Quest. The cropping system beneficial to prevent soil erosion due to winds is

Ans.Strip cropping

Quest.Cropping intensity of maize-potato-wheat Ans.300%

Quest. The example of parallel cropping is *Ans*.Urd/Moong + Maize

Quest.Paira and Utera cropping are most probable in

Ans.Bihar, MP and Chhattisgarh states

Quest. When the productions of both inter crops is equal to that of its solid planting.

Ans.Companion cropping

Quest.Synergetic cropping means

Ans.When yield of both the crops are higher than their pure crops on unit area *e.g.* Sugarcane + Potato

Quest. What does 'jhuming' refers to

Ans.Traditional method of cultivation in hilly area

Quest. The formulae of cropping intensity is

Ans.C.I. $(\%) = \frac{\text{Total cropped area}}{\text{Net sown area}} \times 100$

Quest. The average cropping intensity of India Ans.135%

Quest. The formulae of rotational intensity

Ans.R.I. $(\%) = \frac{\text{No.of crops grown in rotation}}{\text{Duration of the rotation}} \times 100$

Quest. "Relative land area under sole crop required to produce the same yield as obtained under a mixed or intercropping system at the same level of management is termed as

Ans.Land equivalent ratio (LER)

Quest.Sustainability Yield index value lies between

Ans.0 to +1

Quest. The formulae of cropping index is

Ans.C.I. (%) = $\frac{\text{Total cropped area}}{\text{Net sown area}} \times 100$

Quest.Organic farming excludes the application of *Ans*.Fertilizers

(V) Irrigation Water Management

Quest. The artificial application of water to supply moisture essential to plant growth is termed as

Ans.Irrigation

Quest.First entry of water from the upper layer of soil is known as

Ans.Infiltration

Quest.Vertical movement of water or downward movement of water from different soil layer is called as

Ans.Percolation

Quest. Horizontal flow of water in irrigation channels or through canals is known as

Ans.Seepage

Quest. The flow of excess water from the field after saturation of soil.

Ans.Runoff

Quest.Downward movement of nutrients and salts from the root zone with the water *Ans*.Leaching

Quest.Life saving irrigation is also known as

Ans.Contingency irrigation

Quest.Volume or quantity of water required for irrigation to bring a crop to maturity *Ans*.Duty of water

Quest. The total depth of water (cm) required y a crop during its duration in the field *Ans*. **Delta**

Quest. The percentage of applied irrigation water stored in the soil and made available for consumptive use by the crop

Ans.Irrigation Efficiency

Quest.Soil crusting reduces

Ans.Infiltration

Quest.Average annual rainfall of India is about *Ans*.400 Mha.m

Quest.75% of rainfall is received by *Ans*.**S-W monsoon period (June-Sept)**

Quest.Biggest river basin of India *Ans*.Ganga

Quest. The quantity of water (gm) necessary for a plant to produce 1 kg of dry matter is known as *Ans*. Transpiration coefficient

Quest. The process of determining when to irrigate and how much water to apply is termed as *Ans*. **Irrigation scheduling**

Quest.Irrigation is applied to the crop at *Ans*.50% soil moisture depletion stage

Quest.Soil moisture content is determined by *Ans*.Tensiometer (at 0.85 bar)

Quest.P^F refers to *Ans*.Logarithm of soil moisture tension

Quest. Which of the following is a method of indirect measurement of soil moisture? *Ans*.Neutron moisture meter

Quest.Volumetric method of water measurement are

Ans.Furrows, Sprinklers and Drippers

Quest.For measuring uniform flow of water, weirs used are *Ans*.Rectangular and Trapezoidal weir

Quest. Venturi meter is used to measure water, if

Ans.Water flow from the pipe

Quest. The most common water flow measuring device which measures water flow in open conduit is

Ans.Parshall/Venturi flume

Quest.Irrigation method suitable for lowland rice and jute *Ans*.Flooding

Quest.Most common method of surface irrigation to irrigate groundnut and pulses *Ans*.Check basin

Quest.Ring basin method is suitable for

Ans.Fruit trees

Quest. The method in which field divided into number of strips by bunds of around 15 cm height is

Ans.Border strip method

Quest. The method, suitable for crops *i.e.* Sorghum, cotton, maize, tobacco, potato, sugarcane etc is

Ans.Furrow method

Quest.Micro irrigation method, in which water is applied as spray

Ans.Sprinkler method

Quest.Irrigation method, suitable for undulating land, sandy soils and Vegetable and fruit crops *Ans*.Sprinkler method

Quest.Pressure, applied in sprinkler irrigation system *Ans.*>2.5 bar

Quest. The rate of water delivery in sprinkler system is *Ans.*>1000 litre/hrs.

Quest.Drip Irrigation is discovered at *Ans*.Israel

Quest.Drip Irrigation method is also known as *Ans*.Trickle irrigation

Quest.Micro irrigation method, in which water is applied as drop form through emitters *Ans*.Drip method

Quest.Drip method is suitable for

Ans.Wider spaced orchard crops, sugarcane and for saline soils

Quest.Discharge rate of water per dripper is

Ans.1-4 litre/hrs

Quest. The saving of water in sprinkler and drip irrigation methods as compared to surface irrigation methods

Ans.25-50% and 50-70% water, respectively.

Quest. Which irrigation method has highest irrigation efficiency?

Ans.Drip method

Quest. The water content between Field capacity (-1/3 bar) to PWP (-15 bar) is called

Ans.Available water

Quest. The amount of soil moisture or water content held in soil after excess water has drained away is called

Ans.Field capacity (FC)

Quest. The moisture content of a soil at which plants permanently wilt and will not recover.

Ans.Permanent wilting point (PWP)

Quest. The water, that moves downward freely under the influence of gravity (< 1/3 bar) beyond the root zone

Ans.Gravitational water

Quest. The water, retained by the soil in capillary pores (micropores), against gravity (-1/3 to - 31 bar) by the force of surface tension

Ans.Capillary water

Quest. When water is held tightly as thin film around soil particles by adsorption forces and flows at gravity of > -31 bar, is called

Ans.Hygroscopic water

Quest.Capillary movement of water is complemented by

Ans.Root extension

Quest. A diffusive process by which liquid water in the form of vapour is lost in the atmosphere *Ans*. Evaporation

Quest. The process in which soil water lost from leaves of plants in the form of vapour and enters the surrounding atmosphere.

Ans.Transpiration

Quest. The quantity of water needed for normal crop growth and yield in a period of time to a place and may be supplied by precipitation or by irrigation or by both.

Ans.Water requirement of a crop

Quest. The consumptive use of water is equal to

Ans.ET + Mw

Quest.Water requirement of rice is *Ans*.90-250 cm

Quest.Water requirement of wheat, sorghum, soybean and tobbaco are *Ans*.45-65 cm

Quest.Water requirement of sugarcane *Ans*.150-250 cm

Quest. Water requirement of cotton crop *Ans*.70-130 cm

Quest. Water requirement of maize and groundnut are

Ans.50-80 cm

Quest. The period when water requirement is maximum is called as

Ans.Critical stages of water requirement

Quest. What will be CPE value when irrigation is scheduled at 0.8 IW/CPE with 6.0 cm depth of irrigation water?

Ans.7.5 cm or 75 mm

Quest. The ratio of the crop yield to the total amount of water used for irrigation is called, measured in kg/ha-cm is

Ans.Water use efficiency

Quest.Salt content in irrigation water evaluated as best quality

Ans.0.2 to 0.5 g/lt

Quest. The permissible and normal limit of EC, RSC, SAR (meq 1^{-1}) and Boron content (ppm) *Ans*.2–4, < 2.5, < 10 and <3, respectively.

Quest.Nitrate levels in drinking water above _____ mg per litre are considered as a human health hazard.

Ans.10

Quest. The process of removal of excess water from the field to ensure a favourable salt balance in the soil

Ans.Agricultural drainage

Quest.In a waterlogged soil, the concentration of ______ is high

Ans.Methane

Quest. The root developed due to water logging in most of the crops

Ans.Adventitious root

Quest.Under water logged conditions, which nutrients are found deficient for the crops

Ans.Both Zn and Cu

Quest. The depth of water (cm) to be drained in 24 hours period from the entire drainage area. *Ans*.Drainage coefficient

Quest.Drainage of one ha cm (105 lt) in 24 hrs is equal to Ans.1.157 litre/sec

(VI) Watershed Management

Quest.A natural hydrological unit having common runoff outlet point Ans.Watershed

Quest. The ratio of runoff to the volume of precipitation receive in a catchment area is known as *Ans*. Runoff coefficient

Quest.Micro watershed covers an area of about

Ans.100 - 1000 ha

Quest.Major irrigation project covers an area of *Ans.*>10,000 ha

Quest.Irrigation project covered >10,000 ha of catchments command area (CCA) *Ans*.Major irrigation project

Quest.Irrigation project covered 2,000 to 10,000 ha of CCA *Ans*.Medium irrigation project

Quest.Irrigation project covered < 2,000 ha of CCA *Ans*.Minor irrigation project

Quest.Water harvesting *in situ* is known as *Ans*.Runoff farming

(VII) Dryland Agriculture

Quest.Cultivation of crops in areas where average annual rainfall is <750 mm per annum *Ans*.Dry Farming

Quest.Cultivation of crops in areas receiving rainfall from 750 to 1150 mm per annum. *Ans*.Dryland Farming

Quest. The areas receiving average annual rain fall > 1150 mm are categories as *Ans*. Rainfed Farming

Quest.Crop growing season of dryland farming is *Ans*.75 – 120 days

Quest.Change in normal crop planning to meet weather abnormalities is termed as *Ans*.Contingent planning

Quest. The main important feature of Indian monsoon *Ans*.Long breaks in the rainy season or Prolonged Dry spells

Quest. The most dangerous situation in dryland condition is *Ans*. Early withdrawal of water

Quest. The contingent crop plan suggested when long gap in rainfall *Ans*. Providing life saving irrigation only at critical growth stages

Quest. The alternate crops recommended to sow under late onset of monsoon

Ans.Castor, Greengram, Cowpea, Sunflower etc.

Quest. The crop sown under condition of early onset of monsoon

Ans.Pearlmillet and Sesamum

Quest. A period in which the available soil moisture is enough to meet the evapotranspiration requirement of dry land crops

Ans.Length of growing period

Quest. The length of growing period, suitable for growing only a single dry land crop *Ans*.14 weeks

Quest. The length of growing period, suitable for inter cropping system

Ans.14 to 20 weeks

Quest. The moisture deficit condition, results when the amount of water vapour available in the soil is not sufficient to meet the demand of potential evapo-transpiration

Ans.Drought

Quest. The simplest way of adaptation of plant to drought is

Ans.Evasion

Quest. The chemical accumulated during drought condition *Ans*. **Proline**

Quest. Which is accumulated in the leaves of water stressed plants *Ans*. ABA

Quest.Most appropriate crops in dryland farming are *Ans*.Pearlmillet, sorghum, gram, toria

Quest. Which crop rotation under dryland situation will be more remunerative? *Ans*.Sesamum-gram

Quest. The chemicals used to check transpiration losses of water *Ans*. Antitranspirents

Quest.2,4-D, Atrazine and PMA at low concentration act as which type of antitranspirents *Ans*.**Stomatal closing**

Quest.Film farming type antitranspirents are *Ans*.Hexadeconal, Mobileaf, Wax and Silicon

Quest.Reflectant type antitranspirents is *Ans*.Kaoline (5%)

Quest.Growth retardant type antitranspires gram.me/agricoss Ans.Cycocel (CCC)

(VIII) Weed Management

Quest.An unwanted plant, growing where it is not desired? *Ans*.Weed

Quest.Such weeds, that are grown in cultivated field?

Ans.Obligate weeds

Quest.Cropped along with wild land weed are known as?

Ans.Facultative weeds

Quest.Problematic weed, whose seed once mixed with crop seed is extremely difficult to separate?

Ans.Objectionable weed

Quest.Undesirable, troublesome weed difficult to control *Ans*.Noxious weed

Quest.Mimicry weeds of rice and wheat is

Ans.Phalaris and wild rice

Quest.Weed that depends for its growth on its host plant? *Ans*.Parasitic weed

Quest.Semi root parasitic weed of Sorghum and Sugarcane? *Ans.Striga spp.*

Quest.Semi stem parasitic weed of Mango? *Ans.Loranthus spp.*

Quest. The total root parasitic weed of Tobacco? *Ans.Orabanchi spp.*

Quest. The total stem parasitic weed of Lucerne? *Ans.Cuscuta spp*

Quest. The off type crop varieties are *Ans*. Rogue

Quest. Which of the following stages of a crop are more prone to weed competition? *Ans*.Germination to seedling

Quest. What is the Critical Period of Crop-Weed Competition for transplanted rice? *Ans*.30-45 DAS

Quest. What is the Critical Period of Crop-Weed Competition for Upland rice condition? *Ans*. Entire period of crop growth

Quest. What is the Critical Period of Crop-Weed Competition for sugarcane? *Ans*.30-120 DAS

Quest. The detrimental effect of one of higher plants on other higher plants is known as *Ans*. Allelopathy

Quest. The practice of flushing out germinable weed seeds before crop sowing is called *Ans*. **Stale seed bed**

Quest.Stale seed bed technique of weed control is a

Ans.Cultural method

*Quest.*2, 4-D, Simazine, Atrazine and Fluchloralin belongs to the selectivity group *Ans*.Selective herbicides

Quest.Diquat, Paraquat, Oxadiargyl and Glyphosate etc. belongs to the selectivity group *Ans*.Non-selective herbicides

Quest. The herbicides applied 1 day before sowing/planting or just are comes under *Ans*. **Pre-plant incorporated (PPI) herbicides**.

Quest. The example of PPI herbicides are *Ans*. Fluchloralin, Alachlor, Trifluralin etc.

Quest. The herbicides applied 1-4 days after sowing are comes under *Ans*. Pre-emergence herbicides.

Quest. The example of PRE herbicides are *Ans*. **Simazine**, **Atrazin**, **Alachlor**, **Butachlor**, **Nitrofen**, **Pendimethalin etc**.

Quest. The herbicides applied 30-40 DAS are comes under *Ans*. Post-emergence herbicides.

Quest. The example of POST herbicides are

Ans.2, 4-D, Diquat, Paraquat, Isoproturon, Fenoxaprop-ethyl, Sulfosulfuron, Chlorimuronethyl etc.

Quest.2, 4-D belongs to the chemical group

Ans.Chloro phenoxy compound

Quest.Fluchloralin and Pendimethalin belong to the chemical group *Ans*.Dinitroanilines

Quest.Atazine and Simazine belong to the chemical group *Ans*.Triazines

Quest.Alachlor, Butachlor and Propanil belong to the chemical group *Ans*.Amide

Quest.Glyphosate and Anilophos belong to the chemical group *Ans*.Organophosphorus

Quest. What is the trade name of Alachlor? *Ans*.Lasso

Quest. What is the trade name of Chlorimuron-ethyl? *Ans*. Classic, Kloben

Quest. What is the trade name of Chlorimuron 10% + Metasulfuron-methyl 10%? *Ans*. Almix

Quest. What is the trade name of Ethoxy sulfuron? *Ans*.Sunrise

Quest. What is the trade name of Glyphosate?

Ans.Roundup

Quest. What is the trade name of Nitrofen? *Ans*. Toke E-25

Quest. What is the trade name of Pendimethalin? *Ans*.Stomp

Quest. What is the trade name of Fenoxa prop-ethyl? *Ans*. Whip super

Quest.Paraquate is a *Ans*.Contact herbicide

Quest. Which herbicide shows Knock down effect? *Ans*. Paraquate, Diquate and Glyphosate

Quest. Which is a contact selective herbicide?

Ans.Propanil

Quest.Herbicides are not used in dust formulation because of

Ans.Drifting hazards

Quest. What is the concentration of solution in ppm if 2 kg of 2,4-D is mixed with 1000 lit of water?

Ans.2000

Quest. Which of the following weed having herbicide resistance?

Ans.Avena fatua

Quest. Which of the following is a indicator plant for the bioassay of Atrazine?

Ans.Soybean

Quest.First biologically controlled weed is

Ans.Lantana camara

Quest.Parthenium hysteroforus is biologically controlled by *Ans.Zygrogramma bicolarata*

Quest. The most dominant aquatic weed *Eichhornia crassipes* is controlled by *Ans*. Neochetina bruchi

Quest.First commercial Bio-herbicide is *Ans*.DEVINE

Quest.BIPOLARIS is used to control weed *Ans*.Johnson grass

Telegram.me/agricoss

Quest. Which of the following causes more wastage of herbicide by drift?

Ans.Ultra-low volume sprayer

Quest. The Bright Red coloured triangle in herbicide shows *Ans*. Extremely toxic group

(IX) Soil and Water Conservation

Quest.Detachment and transportation of top soil particles by wind and or by water is known as. *Ans*.Soil erosion

Quest. What are the types of soil movement in the process of wind erosion?

Ans.Saltation, Suspension and Surface creep

Quest. About 50-75% of soil erosion by wind is carried out by

Ans.Saltation

Quest. Very fine soil particles (<0.1 mm dia) eroded by mechanism

Ans.Suspension

Quest.Removal of soil particles due to rain drops (through bouncing) is called *Ans*.Splash erosion

Quest. Which mechanism of water erosion is known as "Death of Farmers"?

Ans.Sheet erosion

Quest.Chanalization begins from which mechanism of water erosion? *Ans*.Rill erosion.

Quest. The advanced stage of gully erosion is

Ans.Ravines

Quest.Average soil loss million tonnes/year in India is Ans.5,333

Quest. The land capability classes suitable for crop cultivation are *Ans*. Class I to III

Quest.According to USDA classification, the land belongs to class VI and VII are suitable for *Ans*.Timber cum fiber farming

Quest.Agronomical measures are adopted only where land slope is *Ans.*<2%

Quest.Mechanical measures are adopted only where land slope is *Ans.*>2%

Quest.Vertical mulches are used only in *Ans*.Black cotton soil

Quest. The most popular mechanical measure to control soil erosion and conserve is *Ans*. **Contour Bunding**

Quest.Contour Bunding is adopted where *Ans*.Land slope (6 %) and in areas where average annual rainfall is < 600 mm. *Quest*.Bench Terracing is practiced on

Ans.Steep slopping (16-33%) and undulated land

Quest. The crop grown on degraded land for improvement is called *Ans*. **Conservation crop**

Quest. The full form of LEISA is

Ans.Low External Input Sustainable Agriculture

Chapter 3 Agrometeorology

Quest. "The study of envelope of air surrounding the planet and of the phenomenon associated with atmosphere."

Ans.Meteorology

Quest.A weather condition over a given region during a longest period.

Ans.Climate

Quest. A condition of atmosphere at a given place at a given time.

Ans.Weather

Quest.Monsoon is a

Ans.Arabic word

Quest.Gaseous envelop surrounding the earth known as

Ans.Atmosphere

Quest. The ultimate source of energy on the earth is

Ans.The sun

Quest. The mean distance between Earth and Sun

Ans.1.5 x 10⁸ km

Quest.Temperature on the sun is around Ans.6000°C

Quest. Who discovered solar energy? *Ans*. Auguste Mouchout

Quest. The radiation in the sunlight that gives us the feeling of hotness is *Ans*. **Infra-red**

Quest. The radiations emitted by the sun and responsible for the cause of skin cancer *Ans*. Ultra-violet

Quest. In the atmosphere, which of the following gases account for about 99.0 % per cent by

volume?

Ans.Nitrogen, Oxygen, Carbon dioxide

Quest.Percentage concentration of CO_2 in air and soil is

Ans.0.030% and 0.25%

Quest.An average % of solar radiation reaching to the earth Ans.50

Quest. Who is the first scientist attempted to classify the climate? *Ans*.**De Condole (1900)**

Quest.Koppen and Thornthwaite classified the climate on the basis of

Ans.Annual Rainfall and annual Evaporation

Quest.Troll classified the climate on the basis of

Ans.Humid month and temperature

Quest. The instrument able to record almost all meteorological data by desired interval at any time and any place

Ans.Automatic weather station

Quest. The value of solar constant is

Ans.1.94 cal/cm²/min

Quest.A certain part of energy received from the sun, is reflected back to space by the earth known as?

Ans.Albedo

Quest. The structure of atmosphere is divided on the basis of

Ans.Vertical temperature difference

Quest.All weather phenomena (i.e. Rain, fog, frost, clouds) occur in the zone of

Ans.Troposphere

Quest.Closest and Densest layer of atmosphere

Ans.Troposphere (8-18 km height)

Quest.Ozone layer is present in

Ans.Stratosphere zone (20-48 km)

Quest. The coldest region of the atmosphere

Ans.Mesosphere

Quest.Radio transmission found in *Ans*.Ionosphere zone

Quest.Gas less zone is

Ans.Thermosphere (>80 km height)

Quest.Blue colour of the sky and red colour of sunset is due to *Ans*.Dispersion

Quest. What is the wavelength of visible solar radiation?

Ans.0.39-0.7 nm

Quest. Wavelength longer than _____ m/ μ is not visible to the eye, and are called infrared *Ans*.750

Quest. The weight of the carbon of air at any given place and time.

Ans.Atmospheric pressure

Quest. The mean sea level pressure is *Ans*.1013.25 milibars

Quest. What is wind?

Ans.Air blowing at a point.

Quest.North of the equator, surface winds are known as *Ans*.Northeast trade winds

Quest. Wind direction is determined with the help of instrument *Ans*. Wind vane

Quest. Wind turbines uses *Ans*. Kinetic energy

Quest.Heat flow in solid/soil takes place mainly through the process of *Ans*.Conduction

Quest.Heat flow in liquid/water by process of *Ans*.Convection

Quest.Heat flow in air by process of *Ans*.Radiation

Quest.Evaporation is measured by *Ans*.Evaporimeter

Quest. Wind pressure is measured by *Ans*. Beaufort scale

Quest.Atmospheric pressure is measured by *Ans*.Barometer

Quest.Relative humidity (RH) is measured by *Ans*.Hygrometer/Psychrometer

Quest.Total incoming solar radiation is measured by *Ans*.Pyranometer

Quest.Evapotranspiration is measured by *Ans*.Lysimeter

Quest.Combination of Dry bulb and Wet bulb thermometer used for *Ans*.Relative Humidity

Quest.Rainfall is measured by *Ans*.Raingauge

Quest.Instrument used for estimating ET under field condition *Ans*.Can Evaporimeter

Quest.Continuous temperature record by which instrument *Ans*.Thermograph

Quest. Which Instrument record temperature without contact the object Ans.Infrared thermometer

Quest.Instrument used for measuring concentration of ozone in air *Ans*.Ozonometer

Quest.Imaginary line that represents the equal temperature *Ans*.Isotherm

Quest.Lines of equal pressure *Ans*.Isobar

Quest.Lines of equal Taetegram.me/agricoss Ans.Isohyets

Quest.Lines of equal cloud cover Ans.Isonephs
Quest. The optimum temperature for better crop production is between $Ans.18 - 24^{\circ}C$

Quest.Lowest temperature in a day is observed at *Ans*.Just before sunshine

Quest. What is the dry adiabatic lapse rate in troposphere *Ans*.6.5°C/km

Quest. The formulae of Relative humidity is

 $Ans.RH(\%) = \frac{Water vapour present}{Water vapour required} \times 100$ for saturation

Quest. The monsoon covers 75% rainfall in India

Ans.Southwest monsoon

Quest.Date of onset of Monsoon in India

Ans.1st June

Quest.Date of Monsoon withdrawal in India

Ans.31st Sept.

Quest. Average annual rainfall of India

Ans.400 Mha-m.

Quest.One particular day, if the rain received 2.5 mm or more *Ans*.Rainy day

Quest.An average size of rain drop *Ans*.2 mm dia

Quest. Atmospheric water is known as

Ans.Green water

Quest.Soil water is known as

Ans.Blue water

Quest. Which clouds are known as rainy clouds?

Ans.Nimbo-stratus and Cumulonimbus

Quest.Clouds types which give the heavy and continuous precipitation *Ans*.Cumulonimbus

Quest.An aggregation of minute drops of water suspended in the air at higher altitude termed as *Ans*.Clouds

Quest. The unit used to record clouds *Ans*. Okta

Quest.Cold cloud seeding is done by use of chemical *Ans*.Silver iodide (AgI₂)

Quest.Warm cloud seeding is done by *Ans*.Sodium chloride (NaCl)

Quest.Indian Meteorological Organization (IMD) situated in Ans.Pune (1932)

Quest.Phenomenon of warming of eastern pacific

Ans.EI nino

Quest.Phenomenon of cooling of eastern pacific *Ans*.LI nino

Quest. Which surface has least Albedo?

Ans.Moist black soil

Quest.An engine of desertification

Ans.Drought

Quest. A period of 4 consecutive weeks from May to mid October or 6 consecutive weeks during rest of the year

Ans.Agriculture drought

Quest.Widely used index for classification of droughts

Ans.Palmer drought index

Quest. The branch of science in which, the collection and interpretation of information about a target without being in physical contact with it?

Ans.Remote Sensing

Quest.National Remote Sensing Agency (NRSA) is situated at

Ans.Hyderabad

Quest.Medium range weather forecasting is done for *Ans*.**3-10 days**

Quest.Forecast will help in planning cropping pattern

Ans.Long range weather

Quest.According to Planning Commission, Agro Climatic Zones in India are *Ans*.15

Quest.According to NBSSLUP, Agro Ecological Regions in India are *Ans*.21

Quest. The relationship between Celsius and Fahrenheit unit of temperature $Ans.\frac{C}{5} = \frac{F-32}{9}$

Quest.A natural warming process involving the interaction of sunlight and carbon dioxide and other gases from the atmosphere

Ans.Green house effect

Quest. Three common greenhouse gases include

Ans.Carbon dioxide, methane, nitrous oxide

Quest.Chief green house gas responsible for global warming Ans.CO₂ (50%)

Quest. Which green house gas linked with rice crop? *Ans*. Methane (CH₄)

Quest. The gas, responsible for ozone depletion *Ans*. CF₂Cl₂

Quest. Which one is a substitute for CFCs

Ans.Hydrofluorocarbons

Quest. The chemicals most commonly found in acid precipitation are *Ans*. Sulphuric acid and nitric acid

Quest.Normal rain water is slightly acidic with a pH of about *Ans*.5.6

Chapter 4

Soil Science and Biochemistry

(I) Soil Science

Quest. The fine earth covering land surface acts as a reservoir of nutrients and water *Ans*.Soil

Quest. The word 'Soil' is derived from *Ans*. Latin

Quest.Study of origin, classification, morphology of soil is known as *Ans*.Pedology

Quest. The study of soils in relation to crop growth.

Ans.Edaphology

Quest. The father of Soil Science

Ans.Dokuchalev

Quest. The concentration of soil water in soil *Ans*.50%

Quest.Organic matter content in Indian soil is Ans.5 %

Quest.Natural soil aggregates/mass are known as *Ans*.Peds

Quest. The science describes rocks *Ans*. Petrology

Quest.Granite and Basalt are *Ans*.Igneous rocks

Quest.Lime stone, Sand stone and Dolomite are *Ans*.Sedimentary rocks

Quest.Gneiss, Marble, Quartzite and Slate are *Ans*.Metamorphic rocks

Quest. The rocks gets broken in pieces due to temperature is called *Ans*. Exfoliation

Quest.Feldspar, Quartz and Mica are *Ans*.Primary minerals

Quest.Kaolinite, Halloysite and Dickite are *Ans*.1:1 type silicate clay minerals

Quest. The example of 2 : 1 type silicate clay minerals are *Ans*. Montmorillonite, Vermiculite and Illite

Quest.Chlorite is

Ans.2:1:1 or 2:2 type clay mineral

Quest. The most dominant mineral on earth crust Ans. Feldspar (48%)

Quest. The weathering mineral, having most stable soil structure *Ans*. Kaolinite

Quest. Which mineral is a source of phosphorus and boron in soils? *Ans*. Apetite

Quest. The hydroxide act as cementing agent in binding the soil particles together *Ans*.Fe and Al

Quest. A vertical section of soil through all its horizons *Ans*. **Soil Profile**

Quest. Which horizon is called Fertile zone? *Ans*. **'A' horizon**

Quest. The horizon absent in arable land *Ans*. **'O' horizon**

Quest. The eluviation horizon is *Ans*. **'E or A**₂**' horizon**

Quest. The illuviation horizon is *Ans*. **'B' horizon**

Quest.A+B horizons are collectively called as *Ans*.Solum

Quest.A+B+C horizons together called as *Ans*.Regolith

Quest. The formulae of bulk density of soil

 $Ans.BD(g/cc) = \frac{Wt.of oven dry soil}{Volume of soil (Solid + Pores)}$

Quest.Bulk density of normal soil is *Ans*.1-1.6 g/cc

Quest. The formulae of particle density of soil

 $Ans.PD(g/cc) = \frac{Wt.of oven dry soil}{Volume of soil solid}$

Quest. Widely accepted fixed value of particle density is

Ans.2.65 g/cc

Quest. The soil having PD 2.50 g/cc and BD 1.25 g/cc will have _____ % porosity. *Ans*.50

Quest. A field soil sample weighing 60 g, lost12 g on over dying. What is the moisture percent on dry weight basis?

Ans.25%

Quest. The weight of one hectare of surface soil (O-15 cm) in kilograms

Ans.2.24×10⁶ kg/ha

Quest. The arrangement of primary particles of soil

Ans.Soil structure

Quest. The relative proportion of sand, silt and clay is termed as

Ans.Soil texture

Quest. The best agricultural soil structure is

Ans.Crumby/Spheroidal

Quest.Soil structure proving less porosity in soil Ans.Platy

Quest. The best agricultural texture is *Ans*.Loam

Quest.NBSS and LUP centre is located at *Ans*.Nagpur

Quest.Commonly followed soil particle classified in India is *Ans*.International Society of Soil Science (ISSS)

Quest.According to IISS, the particle size of course sand *Ans*.2 - 0.2 mm

Quest. The particle size of fine sand *Ans*.0.2 -0.02 mm

Quest. The particle size of silt *Ans*.0.02 – 0.002

Quest. The particle size of clay *Ans.*< 0.002

Quest. The maximum pore space are found in Ans. Clay soil

Quest.Soil colour is determined by

Ans.Munsell Colour chart

Quest. It is the relative purity or strength of the spectral colour.

Ans.Chroma

Quest. The capacity of the soil to change its shape under moist conditions *Ans*. **Soil Plasticity**

Quest. The attraction of solid surface for water molecules is called as *Ans*. Adhesion

Quest. The density of soil water is maximum at *Ans*.4°C

Quest. The surface tension of water is at 25°C

Ans.72.7 dyne/cm²

Quest.Solution whose strength or concentration is accurately known is termed as *Ans*.Standard solution

Quest.Water held between 1/3rd and 15 atm *Ans*.Available water

Quest. The process by which ions are taken into plant roots *Ans*. Absorption

Quest. The range of usefulness of tensiometer is between *Ans*.0.0-0.8 bar

Quest.Mechanical analysis of soil is estimated by *Ans*.Stock's law

Quest. The negative logarithm of H^+ ion concentration *Ans*. Soil pH

Quest. The pH value varies from *Ans.***0** to **14.00**

Quest. The C : N ratio of the soil are fairly constant between

Ans.10:1 to 12:1

Quest. The C/N ratio in the organic matter of furrow slice (upper 15 cm) of arable soils commonly ranges from

Ans.8:1 to 15:1

Quest. The smell of soil after fresh shower is due to

Ans.Actinomycetes.

Quest. The most dominant soil order of India *Ans*. Entisol

Quest.Black soil belongs the soil order Ans.Vertisol

Quest. The soil having more than 30% organic matter is placed in *Ans*. Histosol

Quest. The most important soil group of India

Ans.Alluvial Soils

Quest.Newly formed alluvial soil is called

Ans.Khadar

Quest. Which micro-nutrient is most deficient in Indo-Gangatic alluvium soils? *Ans.Zinc*

Quest.Black soil contains the clay mineral

Ans.Montmorillonite clay (2:1)

Quest. The soil deficient in nitrogen content *Ans*. Black soil

Quest.Black soil shows black colour due to compound Ans.Mn

Quest. The vertical cracks are major problem in *Ans*. **Deep black soils**

Quest.Red soil is red coloured due to *Ans*.Ferric oxides

Quest.Phosphorus fixation is most probable in *Ans*.Laterite Soil

Quest.Infiltration rate is relatively higher in *Ans*.Sandy soil

Quest.Peaty soils are generally deficient of *Ans*.Cu

Quest. Marshy soils are generally deficient of

Ans.Zn

Quest. The most deficient micronutrient in the Indian soil is

Ans.Zn

Quest. The inherent capacity of the soil to supply nutrients to plants in adequate amount and in suitable proportions

Ans.Soil Fertility

Quest. The capacity of the soil to produce plants under a specified programme of management and it is expressed in terms of yields

Ans.Soil Productivity

Quest. The process of decomposition of organic matter is termed as *Ans*. Humification

Quest.Well decomposed FYM contains N, P and K content Ans.0.5:0.2:0.5%

Quest.A mass of rotted organic matter made from waste

Ans.Compost

Quest.NPK content of farm compost *Ans*.0.5:0.15:0.5%

Quest.NPK content of town compost Ans.1.4:1:1.4%

Quest. The organic matter rich compost made by use of earthworms

Ans.Vermicompost

Quest. A practice of turning un-decomposed fresh green plant tissue into the soil to improve fertility status and physical structure of the soil.

Ans.Green Manuring

Quest.Green manure crops are turned in the field at the stage of

Ans.Flowering

Quest.Green manure crops contributes nitrogen ranging from *Ans*.50-175 kg/ha

Quest. The most widely used green manure crop

Ans.Sunhemp (Crotalaria juncea)

Quest. The green manure crop having both stem and root nodulation

Ans.Sesbania rostrata

Quest.Green leaf manuring crops *Ans*.Karanj and *Ipomea*

Quest.NPK content of poultry manure *Ans*.3.023:2.63:1.4%

Quest. The crop oilcake, which has highest nitrification rate

Ans.Groundnut

Quest.Groundnut cake contains NPK Ans.7:1.5:1.3%

Quest.Fertilizer which contains only one primary or major nutrient, *e.g.* Urea. *Ans*.Straight fertilizers

Quest. Those fertilizers having all the three major nutrients *viz.*, N, P and K. *Ans*. Complete fertilizers

Quest.Fertilizers contain more than 25% of primary nutrients, *e.g.* Urea (46%), DAP (18% N and 46% P₂O₅).

Ans.High analysis fertilizers

Quest. The relative percentage of N_2 , P_2O_5 and K_2O " in a fertilizer

Ans.Fertilizer ratio

Quest. The fertilizer which destroys soil aggregates *Ans*. **Sodium nitrate**

Quest.Oldest N fertilizer, best for top dressing in rice *Ans*.Ammonium sulphate (20.6% N and 24% S)

Quest.Most concentrated nitrogenous fertilizer

Ans.Anhydrous ammonia (81% N)

Quest.Explosive fertilizer is

Ans.Ammoniun nitrate (33% N)

Quest.Neutral fertilizer, also called Kishan khad

Ans.Calcium Ammonium Nitrate (26% N)

Quest.Cheapest N fertilizer, suitable for foliar spray Ans.Urea (46% N)

Quest.Amid form of N fertilizer *Ans*.Urea

Quest. Which one is considered as organic fertilizer? *Ans*.**Urea**

Quest. Water soluble phosphatic fertilizers *Ans*.**SSP, DSP, TSP and DAP**

Quest.Citric acid soluble phosphatic fertilizers *Ans*.DCP, Basic slag and Bone meal

Quest.Oldest commercially available fertilizer *Ans*.SSP (16-18% P_2O_5)

Quest. The fertilizer which supplies 3 essential plant nutrients *Ans*.**SSP**

Quest.Least hygroscopic fertilizer

Ans.DAP (18% N and 46% P2O5)

Quest. The phosphatic fertilizer suitable for acid soil *Ans*.Bone meal (23-30% P_2O_5)

Quest.Potassic fertilizer containing highest amount of K_2O

Ans.Muriate of potash/KCl (60% K2O)

Quest.Potassic fertilizer suitable for fertigation *Ans*.Potassium Nitrate (44% K₂O)

Quest. The medium range of available N in soil *Ans*.280-560 kg/ha

Quest.Maximum amount of fertilizer is applied in

Ans.Potato

Quest.Fertilizer application in lowland paddy is done at *Ans*.Reduced zone

Quest.Kjeldahl method is used to determine *Ans*.Total N of soil

Quest. The maximum phosphorus availability in most of the soils is in the pH range *Ans*.6.0 to 6.5

Quest. The method used to determine available phosphorus from soil is

Ans.Olsen's method

Quest.Maximum concentration of urea for foliar spray

Ans.6%

Quest.Solution of fertilizer specially applied at initial growth of plants in pulses and vegetable crops

Ans.Starter solution

Quest. The application of fertilizer along with irrigation water

Ans.Fertigation

Quest. Which nutrients can be applied by fertigation

Ans.Nitrogen and sulphur

Quest. The law of diminishing return was proposed by

Ans.Mitscherlich

Quest.Lowland applied nitrification inhibitors *Ans*.Oxamide (31% N) and Thiourea (36.8% N)

Quest.Slowly released N fertilizers

Ans.Scoated urea, Neem coated urea, Urea super granule

Quest.Symbiotic N_2 fixing bacteria in leguminous crop.

Ans.Rhizobium

Quest.Asymbiotic N2 fixing bacteria

Ans.Azotobactor and Azospirillum

Quest.Rhizobium fixes atmospheric nitrogen/ha to the soil *Ans*.50-100 kg

Quest.Azatobactor can fixes atmospheric nitrogen/ha to the soil. *Ans.*20-30 kg

Quest. The essential element required by the N fixing bacterium *Rhizobium* **Ans.Mo**

Quest.Conversion of NH_4 to NO_2 in soil is brought out by

Ans.Nitrosomonas

Quest.Conversion of soil nitrate into gaseous nitrogen is

Ans.Denitrification

Quest.VAM belongs to the group of *Ans*.Fungi

Quest.Rhizobium japonicum culture is applied for crops

Ans.Soybean and Groundnut

Quest.Rhizobium leguminosarum is applied for *Ans*.Pea, Lathyrus and Lentil

Quest.Rhizobium trifoli is applied for

Ans.Berseem

Quest.In waterlogged rice field, atmospheric nitrogen can be fixed to the soil by *Ans*.BGA

Quest. The phosphate solubilizer species of micro organisms is *Ans.Pseudomonas*

Quest.Mychoryza increase availability of *Ans*.Phosphorus

Quest.Bio-super is made up of *Ans*.Rock phosphate + Sulpher + Sulphur oxidizing bacteria

Quest.Zinc solubilizing bacterial biofertilizer is *Ans*.Azozink

Quest. Total no. of essential nutrients for plants *Ans*.17

Quest. Total no. of functional nutrients *Ans*.21 (Essential elements + Co, V, Si, Na)

Quest.Beneficial elements are *Ans*.Ru, Sr, Ni, Cr and As

Quest.N, P, K, Ca, Mg and S are

Ans.Macro nutrients

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Quest.N, P and K are *Ans*.Primary nutrients

Quest.Ca, Mg and S are *Ans*.Secondary nutrients

Quest.Essentiality of N was established by *Ans*.De Saussure

Quest.Concept "Essentiality of elements" was proposed in 1939 by Ans.Arnon and Stout

Quest.Arnon and Stout discovered the essentiality of Ans.Mo

Quest.Nutrient uptake both charges form *Ans*.N (NH_4^+ and NO_3^-)

Quest.Principle uptake form of phosphorus by plants

Ans.H₂PO₄⁻

Quest.Immobile element in soil is *Ans*.Phosphorus

Quest.Immobile element in plant is *Ans*.Calcium

Quest.Plant takes the nutrient in the form of *Ans*.Ions

Quest. The nutrient required for quality maintenance in potato *Ans*. Potassium

Quest.Nutrient, which maximum uptake by the plants *Ans*.K+

Quest.Nutrient essential for oilseed crops *Ans*.S

Quest.Structural component of Vit B_{12}

Ans.Cu

Quest. Deficiency symptoms of N, P, K, Mg and Mo appear in

Ans.Older leaves

Quest.New leaves show deficiency symptoms of

Ans.Fe, Mn, Cu, S

Quest.Old and new leaves show deficiency symptoms of *Ans*.Zn

Quest. Deficiency symptoms of Ca and B appear in

Ans.Terminal buds

Quest.Cereal crops show 'V' shaped pale yellowing at lower leaf tips due to deficiency of *Ans*.N

Quest.Deficiency appears as short internodes in plant. *Ans*.N

Quest.Purple coloration appeared in leaves due to *Ans*.P deficiency

Quest.Scorching and burning on margins of bottom leaves and irregular fruit development of plant are most common symptoms of

Ans.K deficiency

Quest.Failure of terminal bud and root tips is the principle symptom of *Ans*.Ca deficiency

Quest.Interveinal chlorosis occurs due to

Ans.Mg and Fe deficiency

Quest.Downward cupping of leaves in Tobacco and Tea shows *Ans*.**S deficiency**

Quest. Whip like structure appeared in terminal bud

Ans.B deficiency

Quest.Burning quality of Tobacco decreased due to *Ans*.Chloride

Quest.Dia back and Little leaf disease in Citrus shows *Ans*.Cu deficiency

Quest.Mn deficiency shows

Ans.Interveinal yellowing of younger leaves

Quest. Translucent spots of irregular shape between veins shows

Ans.Mo deficiency

Quest.Upper leaves will show chlorosis on midrib, veins green and dead spots occur in all parts of leaf (veins, tips and margins) show

Ans.Zn deficiency

Quest.Zn toxicity is reduced by addition of

Ans.Superphosphate

Quest.A situation in which a crop needs more of a given nutrient yet has shown no deficiency symptoms

Ans.Hidden Hunger

Quest.Luxury consumed nutrient by plants *i.e.* maize *Ans*.K

Quest.Excess of N, P and K causes deficiency of *Ans*.Cu

Quest.Excess of Ca causes deficiency of Ans.P

Quest.Deficiency of N indicated by plant *Ans*.Cauliflower

Quest.Deficiency of Bo indicated by plant *Ans*.Sugarbeet

Quest. The soil, which have <4.0 pH is *Ans*. Cat soil

Quest. The residual effect of urea on soil reaction is *Ans*. Acidic

Quest.Soil pH > 8.5 indicates soil is *Ans*.Alkaline

Quest.Saline soil is also called as *Ans*.Solan chalk and White alkali

Quest.Alkaline soil is also called as *Ans*.Solanetz and Black alkali

Quest. The saline – alkali soil is also known as *Ans*. Usar

Quest.Lime (CaCO₃) is added to neutralize

Ans.Acid soils

Quest.Gypsum (CaSO₄.2H₂O) is used for the reclamation of

Ans.Sodic/Alkaline soils

Quest.Pyrite (FeS₂) is used to reclaim

Ans.Saline soils

Quest.Rock phosphate is applied in *Ans*.Acid soil

Quest.Gypsum contains *Ans*.29.2% Ca and 18.6% S

Quest.Method used for the determination of lime requirement of an acid soil is

Ans.Shoemaker's method

Quest. The crops prefer acidic soil *Ans*. Rice, tea and potato

Quest.Highly salt tolerant crops *Ans*.Barley and Sugarbeet

Quest. Which fertilizer is most beneficial for alkali soils? *Ans*. Ammonium sulphate

Quest. Which of the plant species can be suggested on saline soil? *Ans.Haloxylon salicornium*

(II) Biochemistry

Quest. The word '*Biochemistry*' is a *Ans*. Greek word

Quest.Father of Agricultural biochemistry Ans.Justus von Liebig

Quest.First used the term 'biochemistry' Ans.Neuberg (1903)

Quest. The most abundant biomolecules on earth *Ans*. Carbohydrates

Quest. The formulae of monosaccharide $Ans.C_6H_{12}O_6$

Quest.Monosaccharide contains *Ans*.Glucose, Fructose, Galactose and Mannose

Quest.Oligosaccharides contains *Ans*.Sucrose, Maltose, Cellobiose, Lactose and Stachyose

Quest.Monosaccharides possess reducing property due to the presence of *Ans*.Free aldehyde or keto group

Quest.Glucose is also known as *Ans*.Dextrose

Quest.Glucose is

Ans.Corn sugar

Quest.Biologically active form of glucose *Ans*.D-form

Quest.Fructose is

Ans.Fruit sugar

Quest.Sweetest sugar among all *Ans*.Fructose

Quest.Monosaccharides that are used as energy source *Ans*.Glucose and fructose

Quest.Disaccharides contain *Ans*.Sucrose, Maltose, Lactose and Cellobiose

Quest.Oligosaccharides that is used in preservation of foods *Ans*.Sucrose

Quest.Trisaccharides contain *Ans*.Raffinose

Quest.Tetrasacharides contain Ans.Stachyose

Quest.Non reducing type sugar is *Ans*.Sucrose

Quest.Reducing type sugars are

Ans.Maltose and Cellobiose

Quest.Glucose + Galactose consisting of *Ans*.Lactose

Quest.Sugar presents in milk *Ans*.Lactose

Quest.Glycogen present in *Ans*.Animal cell

Quest.Polymer of glucose *Ans*.Cellulose

Quest.Man can not digest cellulose due to the absence of Ans.Cellulose

Quest.Total no. of essential amino acids are Ans.10

Quest. The term 'Protein' was coined by *Ans*. Moulder (1840)

Quest. The polymers of amino acid *Ans*. **Proteins and enzymes**

Quest.Protein is discovered by Ans.Berzeus

Quest.Protein that contains only amino acid *Ans*.Simple protein

Quest.Regulatory proteins are *Ans*.Insulin

Quest.Transport proteins are *Ans*.Haemoglobin and Myoglobin

Quest.Structural proteins are *Ans*.Collagen and Elastin

Quest. The most abundant protein present in the world *Ans*. **Rubisco**

Quest.Muscle protein is known as *Ans*.Collagen

Quest.Silk protein is known as *Ans*.Fibrolin

Quest.Soybean protein is known as *Ans*.Glycinin

Quest. Wheat protein is known as *Ans*. **Gluten**

Quest.Rice protein is known as *Ans*.Oryzein

Quest.Maize protein is known as *Ans*.Zein

Quest.Nucleic acids were first discovered by *Ans*.Friedrich Meischer (1868)

Quest.DNA denotes *Ans*.Deoxyribose nucleic acid

Quest.Who discovered the base composition of DNA? Ans.Chargaff (1953)

Quest.Deoxyribose sugar + Nitrogenous base is *Ans*.Nucleoside

Quest.Deoxyribose sugar + Nitrogenous base + phosphate group (PO₂)

Ans.Nucleotide

Quest.Single stranded DNA

Ans.Bacteriophage

Quest. The form of DNA present in living organisms

Ans.B-form

Quest.RNA that transfer amino acids from cytoplasm to ribosome

Ans.m-RNA

Quest.Most abundant form of RNA that constitutes 80% parts of cellular RNA *Ans*.t-RNA

Quest. Which nucleic acid controls all cellular activities? *Ans*.DNA

Quest. Which nucleic acid is necessary for protein biosynthesis? *Ans*.RNA

Quest.Double helix model of DNA was proposed by Ans.Watson and Crick (1953)

Quest. The term 'Enzyme' was given by *Ans*. **W. Kuhne (1867)**

Quest.Enzyme is discovered by *Ans*.Buckner (1897)

Quest.1st enzyme which was discovered by yeast

Ans.Zymase

Quest. The enzyme involved in biological nitrogen fixation

Ans.Nitrogenase

Quest.Apoenzyme + Prosthetic group

Ans.Holoenzyme

Quest.Enzyme without Prosthetic group

Ans.Apo enzyme

Quest.Enzymes which exist in multiple forms within single specing of an organism

Ans.Isoenzyme

Quest. The non protein component of the enzyme

Ans.Coenzymes

Quest.Vitamin was discovered by Ans.Funk (1911)

Quest.Total well defined vitamins are Ans.13

Quest.Vit. B complex (B₁, B₂, B₁₂), B₃, B₆ and Vit. C are

Ans.Water soluble vitamins

Quest.Vit. A, D, E and K are

Ans.Fat soluble vitamins

Quest.Vitamin A is also known as *Ans*.Retinal

Quest.Vitamin A deficiency causes *Ans*.Night blindness

Quest.Vitamin B_1 is also known as

Ans.Thiamin

Quest. Deficiency of vitamin B_1 causes

Ans.Beriberi

Quest.Vitamin B_2 is also known as

Ans.Riboflavin

Quest.Deficiency of vitamin B2 causes

Ans.Skin cracking

Quest.Vitamin B₃ is also known as

Ans.Pantathenic acid

Quest.Vitamin B₃ deficiency causes

Ans.Whiteness of hairs

Quest.Vitamin B₅ is also known as

Ans.Niacin

Quest. Deficiency of vitamin B₅ causes

Ans.Pellagra

Quest.Vitamin B7 is also known as

Ans.Biotin

Quest. Deficiency of vitamin B7 causes

Ans.Paralysis

Quest.Vitamin B_{12} is also known as

Ans.Cynocobalamin

Quest. Disease caused due to deficiency of vitamin B_{12}

Ans.Pernicious anaemia

Quest.Vitamin C is also also known as *Ans*.Ascorbic acid l

Quest.Vitamin C deficiency causes *Ans*.Scurvy

Quest.Vitamin D is also known as *Ans*.Calciferol

Quest.Vitamin D deficiency causes *Ans*.Reckets

Quest. The vitamin also called Sunshine vitamin

Ans.Vit. D

Quest.Vitamin E is also known as *Ans*.Tocopherol

Quest.Vitamin K is also known as *Ans*.Phyloquinon

Quest.Disease caused due to deficiency of vitamin E *Ans*.Sterility

Quest.Disease caused due to deficiency of vitamin K *Ans*.Non-coagulation of blood

Quest.Cereals are deficient in amino acid *Ans*.Lysine

Quest.Pulses are deficient in amino acid *Ans*.Methionine

Quest. Which vitamin contains metal ion? *Ans*.Vitamin B₁₂

Quest. The reaction of oil/fat with NaOH/KOH as

Ans.Saponification

Quest. The number of grams of iodine absorbed by 100 g fat or oil *Ans*. Iodine value/number

Quest.Value, used to assess the degree of spoilage (rancidity) of a fat or oil *Ans*.Acid Number/Value

Quest.A partial substitute for petroleum diesel *Ans*.Biodiesel

Quest.Golden rice is rich in *Ans*.β-carotene

Chapter 5

Genetics, Plant Breeding, Seed Science and Plant Biotechnology

(I) Genetics

Quest. The study of the way in which genes operate and the way in which they are transmitted (heredity) from parents to offsprings

Ans.Genetics

Quest. Who coined the term genetics?

Ans.W. Bateson (1905)

Quest. The 'father of modern genetics'

Ans.Gregor John Mendal

Quest. Which is known as functional unit of life?

Ans.Cell

Quest. Who discovered the cell? *Ans*.**R. Hooke (1665)**

Telegram.me/agricoss

Quest.Cell theory was given by

Ans.M.J. Schleiden and T.Schwann (1939)

Quest. Which is known as physical basis of life?

Ans.Protoplasm

Quest. How many kind of cells are found in living world?

Ans.2 (Eukaryote and Prokaryote)

Quest. The plant cell is a type of cell *Ans*. Eukaryote

Quest. Which cell organelle is found in both prokaryotic and eukaryotic cells? *Ans*. **Ribosome**

Quest. The cells without cell wall *Ans*. **Protoplasts**

Quest.Controlling centre of cell *Ans*.Nucleus

Quest.Nucleus was discovered by *Ans*.Robert Brown (1983)

Quest. Which cell organelle is called as "Power house of the cell"? *Ans*. Mitochondria

Quest. Who discovered mitochondria? *Ans*. Hollicker

Quest. Who coined the term mitochondria? Ans.Benda (1897)

Quest. The term 'Endoplasmic reticulum' coined by *Ans*. Porter (1948)

Quest. Which organelle of cell is known as engine of cell? *Ans*. **Ribosome**

Quest.Rough ER is associated with *Ans*.Ribosome

Quest. The main site of protein synthesis *Ans*. **Ribosome**

Quest.70s type ribosome is found in *Ans*.Mitochondria

Quest.Name the prokaryotic organism which does not contain mitochondria? *Ans*.Bacteria

Quest. The term Lysosome was 1st used by *Ans*. Dave (1955)

Quest. Which organelle of cell is known as suicidal bag of cell?

Ans.Lysosome

Quest. The main function of Golgi body is *Ans*. Packing and transport of food materials

Quest. Which organelle of cell is known as dustbin of cell? *Ans*. Vacuoles

Quest. Which organelle of cell is non living? *Ans*.Cell wall

Quest. The material contained in vacuoles *Ans*. Cell sap

Quest. A self replicating, extra-chromosomal genetic material found in plant cell *Ans*. Plastids

Quest.Plastids was introduced by *Ans*.Lederberg

Quest. Which organelles of cell are found only in plants?

Ans.Plastids, Spherosome

Quest. Which plastid of cell is responsible for photosynthesis in plants? *Ans*. Chloroplast

Quest. Which plastid of cell is responsible for colour in plants?

Ans.Chromoplast

Quest. Which plastid of cell is responsible for storage of starch and fat in plants? *Ans*.Leucoplast

Quest.Name the leucoplast which functions as the storage of oil? *Ans*.Lipoplast

Quest. Thread like bodies that carry gene *Ans*. Chromosome

Quest. Who firstly discovered chromosome? *Ans*. **Strasburger (1875)**

Quest. Who coined the term chromosome? Ans. Waldeyer (1888)

Quest. Who gave the chromosomal theory of Inheritance?

Ans.Sutton and Boveri

Quest. What is the fundamental unit of chromosome? *Ans*. Chromatin

Quest. Which part of the chromosome is known as primary constriction? *Ans*.Centromere

Quest. The major genetic constituent of chromosome Ans. DNA

Quest.How many daughter cells are formed in one cycle of mitosis? *Ans*.Two

Quest. 'Mitosis' term was coined by *Ans*. Walter Flemming (1882)

Quest.In which cells does mitosis occur? *Ans*.Somatic cells

Quest.Longest phase of mitosis

Ans.Prophase

Quest.Shortest phase of mitosis *Ans*.Anaphase

Quest. The middle stage in which chromosomes are arranged in equatorial plate *Ans*. Metaphase

Quest. The stage of DNA synthesis in mitosis *Ans*. Interphase

Quest.How many daughter cells are formed in one cycle of meiosis? *Ans*.Four

Quest. 'Meiosis' term was 1st given by *Ans.J.B. Farmer* (1905)

Quest.In which cells does the meiosis occur? *Ans*.Reproductive cells

Quest.Crossing over and recombination occur during *Ans*.Meiosis division

Quest.In which stage, crossing over takes place?

Ans.Pachytene stage

Quest.Chiasmata occurs at *Ans.Diplotene stage*

Quest.Spindle formation takes place during Ans.Metaphase 1

Quest. The process of separation of chromatids called *Ans*. **Disjunction**

Quest.Mendal was born on Ans.July 22, 1822

Quest.Mendal works on the 7 contrasting characters of crop *Ans*.Garden pea

Quest.Rediscovery of Mendel's work was done by *Ans*.Hugo de Vries, Erich Correns and Erich Tschermak (1900)

Quest. The accepted theory of Mendal was *Ans*. Law of Segregation

Quest.Mendelian population is also known as *Ans*.Random mating population

Quest.A tall pea plant (DD) and a tall pea plant (Dd) have what in common? *Ans*.Phenotype

Quest. The double helix model of DNA proposed by *Ans*. Watson and Crick (1953)

Quest. The process of using information (genetic material) from DNA to construct m-RNA *Ans*. Transcription

Quest.Transfer of genetic material from m-RNA to Protein

Ans.Translation

Quest.An expression of one gene depends on the presence or absence of another gene in an individual.

Ans.Epistasis/gene interaction

Quest.Phenotypic ratio of Monocross hybrid *Ans*.**3**:1

Quest.Phenotypic ratio of Dicross hybrid *Ans*.9:3:3:1

Quest.Triplet sequence found in mRNA which codes for single amino acid

Ans.Codon

Quest.Triplet sequence in t-RNA *Ans*.Anticodon

Quest.5 inbred lines will lead to no. of single crosses. *Ans*.10

Quest. The term "Genomics" was coined by Ans. Thomas Roderick (1986)

Quest. Who developed the concept of pangenesis? *Ans*. **Darwin**

Quest. Theory of evolution through natural selection was given by *Ans*. **C.Darwin and A.R.Wallace (1858)**

Quest. Who developed the theory of acquired character?

Ans.Lamarck

Quest. Chromosomal theory of heredity was proposed by

Ans.W. Sutton (1902)

Quest.Genes for sex-linked traits are located on

Ans."Y" chromosome

Quest. How many pairs of homologous chromosomes do humans have? Ans.23

(II) Plant Breeding

Quest. The science, which helps in changing the genetic make-up of plants in such a way that they give rise to the maximum economic product for human use.

Ans.Plant Breeding

Quest.Basic chromosome/Genomic number is Ans.X

Quest.Genetic chromosome number is

Ans.n

Quest.Haploid no. of *Triticum aestivum Ans*.n = 21

Quest.Heteroploid in which one or few chromosomes or missing from 2n Ans.Aneuploid

Quest.Monosomic hypoploid *Ans*.2n -1

Quest.Double monosomic Ans.2n-1-1

Quest.Nullisomic

Ans.2n-2

Quest.Hyperploid have one extra chromosome *Ans*.Trisonic (2n+1)

Quest.Double trisomic *Ans*.2n+1+1

Quest.Tetrasomic *Ans*.2n+2

Quest.Double Tetrasomic *Ans*.2n+2

Quest.Polyploidy level in embryo and endosperm of seed *Ans*.3n

Quest.Polyploidy level of testa and pollen mother cell of seed *Ans*.2n

Quest.Polyploidy level in endosperm of *Triticum aestivum Ans*.63

Quest. Triploids are useful for

Ans.Seedless fruits

Quest. Wheat, cotton, tobacco and oat are *Ans*. Allopolyploids

Quest. The term "primary centres of origin" was proposed by Ans. Vevilov

Quest.Vegetative embryos develops without fertilization *Ans*.Apomixis

Quest.Development of fruit without fertilization *Ans*.Parthenocarpy

Quest.Embryo originates from unfertilized egg *Ans*.Parthenogenesis

Quest.Progeny of a single cross fertilized heterozygous individual *Ans*.Inbred

Quest.Male sterile line *Ans*.A-line

Quest.Progeny of a single plant, obtained by asexual reproduction *Ans*.Clone

Quest. A single gene affecting more than one character/governing multiple traits *Ans*. **Pleiotropy**

Quest.Repeated crossing of hybrid progeny back to one of its parents Ans.Back Cross

Quest.F₁ x homozygous recessive parent

Ans.Test Cross

Quest.Intra-specific hybridization is a crossed between

Ans. Two plant of different varieties

Quest. When pollen grains from an another falls on receptive stigma of the same flowers *Ans*. **Self pollination**

Quest.Self pollinated species are also known as

Ans.Autogamous species

Quest. When pollen grains from flower of one plant transferred to receptive stigmas of flowers of another plant

Ans.Cross pollination/Allogamy

Quest.Rice, Wheat, Buckwheat and Oat are

Ans.Self pollinated crops

Quest.Maize, Pearl millet, Black mustard and Sunflower are

Ans.Cross pollinated crops

Quest.Often Cross pollination crops are

Ans.Safflower, Arhar, Cotton and Sorghum

Quest.Continuous inbreeding (Selfing) leads *Ans*.Homozygosity

Quest.Single seed descent method is a method of *Ans*.Method of Self pollination

Quest.Mass selection is always based on *Ans*.Phenotype

Quest. The oldest selection method of crop improvement *Ans*. Mass selection

Quest.Concept of pure line was given by

Ans.Johnson

Quest. A progeny of single homozygous, self pollinated crops *Ans*. Pure line

Quest.A method of breeding for wheat

Ans.Pure line selection method

Quest.Breeding refers to selection procedure in which the segregating population of self pollinated species is grown without selections

Ans.Bulk

Quest.Most commonly used method for selection from segregation generations of crosses in self pollinated crops

Ans.Pedigree method

Quest.A method which is not for handling segregating populations

Ans.Bulk method

Quest.A method for improving specific traits i.e. plant height, disease resistancy

Ans.Pedigree method

Quest.Multiline breeding is exploited widely in the crop

Ans.Wheat

Quest.A method does not provide opportunity to practice selection for superior plant till F₅ generations

Ans.Single seed descent method

Quest.Commonly used method for transfer of disease resistancy from one variety to another variety.

Ans.Back cross method

Quest.Clonal selection mostly used in the group of the selection mostly used in the group of the selection of the selection mostly used in the group of the selection of the sel

Quest. The parent which is used only once in back cross breeding method *Ans*. **Donor**

Quest.Bulk method was 1st used by *Ans*.Nilson Ehle (1908)

Quest.Progeny selection is also known as

Ans.Ear to row method of selection

Quest.Methods used for handling the segregating generation

Ans.Pedigree, Bulk and Single seed descent method

Quest.A method of breeding is appropriate for improvement of good variety.

Ans.Back cross method

Quest.A method in which desirable scattered favourable genes are selected in different plants in each generation

Ans.Recurrent selection

Quest.A method of breeding is not appropriate for cross pollinated crops

Ans.Pure line selection

Quest.Cross between two genetically different homozygote plants is

Ans.Hybrid or F₁

 $Quest.A \ge B = F_1$

Ans.Single cross hybrid

Quest.(A x B) x (C x D)

Ans.Double cross hybrid

Quest.Selected variety/line/clone x open pollinated variety

Ans.Top cross

Quest.A single cross (A x B) x OP variety *Ans*.Double top cross

Quest.A variety produced by crossing in all combinations a number of lines that combine well each other

Ans.Synthetic variety

Quest.Synthetic variety is maintained by

Ans.Self pollination

Quest.A variety produced by mixing the seeds of several phenotypically outstanding lines (varieties)

Ans.Composite variety

Quest.Composite variety is developed by

Ans.Cross pollination

Quest.Hybrid variety was first exploited in

Ans.Maize

Quest.A mechanism of self pollination in which flowers open but only after pollination has take place

Ans.Chasmogamy

Quest. Chasmogamy was found in

Ans.Rice Moong and Oat

Quest.Pollination and fertilization occurs before opening of flower is termed as

Ans.Cleistogamy

Quest.Cleistogamy was found in

Ans.Wheat and Barley

Quest. When male and female flowers of a hermaphrodite flower matures at different time *Ans*. **Dichogamy**

Quest. When female matures before male

Ans.Protogyny

Quest.Pollen from a flower of one plant falls on the stigmas of other flowers of the same plant. *Ans*.Geitonogamy

Quest. When male and female flowers occur on the same plant *Ans*. Monocius

Quest. When male and female flowers occur on different plants *Ans*. **Diocious**

Quest.Maize is a *Ans*.Monocius plant

Quest.Papaya is a *Ans*.Diocious plant

Quest.1st Intergeneric hybrid was *Ans.Raphino brassica* (Radish x Cabbage)

Quest.Hybrid variety of rice is developed by using *Ans*.GMS and CGMS line

Quest.Double cross hybrids of maize are developed by *Ans*.CGMS line

Quest.Exploitation of hybrids in tobacco was carried out by *Ans*.Koelreuter

Quest. Superiority of F_1 hybrids over both of its parents is termed as

Ans.Heterosis

Quest.Term 'Heterosis' was given by Ans.Shull

Quest. The average value for a character of the two parents of the concerned hybrid.

Ans.Mid parent/Average Heterosis

Quest. When heterosis estimated over the superior or better parent

Ans.Heterobeltiosis

Quest. When superiority of the hybrid to the standard commercial check variety

Ans.Economic heterosis

Quest.Exchange of chromatin between non-sister chromatids of homologous chromosomes is known as

Ans.Crossing over

Quest.Loss or decrease in vigour and fitness as a result of inbreeding.

Ans.Inbreeding Depression

Quest.Highly ID is found in

Ans.Alfalfa and Carrot

Quest.Sudden heritable change in any characteristics of an organism
Ans. Mutation

Quest.X-rays as mutagen was 1st used by *Ans*.Mullar

Quest. The unit in which mutation occurs

Ans.Muton

Quest.Chemical or physical agent which greatly enhances the frequency of mutation.

Ans.Mutagen

Quest.A man made cereal *Ans.Triticale*

Quest. The cultivated banana is a

Ans.Autotriploid

Quest.Removal of the entire tassel (male inflorescence of maize) from the plant before pollen to initiate cross hybridization

Ans.Detasseling

Quest.A condition in which either pollen is absent or non functional in flowering plants.

Ans.Male Sterility

Quest. When pollen sterility is caused by cytoplasmic genes

Ans.Cytoplasmic Male Sterility (CMS)

Quest.An important male sterility source of sorghum *Ans*.Tift 60

Quest.Ethrel is used as Gametocide for *Ans*.Wheat, Rice and Sugarbeet

Quest. Wheat is a

Ans.Allohexaploid

Quest.Sugarcane, Cotton and Brassica are *Ans*.Autopolyploids

Quest.Potato is a

Ans.Autotetraploid

Quest.Brassica nigra was evolved from *Ans.B. compestris x B. oleracia*

Quest.Brassica juncia was evolved from

Ans.B. compestris x B. nigra

Quest.Characters which are governed/controlled by several genes each having small individual effect.

Ans.Polygenic Traits

Quest.Natural genetic engineer Ans.Agrobacterium

(III) Seed Science

Quest. A fertilized ovule consisting of intact embryo, stored food and seed-coat which is viable and has got the capacity to germinate

Ans.Seed

Quest. The seed of a crop variety produced by the breeder which is small in quantity is said to be

Ans.Nucleus seed

Quest.Source of breeder seed

Ans.Nucleus seed

Quest.Progeny of breeder seed

Ans.Foundation seed

Quest.Certified tag colour of breeder seed

Ans.Golden brown

Quest. The seeds produced by NSC

Ans.Foundation seed

Quest.Certified tag colour of foundation seed

Ans.White tag

Quest.Progeny of foundation or registered seed Ans.Certified seed

Quest.Certified seed is generally produced by *Ans*.SSC

Quest.Certified seed tag having *Ans*.Azure blue colour

Quest. The emergence and development of seedlings from the seed-embryo under favourable condition

Ans.Germination

Quest.Hypogeal germination is found in

Ans.Cereals, Gram, Arhar, Lentil

Quest.Epigeal germination is found in *Ans*.Mustard, Sunflower, Castor, Onion.

Quest. Varietal purity is checked by *Ans*. Grow out test (GOT)

Quest. The impurity percentage of seed *Ans*. **Dockage**

Quest.Formulae of real value of seed Ans.Real value of seed = $\frac{Purity \% \times Germination \%}{100}$

Quest. The capacity of the seed to germinate *Ans*. Seed vigour/viability

Quest.Seed viability is mostly tested by use of

Ans.2, 3, 5-triphenyl tetrazolium chloride

Quest.Formulae of pure live seed Ans.Pure Live Seed = $\frac{Purity \% \times Viability \%}{100}$

Quest. The main aim to maintain isolation distance

Ans. To avoid contamination or cross pollination

Quest.Isolation distance for self pollinated crops *i.e.* rice, wheat *Ans.***3** m

Quest.Isolation distance for certified maize seed *Ans*.200 m

Quest.Isolation distance for certified pigeonpea *Ans*.50 m

Quest.Isolation distance for certified sunflower *Ans*.500 m

Quest.Weight of 1000 seeds is known as

Ans.Test weight

Quest.Weight of 100 seeds *Ans*.Seed Index

Quest.Seed testing refers to

Ans. Testing of Purity, Moisture and Germination of seeds

Quest. The standard method of seed moisture estimation *Ans*. **Oven dry method**

Quest. The rice variety which has no seed dormancy *Ans*.I.R.-50

Quest. The dormancy due to hard seed coat or impermeable seed coats *Ans*. Scarification

Quest. The dormancy due to low temperature and moisture conditions *Ans*. Stratification

Quest. The PGR used to initiate seed germination *Ans*. Gibberellic acid

Quest.Seed dormancy of potato tubers is broken by treating tubers with *Ans*.Thiourea 1%

Quest. The main objective of field inspection is to examine *Ans*. **Disease incidence**, **Isolation distance and Off-types**

Quest.Seed processing is termed as *Ans*.Grading

Quest.National Seed Corporation (NSC) was registered in Ans.1963

Quest.Seed act was passed on Ans.1966

Quest. The Seed Rule was passed on *Ans*.1968

Quest.National Seed Project (NSP) was started on Ans.1988

(IV) Plant Biotechnology

Quest.Applied use of molecular biology and recombinant DNA Technology known as *Ans*.Biotechnology

Quest. The term 'Biotechnology' was coined by Ans.Karl Ereky (1919)

Quest.Multiplication of cell of large number of plants placed in appropriate environment conditions with required nutrients is known as

Ans.Plant tissue or in vitro culture

Quest. The plant or plant part excised for the *in vitro* cultivation *Ans*.Explant

Quest. An exact genetic replica of a specific gene or an entire organism.

Ans.Clone

Quest.General used nutrient medium in tissue culture

Ans.B-5 medium and MS medium

Quest.A culture of isolated mature or immature embryos

Ans.Meristem culture

Quest. Young embryo is removed from developing seeds and planted on a suitable nutrient medium *in vitro* is called as

Ans.Embryo culture

Quest.Anther or pollen culture technique is used to obtained

Ans.Haploid plants

Quest.Culture of an organ in vitro

Ans.Organ culture

Quest.Capability of an isolated single cell to multiply and differentiate into multicellular organism

Ans. Totipotency

Quest. A biochemical process or reaction taking place in a test tube (in lab) *Ans.In vitro*

Quest.Alternate forms of a gene *Ans*.Allele

Quest. A method for transforming DNA especially useful of plant cells *Ans*. Electroporation

Quest.DNA was 1st synthesized by *Ans*.A. Kornberg (1953)

Quest. A DNA sequence that codes for a specific polypeptide *Ans*. **Cistron**

Quest.A library composed of complementary copies of cellular mRNA Ans.cDNA

Quest. The molecule which encodes genetic information *Ans*. **DNA**

Quest. The molecule which helps in decoding genetic information carried by DNA *Ans*.**RNA**

Quest. A process of formation of somatic embryos from callus *Ans*. Embryogenesis

Quest.Crossing of plants through fusion of somatic cell *Ans*.Somatic hybridization

Quest.A segment of DNA that codes for a specific characters *Ans*.Gene

Quest. A DNA element which has the ability to move from one chromosomal position to another *Ans*. Jumping gene

Quest.Father of genetic engineering

Ans.Paul Berg

Quest.A bacterium used in genetic engineering Ans.E-coli (Agrobacterium rhizogenes)

Quest.Gene responsible for higher amount of lysine in maize *Ans*.Opaque-2

Quest.PCR denotes *Ans*.Polymerase Chain Reactions

Quest.RFLD denotes *Ans*.Restriction fragement length polymorphism

Quest.RAPD denotes

Ans.Random amplified polymorphic DNA

Quest. A hybrid produced using nucleous of one parent cell and cytoplasm of both the cell *Ans*.Cybrid

Quest.Molecular scissors used in genetic engineering

Ans.Restriction endonuclease

Quest.Map of genome showing relative positions of genes and or markers on chromosomes *Ans*.Genetic map

Quest. A single DNA molecule condensed into a compact structure *in vivo* by complexing with accessory histones or histone-like proteins.

Ans.Chromosome

Quest. The process of synthesizing multiple copies of a particular DNA sequence

Ans.Gene cloning

Quest. The process of producing a protein from its DNA- and mRNA-coding sequences.

Ans.Gene expression

Quest.DNA amplification is done in the machine

Ans.Thermocycler

Quest.Francis Crick's seminal concept that in nature genetic information generally flows from DNA to RNA to protein.

Ans.Central Dogma

Quest. Transplanting a cell, tissue or organ from one nutrient medium to another.

Ans.Subculture

Quest. The first biotech plant is

Ans.Tobacco

Quest.Bt genes are introduced in cotton against the pest

Ans.Cotton Bollworm

Quest. The vegetable crop under approval for Bt. technology *Ans*.Brinjal

Quest.Terminator technology is recently used in *Ans*.Cotton

Chapter 6 Plant Physiology

Quest. The science concerned with processes, functions, plant responses to external stimulus and growth and development of plant.

Ans.Plant Physiology

Quest.Father of plant physiology *Ans*.Stephan Hales

Quest. The cause of most of the gaseous interchange in soil *Ans*. **Diffusion**

Quest.In diffusion, particle/molecules moves from region of

Ans.Higher to lower concentration

Quest. The concept 'Osmosis' is given by *Ans*. Abbe Nollel

Quest.Plasma membrane is a type of *Ans*.Semi-permeable membrane

Quest. The diffusion of solvent particles into a living cell *Ans*. Endosmosis

Quest.Strong solution having higher concentration

Ans.Hypertonic solution

Quest.Imbibition is coined by

Ans.Such

Quest. The component of water potential which determine by the attraction between water and hydrating colloids.

Ans.Matric potential

Quest.Shrinkage of protoplasm due to outward flow of water (exosmosis) in a concentrate solution.

Ans.Plasmolysis

Quest. The Casparian strip is present in

Ans.Endosmosis

Quest. The hydrostatic pressure generated within the cell against cell wall as a result of entry of water into it, due to osmosis.

Ans.Turgor pressure

Quest.During Osmosis, movement of water takes place from

Ans.Lower to higher concentration of solution

Quest. Water is absorption by plants mainly through

Ans.Root hairs

Ouest. First step in absorption of water

Ans.Imbibition

Quest. Absorbed of water against a concentration gradient by using energy released from respiration is called as

Ans.Active absorption

Quest. Transpiration associated ion uptake is

Ans. Passive uptake process

Quest.Nutrients absorbed by plants from soil solution are carried upward through the *Ans*.Xylem

Quest.Downward movement of food synthesized in leaves takes place through *Ans*.Phloem

Quest. The movement of nutrient ions and salts along with moving water

Ans.Mass flow

Quest.Mass flow or pressure flow theory was given by Ans.Godlewski (1884)

Quest.Pulsation theory was given by

Ans.J.C. Bose (1923)

Quest. The hydrostatic pressure developed due to the accumulation of water absorb by the root is called root pressure.

Ans.Root pressure

Quest.Root pressure is measured by *Ans*.Manometer

Quest.Upward translocation of fluid in xylem takes place due to *Ans*.Pull of transpiration stream

Quest. The most accepted theory of water absorption *Ans*. **Transpiration pull theory**

Quest.Plant cell walls are *Ans*.Permeable in nature

Quest.Minerals are translocated in plants as

Ans.Both organic and inorganic compounds

Quest. The plant meet their carbon requirement by absorbing

Ans.CO₂ for atmosphere

Quest. The process by which plants convert light energy of photon (captured from sunrays) into chemical energy

Ans.Photosynthesis

Quest. The oxidation reduction process is

Ans.Photosynthesis

Quest.Photosynthesis active radiation (PAR) occurs at

Ans.400-700 nm

Quest.Plant component responsible for photosynthesis is a pigment called *Ans*.Chlorophyll

Quest.Chlorophyll contains

Ans.Mg

Quest.Pigment which are responsible for photosynthesis in higher plants *Ans*.Chlorophyll a and b

Quest. The colour of chlorophyll a

Ans.Blue green

Quest. The colour of chlorophyll b

Ans.Yellow green

Quest.Oxygen required for photosynthesis comes from

Ans.Water

Quest. The product of photosynthesis which is used for growth and development of plants

Ans.Glucose

Quest.Photosynthesis can be measured by measuring *Ans*.O₂ given off and CO₂ uptake

Quest. Chemicals which retard transpiration rate called

Ans.Anti-transparent

Quest. Which organism/groups do not have photosynthesizing capability? *Ans*.Fungi

Quest. The first biological process that begins in a seed soon after in imbibes water *Ans*. **Respiration**

Quest.C₄/Light reaction/Hill reaction take place in

Ans.Grana of Chlorophyll

Quest.C₃/Dark reaction/Calvin cycle take place in

Ans.Stroma of Chlorophyll

Quest.Grana and Stroma are found in *Ans*.Chloroplast

Quest.C₃ cycle is also known as

Ans.Blackman reaction

Quest.Final product of C3 pathway is

Ans.3 PGA

Quest.C₃ plants are

Ans.Rice, Wheat, Pea, Soybean etc

Quest. The most important enzyme involved in photosynthetic CO_2 fixation in C_3 plants *Ans*. Rubisco

Quest.C₄ cycle is also known as

Ans.Hatch and slack pathway

Quest. First product of C_4 pathway is

Ans.Oxalo acetic acid (OAA)

Quest.C₄ plants are

Ans.Maize, Sorghum, Sugarcane, millets etc.

Quest. The most important enzyme involved in photosynthetic CO_2 fixation in C_4 plants *Ans*.**PEP carboxylase**

Quest.C₄ plants have

Ans.Kranz type leaf

Quest.CAM denotes

Ans.Crassulacean Acid Metabolism

Quest. The example of CAM plants are *Ans*. **Pineapple and Opuntia**

Quest. The water use efficiency of C_4 is than C_3 plants

Ans.High

Quest. The photosynthetic rate of C_4 is than C_3 plants

Ans.Low

Quest.C₄ plants normally give more biological yield than C₃ plants because of

Ans.Less respiration

Quest.One NADH₂ produces how many ATP molecules?

Ans.3

Quest.Oxygen is required by the plants for *Ans*.Respiration

Quest.Glycolysis occurs in

Ans.Cytoplasm

Quest.Final product of Glycolysis *Ans*.Pyruvate

Quest.Net gain ATP during glycolysis *Ans*.2

Quest.Kreb cycle and ETC occurs in *Ans*.Mitochondria

Quest.Net gain ATP synthesis from one molecule of glucose in respiration *Ans*.36 ATP

Quest.One molecules of ATP yields *Ans*.7.6 Kcal energy

Quest. An energy spending process *Ans*. Photore spiration

Quest.Photorespiration occurs in *Ans*.Night

Quest. Photorespiration occurs only in

Ans.Chlorophyllous cells

Quest. The loss of water in the form of vapour from the living aerial parts of the plant is known as

Ans.Transpiration

Quest. The principle organ of transpiration is

Ans.Stomata of leaf (90% transpiration)

Quest. The water is lost during transpiration in the form of *Ans*. Vapour

Quest.Stomata is found mainly on

Ans.Lower surface of leaves

Quest.Opening and closing of stomata are due to its *Ans*.Turgidity and faccidity

Quest. The types of stomata mostly present on lower surface of leaves

Ans.Potato type

Quest.Stomata that is present on only under surface of leaf.

Ans.Apple and Mulberry type

Quest. The loss of water (contains salts and minerals) through hydathodes in liquid form during night and regulated by root pressure

Ans.Guttation

Quest. The irreversible change in any plant part (s) with respect to size, form, weight, volume etc.

Ans.Growth

Quest. The phasic change of individual cells into tissues, organs and organisms *Ans*. **Development**

Quest. The growth rate of plants is measured by *Ans*. Auxanometer and Crescograph

Quest. The element which takes part in the growth and development of plants *Ans*. **Plant nutrients**

Quest.Organic compounds which inhibit or modify any physiological process *Ans*.Plant Growth Regulators (PGRs)

Quest.Growth promoters are *Ans*.Auxins, Gibberellins and Cytokinin

Quest.Example of growth inhibitors *Ans*.Abscisic acid and Ethylene

Quest. The PGR causes apical bud dominance Ans. Auxins

Quest. The senescence is delayed by *Ans*. Cytokinin

Quest.Seed dormancy of seed is broken by *Ans*.Cytokinin

Quest.Seed dormancy is induced by *Ans*.Abscisic acid

Quest.PGR used for fruit ripening *Ans*.Ethylene

Quest.Abscisic acid is synthesized from *Ans*.Actively growing points

Quest.Cytokinin is mainly synthesized in *Ans*.Root tips

Quest.PGR related to drought tolerance and stress hardness in plants *Ans*.Abscisic acid

Quest. The physiological response of plants in relation to length of light *Ans*. Photoperiodism

Quest.Short day plants require day length *Ans.*<10 hrs

Quest.Kharif crops requires *Ans*.Shorter day length

Quest.Generally rabi crops are *Ans*.Long day plants

Quest.Long day plants require day length *Ans.*>14 hrs

Quest. The sites of Vernalisation *Ans*. Apical buds/Growing point

Quest.For germination, seed depends on external source for supply of Ans.Water

Quest. The temperature at which highest percentage of seed germination occurs in short period of time

Ans.Optimum temperature

Quest.Ca is essential for

Ans.Cell wall formation

Quest. The region of plants in which food to be translocated originates

Ans.Source

Quest. The region of plants in which translocated food is utilized or immobilized *Ans*. Sink

Quest.Concentration of a nutrient in plant tissue where growth of the plant is slowed down *Ans*.Critical concentration

Chapter 7

Major Pest and Diseases of Important Crops

(1) Pest of Rice

Quest. The scientific name of Yellow Stem Borer *Ans.Scirphophaga incertulas*

Quest. The scientific name of Rice Gall Midge *Ans.Orseolia oryzae*

Quest. The scientific name of Green Leaf hopper (GLH) *Ans.Nephotetrix nigropictus*

Quest. The scientific name of White-backed Plant-hopper (WBPH) *Ans.Sogatella furcifera*

Quest. The scientific name of Brown Plant hopper (BPH) *Ans.Nilaparvata lugens*

Quest. Which pest causes severe damage to rice panicle at night? *Ans*.Rice Army worm (*Mythimna saparata*)

Quest.Chaffy grains with black spot is the infestation of *Ans*.Gundhi Bug (*Leptocorisa acuta*)

Quest.Clipping off the top of rice seedlings containing immature stages of insects reduces the carry over of infestation of

Ans.Rice hispa

(2) Wheat

Quest. The scientific name of Pink Stem Borer *Ans.Sesamia inferens*

Quest.Pink stem borer attacks to plants in *Ans*.Night

Quest. The scientific name of Wheat Termites *Ans.Odentotermis obesus*

Quest. The scientific name of Cut Worm *Ans.Agrotis ipsilon*

Quest. Which pest attacks all the parts of the plant? *Ans*. Termite

(3) Sorghum

Quest. The scientific name of Sorghum Shoofly *Ans*. *Atherigona varia soccata*

(4) Chickpea

Quest. The scientific name of Cut worm *Ans.Agrotis ipsilon*

Quest. The scientific name of Pod borer *Ans.Helicoverpa armigera*

(5) Pigeonpea

Quest. The scientific name of Pod borer *Ans.Etiella zincknella*

Quest. The scientific name of Plume moth *Ans.Exelastis atomosa*

Quest. The scientific name of Pod fly *Ans.Melanagromyza obtuse*

Quest. The scientific name of Pod bug *Ans.Clavigralla gibbosa*

(6) Soybean

Quest. The scientific name of Soybean Girdle beetle *Ans.Oberea brevis*

Quest. The scientific name of stemfly *Ans.Melanagromyza sojae*

Quest. Which pest is known as stem borer of soybean *Ans*. Girdle beetle

(7) Groundnut

Quest. The scientific name of Groundnut aphid *Ans.Aphis craccivora*

Quest. The scientific name of White Grub of groundnut *Ans.Holotrachia conseguina*

Quest. The scientific name of Groundnut Leaf minor *Ans.Stomoperyx nertaria*

(8) Mustard

Quest. The scientific name of Mustard aphid *Ans.Lipaphis erysimi*

Quest. The scientific name of Mustard sawfly *Ans.Athaliya proxima*

Quest. The scientific name of Mustard Painted Bug *Ans.Bargrada cruciferarum*

(9) Sunflower and Linseed

Quest. The scientific name of Capitulai/Head borer *Ans.Helicoverpa armigera*

(10) Cotton

Quest.Rosetting of flowers and double seed formation is the symptoms of *Ans*.Pink Bollworm (*Pectinophora gossypiella*)

Quest. The pest causing flaring of squares in cotton *Ans*. **Spotted Bollworm** (*Earias vitella*)

Quest. The scientific name of American Bollworm *Ans.Helicoverpa armigera*

Quest. The main symptom of American bollworm is *Ans*. Larger circular bore holes with faecal pellets.

Quest. The vector of leaf curry virus Ans. White Fly (Bemisia tabaci)

Quest. The scientific name of Red Cotton Bug Ans. Dysdercus koenigii

Quest. Which cotton pest causes hopper burn? *Ans*. Cotton Jassid (*Amrasca bigutulla*)

Quest.Curling of leaf upwards and yellowing of terminal cotton shoots is a characteristics symptom of presence of

Ans.Cotton Aphid

Quest.Highest consumption of pesticides found in *Ans*.Cotton (54%)

(11) Sugarcane

Quest. The scientific name of Sugarcane Pyrilla/Leaf hopper *Ans.Pyrilla purpusilla*

Quest. Which pest causes Bunchi top appearance in sugarcane *Ans*. **Top Borer** (*Tryporza novella*)

Quest. The scientific name of Sugarcane shoot borer *Ans.Chilo sacchariphagus*

Quest. The scientific name of Sugarcane root borer *Ans.Emmalocera depressella*

Quest. The scientific name of Whitefly of sugarcane *Ans*. *Aleurolobus barodensis*

(12) Potato and Tobacco

Quest. The scientific name of Potato aphid *Ans. Aphis gossypii*

Quest. The scientific name of Potato tuber moth *Ans.Phthorimaea operculella*

Quest. The scientific name of Tobacco cutworm *Ans.Spodoptera litura*

(13) Pest of Fruit Crops

Quest. The scientific name of Mango hopper *Ans. Amritodus atkinsoni*

Quest. The scientific name of Mango mealy bug *Ans.Drosicha mangiferae*

Quest.Sticky bands around tree trunks provide protection against *Ans*.Mango mealy bug

Quest. The scientific name of Banana Stem weevil *Ans.Odoiporus longicollis*

Quest. The scientific name of Guava fruitfly Ans. Bactrocera diversus

Quest. The scientific name of Fruit sucking moth of citrus *Ans.Otheris materna*

Quest. The scientific name of Lemon butterfly *Ans.Papillio demoleus*

Quest. The scientific name of Citrus Psylla *Ans.Diaphorina citri*

Quest. The scientific name of Papaya fruitfly *Ans.Bactrocera/Dacus dorsalis*

Quest. The scientific name of Fruit Borer of pomegranate *Ans.Conogethes punctiferalis*

Quest. The scientific name of Woolf aphis of apple *Ans.Eriosoma lanigerum*

(14) Pest of Vegetable Crops

Quest. The scientific name of Tomato fruit borer *Ans.Helicoverpa armigera*

Quest. The scientific name of Brinjal fruit and shoot borer *Ans.Leucinodes orbonalis*

Quest. The scientific name of fruit and shoot borer of Okra

Ans.Earias vitella

Quest. The scientific name of Chilly thrips *Ans.Thrips tabaci*

Quest. The scientific name of Red Pumpkin beetles of cucurbits *Ans.Raphidopalpa foveicollis*

Quest. The scientific name of Cucurbits fruitfly *Ans.Dacus cucurbitae*

Quest. The scientific name of Diamond back moth (DBM) of cabbage *Ans.Plutella xylostella*

Quest. The scientific name of Cabbage head borer *Ans.Hellula undalis*

(15) Stored Grain Pests

Quest. The scientific name of Khapra beetle or Wheat beetle *Ans.Trogoderma granarium*

Quest. The scientific name of Red flour beetle *Ans.Tribolium castaneum*

Quest. The scientific name of Pulse beetle *Ans.Callosobruchus chinensis*

Quest. The scientific name of Rice moth *Ans.Corcyra cephalonica*

DISEASES OF IMPORTANT CROPS (1) Rice

Quest. The causal organism of brown spot of rice *Ans.Helminthosporium oryzae*

Quest. The brown spot of rice is

Ans.Externally seed borne disease

Quest.Poor man's disease of rice

Ans.Bacterial leaf blight (Xanthomonas oryzae)

Quest. The most destructive phase of the bacterial blight of rice is known as

Ans.Kresek

Quest. The air borne disease of rice *Ans*. Rice Blast (*Pyricularia oryzae*)

Quest.Rice blast is effectively controlled by spraying of *Ans*.Edifenphos

Quest. The soil borne disease of rice *Ans*. **Sheath blight of rice** (*Rhizoctonia oryzae*)

Quest.Khaira disease of rice is caused by *Ans.Zinc deficiency*

Quest.Khaira disease of rice is controlled by spraying Ans.Zinc sulphate (5 kg)+ lime (2.5 kg/ha) in 10 days nursery

Quest. The main symptom of Tungro disease of rice *Ans*. Yellowing of leaves

Quest. The vector of Tungro disease *Ans*. **GLH**

Quest. The disease responsible for the great Bengal famine in 1942-43 *Ans*. Brown spot of rice

Quest.Montek disease of rice is caused by *Ans*.Rice root nematode

(2) Wheat and Barley

Quest. The soil, air and seed borne disease of wheat *Ans*. Kernal bunt (*Neovossia indica*)

Quest. The foul smell of kernel bunt infected field is due to *Ans*. **Trimethyl-amine**

Quest.Loose smut of wheat is a *Ans*.Internally seed borne disease

Quest.Loose smut of wheat is caused by *Ans.Ustilego nuda triticii*

Quest.Loose smut of wheat can be controlled by seed treatment with

Ans.Vitavax

Quest.Solar heat treatment is used to control *Ans*.Loose smut of wheat

Quest. Which rust was earliest appeared in India on wheat *Ans*.Brown/Orange/Leaf rust

Quest. Alternate host of black stem rust of wheat in India is *Ans.Berberries* sp.

Quest. The causal organism of Black/stem rust *Ans.Puccinia gramini triticii*

Quest. The causal organism of Yellow/strip rust *Ans.Puccinia striformis*

Quest. The causal organism of Brown/orange/leaf rust *Ans.Puccinia recondita*

Quest. Which disease of wheat is discovered in Haryana? *Ans*.Kernal bunt

Quest.Bacterial rot of wheat ears is also known as

Ans.Spike blight/Tundu/Yellow slime disease

Quest. The causal organism of covered smut of barley *Ans.Ustilago hardei*

Quest.Sooty or charcoal like powdery mass usually appearing on floral organs particularly the ovary is

Ans.Smut

Quest. Which stage of the wheat rust fungus is considered as the perfect stage ? Ans. Telial stage

(3) Maize, Sorghum and Bajra

Quest. White bud of maize is caused by *Ans.Zn deficiency*

Quest. The causal organism of Grain Smut of sorghum *Ans.Sphacelotheca sorghi*

Quest.Grain Smut of sorghum is also known as *Ans.Covered/Kernel/Shoot smut*

Quest.Grain and Head smuts are *Ans*.Seed borne disease

Quest. The causal organism of Head Smut of sorghum *Ans.Sphacelotheca relliana*

Quest. The most serious smut among the smuts affecting sorghum is *Ans*. Grain smut

Quest.Downey Mildew/Green Ear disease of Bajra is caused by *Ans.Sclerospora graminicola*

Quest.Ergot disease of Bajra is caused by *Ans.Claviceps fusiformis*

Quest.Ear showing honey dew symptoms is characteristic feature of *Ans*.Grain smut of bajra

Quest.Smut disease infect the plant at *Ans*.Tillering stage

(4) Chickpea and Pigeonpea

Quest.Wilt disease is a *Ans.Soil borne disease*

Quest.Wilt disease of chickpea is caused by Ans.Fusarium oxisporium

Quest.Wilt of pigeonpea is caused by Ans.Fusarium oxisporum f. sp. udum

Quest. The vector of sterility mosaic of pigeonpea *Ans*. **Mite** (*Aceria cajani*)

(5) Groundnut

Quest.Leaf spot of groundnut is also known as *Ans*.Tikka disease

Quest.Early leaf spot of groundnut is caused by

Ans.Cercospora arachidicola

Quest.Late leaf spot of groundnut is caused by *Ans.Cercospora parsonata*

Quest. The causal organism of collar rot disease *Ans*. *Aspergillus niger*

Quest.Rust of groundnut is caused by *Ans.Puccinia arachidis*

Quest.Vector for bud necrosis of groundnut is *Ans*.Thrips

(6) Rapseed and Mustard

Quest.Alternaria blight of mustard is caused by *Ans.Alternaria brasicae*

Quest. White rust of crusifers is a *Ans*. Pseudo rust

Quest. White rust/Blister is caused by *Ans.Albugo candida*

(7) Soybean

Quest.Yellow Mosaic of soybean is caused by *Ans*.Mungbean yellow mosaic virus (MYMV)

Quest. The causal organism of Anthracnose/Pod blight *Ans.Colletotrichum truncatum*

(8) Sunflower and Sesame

Quest.Alternaria blight or leaf spot of sunflower is caused by *Ans*.*Alternaria helianthi*

Quest.Root and collar rot of sunflower is caused by *Ans.Sclerotium rolfssi*

Quest. The causal organism of Phyllody disease of sesame *Ans*. MLO

(9) Cotton

Quest.Fusarium wilt is caused by *Ans.Fusarium moniliform*

Quest. The wilt of cotton is *Ans.Seed and Soil borne*

Quest.Black arm or bacterial blight is due to *Ans.Xanthomonas compestris*

Quest.Bacterial blight disease is *Ans.Internally seed borne*

Quest.Bacterial blight/Angular leaf spot is caused by *Ans.Xanthmonas malvacearum*

(10) Sugarcane

Quest.Most serious of sugarcane *Ans*.Red rot disease

Quest.Red rot disease is caused by *Ans.Colletrotricum falcatum*

Quest.Red strip of sugarcane is caused by Ans.Pseudomonas riubrilinus

Quest. The causal organism of sugarcane smut *Ans.Ustilego citamini*

Quest.Grassy shoot of sugarcane is cased by *Ans.MLO*

Quest. The pith of the red rot affected can emits *Ans*. Rotten fish like smell

Quest. The whip smut of sugarcane is caused by *Ans.Ustilago hordei*

(11) Potato and Tobacco

Quest.Most dangerous disease of potato *Ans*.Late blight

Quest.Late blight of potato is caused by *Ans.Phytophthora infestans*

Quest.Early blight of potato is caused by *Ans.Alternaria solani*

Quest. The tuber borne disease of potato *Ans*.Black scurf (*Rhizoctonia solani*)

Quest. Which potato disease causes Irish famine (1845)? *Ans*.Late blight

Quest.Wart disease of potato is caused by *Ans.Synchutium endobioticum*

Quest.Potato virus diseases are spread by *Ans*.Aphids

Quest.Damping off of tobacco is caused by *Ans.Pythium aphanidermaum*

Quest.Tobacco Mosaic disease is caused by *Ans*.Nicotiana Virus-1

Quest.Root knot disease of tobacco is effective controlled by *Ans*.Carbofuran

(12) Mango

Quest.Mango Malformation is caused by *Ans.Fusarium monilliformae*

Quest.Mango malformation is common in *Ans*.North-West India

Quest.Black tip/Mango necrosis is caused by *Ans.Boron deficiency*

(13) Other Fruit Diseases

Quest.Scab disease in apple is caused by *Ans.Venturia inaequalis*

Quest.Anthracnose of guava is caused by *Ans.Collectotrichum psidii*

Quest.Leaf curl and mosaic of papaya is caused by *Ans.Virus*

Quest.Panama wilt of banana is also called as *Ans.Fusarium wilt*

Quest.Bunchy top of banana is caused by *Ans.Virus*

Quest. Which pathogen caused heavy losses to wine industry in France due to its epidemics in 1875?

Ans.Plasmopara viticola

Quest.Citrus canker is caused by *Ans.Xanthomonas compestris pv citri*

Quest.Citrus gumosis is caused by *Ans.Phytophthora palmivora*

Quest.Mottle leaf of citrus is due to deficiency of *Ans*.Zinc

Quest.Greening of citrus is caused by *Ans.Gracillicuts* (a *gram negative bacteria*)

Quest.Downy mildew of grape vine is controlled by *Ans*.Bordeaux mixture

(14) Tomato and Brinjal

Quest.Leaf curl of tomato is spread by *Ans*.White fly

Quest.Early blight of tomato is caused by *Ans.Alternaria solani*

Quest.Wilting in Brinjal is caused by *Ans.Pseudomonas solanacearum*

Quest.Phomopsis blight or Fruit rot of Brinjal is caused by *Ans.Phomopsis vexans*

Quest.Damping off of Brinjal seedlings is due to *Ans.Pithium sp*

(15) Other Vegetable Diseases

Quest. Yellow vein mosaic of okra is transmitted through *Ans.White fly*

Quest.Damping off of chilly seedlings is due to *Ans.Pithium sp*

Quest.Anthracnose/Ripe rot/Die back of chilly is caused by *Ans.Collectotrichum capsici*

Quest. White blister of cabbage is caused by *Ans.Albugo candida*

Quest.Black rot of cabbage is caused by *Ans.Xanthomonas compestris*

Quest.A cabbage disease which is known to be more severe in acidic soils is *Ans*.Black rot

Quest.Powdery mildew of cucurbits is caused by *Ans.Erysiphe cichoracearum*

Quest.Downey mildew of cucurbits is caused by

Ans.Pseudopernospora cubensis

Quest.Downy mildew disease can be effectively managed by spraying of *Ans*.Metalaxyl

Chapter 8 Horticulture

(I) BASIC HORTICULTURE

Quest. The term 'Horticulture' is derived from *Ans*. Latin word

Quest. The science of growing of fruits, vegetables, ornament plants and preservation of foods *Ans*. Horticulture

Quest. The science of production of fruit crops

Ans.Pomology

Quest. The term 'Pomology' is derived from *Ans*. Latin word

Quest. The science of growing vegetable crops

Ans.Olericulture

Quest. The science of growing flower and ornamental plants. *Ans*. Floriculture/Ornamental horticulture

Quest. A method by which food is kept out from spoilage after harvest *Ans*.**Preservation**

Quest. Which process is involved in the senescence of fruits and vegetables? *Ans*.Respiration

Quest.Fruits experiencing sudden increase in the rate of respiration at the time of ripening. *Ans*.Climacteric Fruits

Quest.Mango, Banana, Guava, Papaya, Jackfruit, Sapota, Apple are known as *Ans*.Climacteric Fruits

Quest.Fruits experiencing simple gradual decline in the rate of respiration at the time of ripening.

Ans.Non-Climacteric Fruits

Quest.Litchi, Lemon, Citrus, Grape, Ber, Pineapple are known as *Ans*.Non-Climacteric Fruits

Quest. Which operation controls the shape of plant? *Ans*. Training

Quest.Most widely used training system for commercial fruits

Ans.Modified Leader System

Quest.Removal of any excess or undesirable/unproductive branches, shoots or any other parts of plants

Ans.Pruning

Quest.Heading back and thinning out are associated with

Ans.Pruning

Quest. The most common pit size for fruit planting

Ans.1 m \times 1 m \times 1 m

Quest. The simplest system of fruit planting

Ans.Square System

Quest. In which planting system, a tree is planted on a corner of each angle

Ans.Triangle System

Quest. The 'filler tree technology' is associated with

Ans.Quincunx System

Quest.A pruning process in which a circular ring of bark measuring about 3 cm in length is removed.

Ans.Ringing/Girdling

Quest. Which fruit has the highest Vitamin A?

Ans.Mango

Quest. Which grafting is used for repairing the plant?

Ans.Bridge grafting

(II) CULTIVATION OF IMPORTANT FRUIT CROPS (1) Mango

Quest.Mango is also known as *Ans*.King of fruits/National fruit/Bathroom fruit

Quest. The botanical name of mango *Ans.Mangifera indica*

Quest.Mango belongs to which family *Ans*.Anacardiaceae

Quest. The origin place of mango *Ans*. Indo-Burma region

Quest.Leading Mango producing state having maximum area under mango *Ans*.Uttar pradesh

Quest. The commercial propagation method of mango *Ans*. Veneer grafting

Quest. The normal planting space of mango *Ans*.10m × 10m

Quest.High density planting (2.5 m \times 2.5 m) of mango is done in *Ans*.Amrapalli variety

Quest.Most popular variety of India *Ans*.Alphanso

Quest.Sweetest variety of mango

Ans.Chousa

Quest.Regular bearer varieties of mango Ans.Ratna, Neelum, Himsagar, Gulab khas, Pairy and Totapari

Quest.Seedless variety of mango *Ans*.Sindhu

Quest.Mallika is a cross of *Ans*.Neelam × Dashehari

Quest.Amrapalli is a cross of *Ans*.Dashehari × Neelam

Quest.Ratna is a cross of *Ans*.Neelam × Alphanso

Quest.Sindhu is a cross of *Ans*.Ratna × Alphanso

Quest.Most commonly used for flower induction Ans.Paclobutrazol

Quest. The pollinator of mango is *Ans*. Housefly

Quest.Bearing habit of mango is *Ans*.Terminal

Quest.Fruit drop in mango is controlled by *Ans.***2**, **4**-**D**

Quest.Mango malformation is controlled by *Ans*.NAA

Quest.Spongy tissue is due to *Ans*.Convection heats

Quest.Internal fruit necrosis is due to *Ans*.Boron deficiency

(2) Guava

Quest. The botanical name of guava *Ans*. *Psidium guajava*

Quest. The normal planting space of guava *Ans*.10m × 10m

Quest. The commercial propagation method of guava *Ans*. Air layering

Quest. Which guava variety is known as Sardar *Ans*.Lucknow- 49

Quest.Dual purpose variety of guava *Ans*.Lalit

Quest.Parthenocarpic variety of guava *Ans*.Allahabad round

Quest.Kohir safed is a cross of *Ans*.Kohir × Allahabad Safeda

Quest.Safed Jam is a cross of *Ans*.AS × Kohir

Quest. The fruiting time of Mrig bahar *Ans*. Nov-January

(3) Papaya

Quest.Origin of Papaya *Ans*.Tropical America

Quest.Yellow pigment in papaya *Ans*.Caricaxanthin

Quest. The commercial propagation method of papaya Ans.Seed (500 g/ha)

Quest.Planting space of papaya *Ans*.2m×2m

Quest.Best suited variety for high density planting of papaya *Ans*.Pusa nanha (1.25m×1.25m)

Quest.Highest papain yielding variety *Ans*.Pusa majesty

Quest.Pusa delicious, Pusa majesty, CO⁻³ and Coorg honew dew are *Ans*.Gynodioecious varieties

Quest. The serious disease of papaya *Ans*. **Damping off**

Quest. The fruiting time of papaya

Ans.Feb-June

Quest. The chemical used for better colour and keeping quality of papain *Ans*. Potassium meta-bi-sulphite (KMS)

Quest.Enzyme present in dried latex of papaya *Ans*.Pepsin

Quest.Pusa dwarf, Pusa Nanha and Pusa giant are naturally *Ans*.Didecious

(4) Pomegranate

Quest. The botanical name of pomegranate *Ans.Punica granatum*

Quest. The normal planting space is *Ans.*6m × 6m

Quest.Commercial propagation method *Ans*.Air layering

Quest. The hybrid variety of pomegranate *Ans*. Amlidana

Quest.Most popular vary *Ans*.Ganesh and Dholka

Quest.Fruit cracking is most probable in *Ans*.Mrig bahar season

(5) Citrus

Quest. The botanical name of acid lime *Ans.Citrus aurentifolia*

Quest.Break fast fruit is *Ans*.Grape fruit (*C. paradise leaf*)

Quest. The botanical name of Sweet Orange *Ans.Citrus sinensis*

Quest. Which citrus species is known as *Fancy fruit*? *Ans.C. reticulate*

Quest. Thornless species of citrus *Ans*. Tahiti lime (*C. latifolia*)

Quest.Monoembryonic species of citrus Ans.Pumelo

Quest.Polyembryonic species of citrus *Ans*.Acid lime

Quest. Which species of citrus produces seedless fruits?

Ans.Tahiti lime

Quest. The normal planting space of citrus *Ans*.5-6m × 5-6m

Quest.Commercial propagation method *Ans*.Seed and Budding

Quest.Rootstock of mandarin orange is *Ans*.Rangpur lime

Quest.Best method for irrigation of citrus *Ans*.Ring method

Quest. 'Kinnow' is a cross between *Ans*.King × Willow leaf

Quest.Seedless variety of mandarin orange *Ans*.Satsuma

Quest.Lucknow seedless is a variety of *Ans*.Lemon

(6) Banana

Quest. The banana is commonly known as *Ans*. Adam's fig and Tree of paradise

Quest. The normal planting space of banana *Ans*.1.8-2m × 1.8-2m

Quest.Commercial propagation method *Ans*.Sword Suckers

Quest.Banana inflorescence is known as *Ans*.Spadix

Quest.Best variety for chips making *Ans*.Narendran

Quest.Gold finger is a *Ans*.Hybrid banana

Quest. How much sugar contains in ripe banana?
Ans.26%

Quest.Degreening of banana is done by *Ans*.Ethylene

Quest.Removal of male bud after completion of female phase is known as *Ans*.Denavelling

Quest.Removal of undesired suckers, done once in 45 days of planting *Ans*.Desuckering

Quest.Tetrazolium test is used for detection of *Ans*.Bunchy top virus

(7) Other Fruit Crops

Quest. Which crop is commonly known as *Single seeded nut? Ans*.Litchi

Quest.Litchi is commercial propagated by *Ans*.Air layering and Seed

Quest.Red pigment in litchi is due to *Ans*.Anthocyanin

Quest.Sapota is grown in *Ans*.Tropical climate

Quest.Commercial propagation method of sapota *Ans*.Inarching

Quest.Most popular varieties of sapota *Ans*.Kali patti, Pili patti, Oval, Cricket ball, Chatri, Barahmasi.

Quest.CO-1 is a cross of *Ans*.Cricket ball × oval

Quest.Botanical name of Monkey jack *Ans.Autocarpus heterophylus*

Quest.Jackfruit is commercially propagated by *Ans*.Air layering

Quest. The popular varieties of jackfruit

Ans.Champa, Rudrakshi and Singapore

Quest. Aonla is commercially propagated by *Ans*. Inarching

Quest. The popular varieties of Aonla Ans. Banarasi, Krishna, Chakaiya, Hathi jhul, Kanchan, NA-7, 9

Quest.Most widely used training system of aonla *Ans*.Modified central leader system

Quest.Ber is commonly known as *Ans*.Poor man's fruit and king of arid fruits

Quest. The commercially cultivated variety of ber *Ans*. Umran

Quest.Early variety of ber *Ans*.Seb

Quest.Best time for prunning of ber *Ans*.End of May to Mid June

Quest.Ber fruits are matured at *Ans*.5-6 months after flowering

Quest.Richest source of Vit-B₂

Ans.Bael

Quest.Active ingredient present in Bael *Ans*.Marmelosin

Quest. The most ideal stage of bael for making preserve *Ans*. Mature green stage

Quest.Paras is a variety of *Ans.*Jamun

Quest.Seedless variety of Jamun is *Ans*.Narendra Jamun-6

Quest. The commercial propagation method of pineapple *Ans*. Suckers and slips

Quest.Singapore, Mauritious and Giant Kew are the varieties of *Ans*.Pineapple

Quest. The enzyme contains in pineapple fruit *Ans*.Bromelin

Quest. The chemical used for inducing flowering in pineapple *Ans*. Ethrel and NAA

Quest.Queen of temperate fruit *Ans*.Apple

Quest.Apple bowl of India *Ans*.Himachal Pradesh

Quest.Apple is commercially propagated by *Ans*.Tongue grafting and Whip budding

Quest.Redness in apple is due to *Ans*.Anthocyanin

Quest.Delicious, Rome beauty and Parlin's Beauty are *Ans*.Late maturing apple

Quest.Diploid variety of apples are *Ans*.Self fertile

Quest.Usually apple is graded on *Ans*.6 size

Quest.Discolouration of apple after cutting is due to *Ans*.Enzymes

Quest.Commercial propagating method of grapevine *Ans*.Hard wood cutting

Quest.Arka Hans is a cross of *Ans*.Banglore Blue × Anab-e-shahi

Quest.Most widely accepted training system of grapevine in India *Ans*.Bower system

Quest. Which is used for improving fruit quality of grape? *Ans*.20 ppm GA

Quest. Which fruit is commonly known as "*Kalpavriksha Ans*.Coconut

Quest.Cashew nut and almond are the richest source of *Ans*.Fat

Quest.Richest source of Iron *Ans*.Karonda

(III) CULTIVATION OF IMPORTANT VEGETABLE CROPS

(1) Tomato

Quest.No. 1 processing vegetable *Ans*.Tomato

Quest. The new botanical name of tomato *Ans.Solanum lycopersicon*

Quest. A pigment responsible for red colour in tomato *Ans*.Lycopene

Quest.Pusa Rubi is a cross of

Ans.Sioux × Improved Maruti

Quest. The best combiner variety of tomato *Ans*. Pusa Rubi

Quest.Pusa Rubi, Arka sourav, Pant bahar and Best of all are *Ans*.Indeterminate varieties

Quest. The best suited variety for drought condition Ans. Arka Vikas

Quest.Most serious pest for tomato plant *Ans*.Root knot nematode

Quest.Nematode and Bacterial wilt resistant variety of tomato *Ans*.Arka vardan

Quest.Most important nutrients required for tomato cultivation *Ans*.Boron and zinc

Quest. The recommended seed rate of tomato per hectare

Ans.300-350 gm/ha

Quest.Harvesting stage of tomato for distant market/transportation *Ans*.Mature green stage

Quest.Best method of extraction of tomato seed Ans.Alkali method

Quest.Blossom end rot of tomato is due to *Ans*.Ca deficiency

Quest.Fruit cracking of tomato is due to *Ans*.B deficiency

(2) Brinjal

Quest.Brinjal is also known as *Ans*.Egg plant

Quest.Brinjal fruits are good source of *Ans*.Vit.-B

Quest. White brinjal is preferred by *Ans*. **Diabetics patients**

Quest. The normal seed rate of brinjal *Ans*.200 g/ha

Quest.Extra early maturing variety of brinjal *Ans*.Pusa purple long

Quest.Phomopsis blight and Bacterial blight resistant variety of brinjal *Ans*.Pant Samrat

Quest. The normal seed rate of brinjal *Ans*.100 sq.m/ha

Quest.Nursery area of brinjal Ans.1.5-2.0 kg/ha

(3) Chilly

Quest. The botanical name of chilly *Ans.Capsicum annum*

Quest.Causes of red colour in chilli *Ans*.Capsenthin

Quest. The cause of pungency in chilli *Ans*. Capsicin

Quest.Variety suitable for HDP *Ans*.Jwalamukhi

Quest.Leaf curl resistant varieties Ans.Pusa Jwala, Pusa Sadabahar, Pant C⁻¹ Quest.The chemical used for fruit setting Ans.Triacontanol

Quest.Green to dry chilli ratio *Ans*.10:1

(4) Cucurbits

Quest.Cultivation practise followed in cucurbits *Ans*.Daria cultivation

Quest.Cultivated pumpkin is botanically known as *Ans.Cucurbita moschata*

Quest.Seed rate of pumpkin Ans.1.0-1.5 kg/ha

Quest.Chief pollinator of pumpkin *Ans*.Honey bee

Quest.PKM 1 is a variety of

Ans.Snake guord

Quest.Botanical name of bottle gourd *Ans.Lagenaria siceraria*

Quest.Seed rate of bottle gourd *Ans*.**3-4 kg/ha**

Quest.Popular varieties of bottle guard Ans.Pusa Summer Prolific long, Summer Prolific Round, Pusa Manjari, Pusa Megdoot

Quest. Which cucurbit is also known as Bitter cucumber *Ans*. **Bitter gourd**

Quest.Seed rate of bitter gourd Ans.4.5-5 kg/ha

Quest.Gynomonoecious flowers are found in Ans.Cucumber

Quest.Pusa Sanyog is a variety of *Ans*.Cucumber

Quest.Fruit type of cucumber is *Ans*.Pepo

Quest.Bitterness in cucumber is due to *Ans*.Metaxenia

Quest.Pusa Nasdar and Satputia are popular varieties of *Ans*.Ridge guard

Quest.Trichosanthus dioca is botanical name of *Ans*.Pointed gourd

Quest.Pointed gourd is propagated through *Ans*.Vine cutting

Quest.Pusa Chikni, Pusa Supriya and Harita are the varieties of *Ans*.Sponge guard

Quest. How much water contains by water melon fruit? *Ans*.95%

Quest. The seed rate of water melon *Ans*.3.5-5 kg/ha

Quest.Sugar Baby is the popular variety of *Ans*.Water melon

Quest.Pusa bedana is a cross of

Ans.Tetra-2 × Pusa Rasal

Quest.Pink bedana is the variety of *Ans*.Musk melon

Quest.Fruit of okra is known as Ans.Capsule

(5) Other Vegetables

Quest.Richest source of protein is Ans.Beans

Ouest. The seed rate of okra is

Ans.8-10 kg/ha

Quest.Pusa Sawani and Parbhani Kranti is famous variety of Ans.Okra

Quest. Yellow vein mosaic resistant variety of okra

Ans.Pusa Sawani

Quest. A deep rooted crop is

Ans.Sweet potato

Quest.Edible part of cabbage

Quest.Seed rate of cabbage is Telegram.me/agricoss

Ans.350-500 gm/ha

Quest.Anti-cancer property of cabbage is due to Ans.Indole-3-Cardinal

Quest. The botanical name of cauliflower Ans.Brassica oleracia.var botrytis

Quest.Seed rate of cauliflower is

Ans.500-600 gm/ha

Quest.Edible part of cauliflower Ans.Curd

Quest. The important process of cauliflower Ans.Blanching

Quest.Pusa Snowball is a variety of Ans.Cauliflower

Quest.Seed rate of knol khol is *Ans*.1-1.5 kg/ha

Quest.Economic part of knol khol is *Ans*.Extended stem

Quest.Temperature required for bolting in onion is *Ans.*< 15 $^{\circ}$ C

Quest.Japanese white is a variety of *Ans*.Raddish

Quest. The variety of carrot which is richest source of vitamin A *Ans*. Pusa Meghali

Quest.IIHR is located at

Ans.Bangalore

Quest. Which growth regulator is isolated from yam?

Ans.Batasin

Quest. Only tuber crop, which is rich in protein?

Ans.Colocasia

Quest. Toxic substance present in colocasia

Ans.Ca oxalate

Quest. The product of cassava is *Ans*. Sago

Quest.Pungency in garlic is due to *Ans.Alicin, Allinase*

Quest.Economical part of sweet potato *Ans*.Adventious roots

Quest.Pungency of onion is due to *Ans.Allyl Propide di-sulphide*

Quest.Irritation of eye due to cutting onion is due to presence of *Ans*.Pyruvic acid

(IV) ORNAMENTAL HORTICULTURE

Quest.Leading cut flower exporter in the world is *Ans*.Netherlands

Quest.Concept of lawn was developed in *Ans*.England

Quest.In which garden, arrangement of rocks is main feature?

Ans.Japanese garden

Quest.Shrubs or trees planted at regular intervals on boundry for fencing

Ans.Hedges

Quest. The green carpet for the landscape maintained by growing and mowing grasses. *Ans*.Lawn

Quest. Thorny fencing plant used as a hedge

Ans.Inga dulcus

Quest.Planting of low growing plants along with paths, roads, flower beds, lawns etc. for demarcation and beautification

Ans.Edge

Quest. The art of developing the plant or training the plant into different forms or shapes like animals, birds, arches, etc.

Ans.Topiary

Quest. The arrangement of colourful potted plants in different tiers around a central object which may be tree trunk, lamp post or pillar.

Ans.Trophy

Quest. Growing of shrubs in a group

Ans.Shrubbery

Quest.A group of ornamental plants used to grow over walls, trellis, arches, pergolas, arbours, pillars, bowers etc.

Ans.Climbers and Creepers

Quest.An art of growing and training of a plant to a miniature form having a natural look of old age.

Ans.Bonsai

Quest. The father of rose breeding *Ans*. **Dr. Bhattachaterji**

Quest. The fruit of rose is known as *Ans*. Hip

Quest.Rose can be cultivated up to *Ans*.5 years

Quest.Commercial propagation method of rose *Ans*.'T' budding

Quest.Floribundas is a cross of *Ans*.Hybrid tea × Dwarf polyantha

Quest.Yellow coloured rose species is Ans.R. foitida

Quest. Thornless variety of rose *Ans*. Chitra

Quest. The single borne rose species *Ans*. Hybrid tea

Quest.Crimson Glory and Super Star are which type of rose *Ans*.Hybrid tea

Quest.Rose species having large flowers in clusters *Ans*.Floribundas

Quest. The growth habit of Chrysanthemum *Ans*. Perennial

Quest.Commercial propagation method of Chrysanthemum *Ans*.Root suckers and Terminal cuttings

Quest. Which chrysanthemum allows single bloom on a branch? *Ans*. Standard Chrysanthemum

Quest.Off-season variety of chrysanthemum Ans.Haldi ghati, Himansu, Jaya and Jwala

Quest.Per hectare of seed rate of marigold *Ans*.1.2-1.5 kg/ha

Quest.Commercial propagation method of gladiolus *Ans*.Corms

Quest. Annual carnation is propagated by *Ans*. Seeds

Quest.True marigold is also known as *Ans*.Calendulas

Quest.Golden Age and Crown of Gold are the variety of *Ans*.African Marigold

Quest. Tuber is commercially propagated by *Ans*. Tubers

Quest.Queen Elizabeth is a variety of *Ans*.Floribundas rose

Quest. The botanical name of hollyhock *Ans. Althaea rosea*

Quest. The flower colour of Chrysanthemum *Ans*. Yellow and white

(V) POST HARVEST TECHNOLOGY

Quest. Who is known as Father of food preservation?

Ans.Nicolas Apart

Quest.A heat treatment food material at 72°C for 15 seconds, or 63°C for 30 minutes Ans.Pasteurization

Quest.Juices are mostly preserved by

Ans.Freezing

Quest. The original colour of beverages for longer period are retained by *Ans*. Benzoic acid

Quest.Removal of moisture from the food materials for preservation *Ans*.Dehydration

Quest. Which of the following is used for killing microorganisms in food? *Ans*. Heat processing

Quest. The concentration of sugar required for preservation of fruits and jam *Ans*.66%

Quest. The concentration of salt sufficient to preserve most of the food products Ans.15-25%

Quest. A thermal process mostly used for vegetables prior to freezing, drying, or canning in order to soften the texture.

Ans.Blanching

Quest. The peeling of fruits and vegetables is known as

Ans.Lye peeling

Quest. The solution made by dissolving Salt (NaOH) in water is called as

Ans.Brine solution

Quest. Which fruit beverage contains atleast 10% fruit juice and 10% soluble solids? *Ans*.Ready-To-Serve (RTS)

Quest. The fruit beverage commonly prepared from Mango, Papaya, Bel, Aonla *Ans*.Nectar

Quest. A fruit juice normally contains 25% juice and 40% TSS *Ans*. Squash

Quest.Mango pulp is preserved by

Ans.Sugar

Quest. Which fruit beverage is diluted before serving? *Ans*.Syrup

Quest.TSS of jam should not be *Ans.*< 70%

Quest.TSS of cooking jam is measured by

Ans.Hand Refractometer

Quest. A semi-solid transparent product prepared from pectin containing fruit *Ans*.Jelly

Quest.For jelly making, fruit should be harvested at *Ans*.Firm ripe stage

Quest. The pH of final jelly should be

Ans.3.2

Quest. The instrument used to know pectin content

Ans.Jellimeter

Quest. A fruit or vegetable impregnated with the cane sugar or glucose syrup *Ans*. Candied fruit or vegetable

Quest. A product prepared from strained pulp of fully ripe tomato fruits after cooking *Ans*. **Tomato Sauce/Ketchup**

Quest.TSS% of Tomato sauce is *Ans*.30%

Quest. The salt concentration in pickle is maintained at *Ans*.8-10%

Quest.CFTRI denotes
Ans.Central Food Technological Research Institute, Mysore

Chapter 9

Agricultural Extension and Economics

(I) Agricultural Extension

Quest.An educational process to bring about desirable changes *Ans*.Extension

Quest. 'Extension' is a *Ans*.Latin word

Quest.Extension activity was started first time in *Ans*.USA

Quest. The term "Extension education" was originated from *Ans*. England (1866)

Quest. The term "Extension education" was firsed used by *Ans*. Cambridge University, England (1873)

Quest. The father of extension education in India *Ans.J.P. Leagans*

Quest.Extension education is both *Ans*.Science and Art

Quest. The basic principle of extension education is *Ans*. Help to those who helps themselves.

Quest. The right approach of Agril. Extension *Ans*. **Bottom up approach**

Quest.'EDUCARE' (Latin word) means *Ans*.To bringup physically or mentally.

Quest.A statement of situation, objectives, problems and solutions *Ans*.Programme

Quest. The process by which human behavior is modified *Ans*. Education

Quest.Extension education is

Ans.Informal educaion

Quest.School education is *Ans*.Formal education

Quest.Situation, Objectives, teaching, evaluation and reconsideration are the steps of *Ans*.Extension education

Quest.Attention \rightarrow interest \rightarrow desire \rightarrow conviction \rightarrow action \rightarrow satisfaction are the steps of *Ans*.Extension teaching

Quest.An understood information possessed by a person

Ans.Knowledge

Quest. The process of working with rural people in an effort to recognize the problems and determine possible solutions.

Ans.Programme planning

Quest. The father of rural sociology

Ans.August Compte

Quest. The science of human behaviours

Ans.Psychology

Quest. The interchange of ideas between two persons, in such a way that they act on the existing knowledge to achieve some useful results

Ans.Communication

Quest. The suitable medium to establish commonness between sender and receiver of message *Ans*. Communication

Quest.Communication is a

Ans.Two way/Double way Process

Quest.Shannon and Weaver (1949) proposed model of communication

Ans.Source \rightarrow Transmitter \rightarrow Signal \rightarrow Receiver \rightarrow Destination

Quest.Berlo Model of communication (1960)

Ans.Source \rightarrow Encoder \rightarrow Message \rightarrow Signal \rightarrow Decoder \rightarrow Receiver

Quest.Leagans Model (1963) is

Ans.Communicator _ Message _ Channel _ Treatment _ Audience _ Audience response

Quest.Speaker \rightarrow Speech \rightarrow Audience is a communication model proposed by

Ans.Aristotle

Quest. A specific way adopted by the communicator to communicate his message effectively so that whole message is understood by maximum number of audience.

Ans.Treatment of message

Quest. The process by which an innovation is communicated through certain channels overtime among the members of a social system

Ans.Diffusion

Quest.A decision to continue full use of an innovation

Ans.Adoption

Quest. The mental process through which individual passes from fires hearing about an innovation to final adoption.

Ans.Adoption process

Quest.Stages of adoption are

Ans.Awareness \rightarrow Interest \rightarrow Evaluation \rightarrow Trial \rightarrow Adoption

Quest.An attention with a sense of concerns focused upon some object

Ans.Interest

Quest. Which stage of adoption helps to establish "Bench mark"?

Ans.Evaluation

Quest. The people who adopt immediately after getting knowledge and constitutes only 2.5% of the total population.

Ans.Innovators

Quest. The people adopt through local leaders and constitute only 13.5% of the total population. *Ans*. Early adopters

Quest. The percentage population of early majority over total population *Ans*.34%

Quest. The farmer who accepts new practices very last with in his social system is known as *Ans*. Laggard (16 per cent)

Quest. A process by which an idea or innovation spreads

Ans.Diffusion

Quest. The process of arranging situations that stimulate and guide learning activities in order to bring desirable changes in the behaviour of people

Ans.Teaching

Quest.Traditional teaching method

Ans.Drama

Quest.Central element in learning situation

Ans.Learner

Quest.A mental and/or physical reaction that makes through seeing

Ans.Learning experience

Quest.Formulae of Intelligent Quotient

Ans.I.Q. (%) = $\frac{\text{Mental age}}{\text{Chronologi cal age}} \times 100$

Quest. The method of face-to-face or person-to-person contact between the rural people and extension workers

Ans.Individual contact

Quest.Farm and home visit, Office calls, Telephone calls, Personal letters, Result Demonstration are comes under

Ans.Individual contact

Quest.A method in which 20 to 30 rural people or farmers are contacted in a group

Ans.Group-contact

Quest.Conferences, Pannel, Symposium, Discussion, Meeting, Workshops, Field trips, Tour are comes under

Ans.Group contact

Quest. The media used for mass contact

Ans.Radio, Television, Exhibitions, Bulletins, Leaflets, News letter, Circular letters, Posters, folder/pamphlet etc.

Quest. A sheet of paper with pictorial slogan, which is utilized to attract the mass attention for single idea.

Ans.Poster

Quest. The most common size of poster

Ans.50cm x 75cm

Quest.Round table discussion is called *Ans*.Panel

Quest.Mostly widely used pamphlet size

Ans.12 to 24 pages

Quest. A published material on a small paper in which there is brief information of a subject *Ans*.Leaflet

Quest. When a paper folds ones or twice with detail information on specific aspects is called as *Ans*. Folder

Quest.A small published book consisting of 24 to 48 pages

Ans.Bulletin

Quest. A series of illustrated cards flashed before a group in proper sequence to tell a complete story step by step to the group of the learners.

Ans.Flash cards

Quest.For a group of 10-25, people use flash cards of size

Ans.10"x12" (25 cm x 30 cm)

Quest. The letter used to send the same information to many people at the same time is called *Ans*. Circular Letter

Quest. When two or more brief talks presenting phases of the some general topic called *Ans*.Symposium

Quest.A systematic display of models, specimens, charts, real objects and any informative materials.

Ans.Exhibition

Quest. The basic principle of Demonstration

Ans.Learning by seeing and doing

Quest. The concept of demonstration was given by

Ans.Dr. Seeman A. Knapp

Quest.Method demonstration is

Ans.Short -type demonstration

Quest. The oldest form of teaching *Ans*. Method demonstration

Quest. The main purpose of method demonstration is *Ans*. To provide skill

Quest. The basic principle of method demonstration *Ans*. Learning by doing

Quest. The father of method demonstration *Ans*. **Dr. Seeman A. Knapp**

Quest. A single practice demonstration used to show method of sowing *Ans*. Method demonstration

Quest.A demonstration practice used to compare two technologies *i.e.* old and new Ans.Result demonstration

Quest. The demonstration used to improve skill, knowledge and attitude

Ans.Result demonstration

Quest.Result demonstration is based on *Ans*.Seeing by doing

Quest. The front-line demonstrations conducted by researchers on the farmers field *Ans*. National demonstrations

Quest.Tape-recorder, Radio and Telephone are *Ans*.Audio Aids

Quest.Non-projected visual aids *Ans*.Posters, Charts, Flashcards, Bulletin board, Photograph etc.

Quest.Television is a type of *Ans*.Projected Audio Visual Aid

Quest. The best media to communicate with farmers and for village people *Ans*. Puppets

Quest.A transparent picture or photograph in an individual mount, projected through slide projector

Ans.Slides

Quest. The basic unit of civilization *Ans*. Family

Quest. The basic unit of rural society

Ans.Village

Quest. A family consists of husband, wife and their children known as *Ans*. Nuclear family

Quest. The uniformly accepted ways of acting about some social aspects of life are known as : *Ans*.Custom

Quest. They are uniformly accepted ways of thinking

Ans.Tradition

Quest.Cooperative Movement (1904) was initiated by *Ans*.F. Nicholson

Quest.Concept of Village Level Worker was related with the programme *Ans*.Sri Niketan

Quest.Gurgaon Project (1920) was started by Ans.Mr. F.L. Brayne

Quest. Young Men Christian Association was associated with

Ans.Marthandom Project (1928)

Quest.Rural Development programme was started on Ans.1935

Quest. The district level extension programme launched in independent India was in *Ans*. Etawah

Quest.Etawah Pilot Project (1948) was initiated by

Ans.Albert Mayer

Quest. Five year plans were started on *Ans*.1951

Quest.Community Development Project (CDP) was started on Ans.2nd Oct, 1952

Quest. Which programme is called as Package programme *Ans*. **Intensive Agriculture District Programme (1960)**

Quest.High Yielding Varietal Programme (HYVP) was started on Ans.1966-67

Quest. The programme initiated at occasion of ICAR Golden Jubille celebration *Ans*. Lab to Land Programme (1979)

Quest.Training and Visit programme (1974) is also known as *Ans*.Baster and Benor Scheme

Quest. Who had recommended Panchayat Raj System? *Ans*.Balwant Rai Mehata Committee

Quest. The basic principle/slogan of TRYSEM was *Ans*. Learning by doing

Quest. The primary aim of Integrated Rural development Programme (IRDP) *Ans*. All round development of family

Quest.NABARD is started on

Ans.12th July, 1982

Quest.A programme to provide atleast 100 days wage employment in rural areas *Ans*.National Rural Employment Guarantee Act (NAREGA, 2006)

Quest.A guarantee programme for the people below poverty line. *Ans*.National Food Security Mission (2007)

(II) Agricultural Economics

Quest. The science of Wealth

Ans. Economics

Quest. The economic concerned with individual unit *i.e.*, single industry, form or single consumer.

Ans.Micro economics

Quest. The economic deal with the whole economic setup *i.e.* total production, total expenditure, total income etc.

Ans.Macro economics

Quest.Father of Agricultural Economics

Ans.Adam Smith

Quest. The potential exchangeable means of satisfying human wants

Ans.Wealth

Quest. The part of wealth used for further regenerating wealth

Ans.Capital

Quest.Reward of Labour Ans.Wages

Quest.Reward of Capital *Ans*.Interest

Quest.Population theory was proposed by *Ans*.Malthus

Quest. The market used for food grains *Ans*. **Regional or State market**

Quest. The market used for durable goods *Ans*. National market

Quest. A time based market basically for perishable goods *Ans*. Short period market

Quest.Food grain markets, vegetable markets, wool market are the example of *Ans*.Special market

Quest.Which market ensure fair price *Ans*.Regulate market

Quest. Which one is a competitive market? *Ans*.Perfect market

Quest. The market which is permanent in nature *Ans*.Secular market

Quest. The 1st function performed in the marketing of agricultural commodities *Ans*. Packing

Quest. Which is not a function of marketing *Ans*. Harvesting

Quest.FCI was established in *Ans*.1965

Quest. The Warehousing Corporations Act came into operation on *Ans*.18th March, 1962

Quest.NAFED was established in the year *Ans*.October, 1958

Quest. When there is a single salers of a product *Ans*. Monopoly market

Quest.A market consisting of single buyer of a product *Ans*.Monosony market

Quest. When few salers of a commodity *Ans*. **Oligopoly market**

Quest. When few buyers of a commodity *Ans*. **Oligopsony market**

Quest.A market where homogenous products and large no. of buyers and salers are found *Ans*.Pure Market

Quest. The contribution of central govt. in the capital share of Regional Rural Bank Ans.50%

Quest.WTO come in to effect from Ans.1995

Quest. The portion of the total produce in stock which the farmer is willing to sell. *Ans*. Marketable surplus

Quest. The portion which is usually brought to the market at a particular time for sale. *Ans*. Marketed surplus

Quest. The relationship between Marketable to Marketed surplus for perishable products *Ans*. Equal

Quest.Marketable surplus is given by Ans.MS = P - C

Quest. The minimum price at which the govt. is prepared to buy agril. commodities *Ans*. Minimum Support Price (MSP)

Quest.MSP is fixed by

Ans.Commission of Agricultural Cost and Price (CACP)

Quest.National institute of Agricultural Marketing is situated at

Ans.Jaipur

Telegram.me/agricoss

Quest. The difference between value in use and value in exchange

Ans.Consumer surplus

Quest. The excess of what we are prepared to pay over what we actually pay for a commodity is known as

Ans.Consumer surplus

Quest.Short term loan is given for *Ans*.1 to 1¹/₂ years

Quest.Long term loan is given for the period of *Ans*.5 to 30 years

Quest. The 3 Rs of credit are

Ans.Returns, Repayment capacity and Risk bearing ability.

Quest.Loan repaying capacity of a farmer is judged on the basis of *Ans*.Net income of farmer

Quest.Increase in money supply and fall in production causes *Ans*.Inflation

Quest.Risks arise due to changes in Government policies are termed as a *Ans*.Institutional risk

Quest.AGMARK Act was passed in Ans.1937

Quest.Central AGMARK Lab is located at *Ans*.Nagpur

Quest.1st bank in India was established on *Ans*.1806

Quest.Money supply in Indian national economy is regulated by Ans.RBI

Quest.RBI was established and nationalized in

Ans.1st April, 1935 and 1st January, 1949

Quest. The bank who credits to marginal, small and Agricultural labours *Ans*. **RRB (1975)**

Quest. The full form of NABARD

Ans.National Bank for Agricultural and Rural Development

Quest.14 commercial banks were nationalization on

Ans.19th July, 1969

Quest.Income Tax is an example of *Ans*.Direct tax

Quest. The tax which is levied on goods or services produced or purchased.

Ans.Indirect tax

Quest.A multistage sales tax with credit for taxes paid on business purchases. *Ans*.VAT

Quest.A farmer having an area of <1 ha *Ans*.Marginal farmer

Quest. The operational land holding of small farmers *Ans*.1-2 ha

Quest. The land holding of large farmers *Ans.*> 10 ha

Quest.On which basis, CACP fixed minimum prices of crops

Ans.Cost of production

Quest.A science of decision making Ans.Farm Management

Quest.Production function is also known as

Ans.Input Output relation

Quest.Transformation of physical inputs into physical outputs is termed as *Ans*.Production

Quest.Cost calculated per hectare is known as *Ans*.Cost of Production (COC)

Quest. The most important unit of farm management *Ans*. Production unit

Quest. The basis of Cobb - Douglas Production function is *Ans*. Constant elasticity of substitution

Quest. When $MPP_X > APP_X$; then APP_X is

Ans.Increasing

Quest.Under perfect competition market, maximum profit is obtained when *Ans*.Marginal Return = Marginal Cost

Quest.Optimum profit will be obtained at a point where *Ans*.MC = MP

Quest.Marginal cost is equal to Ans.<u>Change in total cost</u> Change in output

Quest. When the demand and price are equal, called as *Ans*. Equilibrium price

Quest. The principle applied for production function "How much to produce" *Ans*. Principal of diminishing returns/costs

Quest. The principle applied for "How to produce" *Ans*. Principal of least cost combination

Quest. The principle applied for "What to produce"

Ans.Principal of opportunity cost/Equimarginal returns

Quest.Optimum level of input use without resource limitation

Ans.Law of diminishing return

Quest.Basic fundamental law of agriculture is

Ans.Law of diminishing return

Quest. Choose best crop enterprises

Ans.Principal of opportunity cost

Quest. When total Assets are divided by total liabilities, called as *Ans*. Net Capital Ratio (NCR)

Quest. The formulae of Rate of Turn Over Ans. Rate of Turn Over = $\frac{\text{Gross Income}}{\text{Total Farm Assets}} \times 100$

Quest. When MP = 0, then $E_P = 0$ is called

Ans.Completely inelastic demand

Quest. When MP > AP then E_P > 1 is called

Ans.Elastic demand

Quest. When MP = AP, then $E_P = 1$

Ans.Unit inelastic demand

Quest.Demand of Agri. Products are always comes under *Ans*.Unit inelastic demand

Quest.Inflexion point is found on *Ans*.Irrational zone (Stage – I)

Quest. The zone at which TP increases but at decreasing rate *Ans*. **Rational zone (Stage – II)**

Quest.E_P is always less than zero in

Ans.Irrational zone (Stage - III)

Quest.Price Ratio is equal to

Ans.Cost per unit of added resource $PR = \frac{Cost \text{ per unit of}}{Cost \text{ per unit of}}$

Quest.Present value of future investment is calculated by

Ans.Discounting

Quest. A line represents the different combinations of two variable inputs used in the production of a given amount of output.

Ans.Isoquant

Quest.Isoquant is used in

Ans.F - F relationship

Quest. A line indicates all possible combinations of two inputs which can be purchased with a given amount of investment fund

Ans.Iso-Cost line

Quest. The line join the end points of Isoquants

Ans.Ridge line

Quest. The line by which all the least cost combination points are joined to each other *Ans*. Expansion Path

Quest. Two or more products when produced in the same production process called *Ans*. Joint product

Quest. When the increase in one product is directly proportionate to increase the other product is called

Ans.Complementary Production

Quest.Crop production and dairy enterprise having

Ans.Supplementary relationship

Quest.Fixed Cost + Variable Cost is

Ans.Total cost

Quest. The costs, related to fixed resources *Ans*. Fixed Costs

Quest.Rent, interest on fixed capital, depreciation of building, taxes and wages of the permanent labourers constitute

Ans.Fixed Costs

Quest. The cost related to the variable resources and change with the output

Ans.Variable Costs

Quest.Gross income - Total Cost is equal to *Ans*.Profit

Quest. The change in cost associated with an increase of one unit of output. *Ans*. Marginal cost (MC)

Quest.Variable cost is also known as *Ans*.**Prime cost/Input cost**

Quest.Fixed cost is also known as *Ans*.Overhead cost

Quest.All actual expenses in cash and kind incurred in production by owner operator *Ans*.Cost-A

Quest.Cost A_1 + rent paid for based in land

Ans.Cost A₂

Quest.Cost A_2 + interest on value of owned capital assets (including land)

Ans.Cost B₁

Quest.Cost B_1 + rental value of owned land and rent paid by leased in land *Ans*.Cost B_2

Quest. The total cost of production which includes all cost items, actual as well as imputed. *Ans*.Cost C

Quest.Cost C is equal to Ans.Cost B + imputed value of family human labour

Quest.Gross Returns – Cost A is *Ans*.Farm business income

Quest.Gross returns - Cost B is *Ans*.Family labour income

Quest.Net income is *Ans*.Gross returns - Cost C

Quest.Benefit Cost Ratio is Ans.Gross income/Cost C

Quest. When farms is classified on the basis of utilization of land and resources, termed as *Ans*. Types of Farming

Quest. The farming having 50% income by single enterprise *Ans*. Specialized farming

Quest.Crop Production + livestock raising is called *Ans*.Mixed farming

Quest. The farming which has < 50% income by single enterprise *Ans*. **Diversified farming**

Quest.Farming in an areas having average annual rainfall of £ 50 cm. *Ans*.Dry farming

Quest.Natural grazing pattern is known as *Ans*.Ranching

Quest. When farm is classified on the basis of organizational setup, termed as *Ans*.System of farming

Quest. The joint agriculture operation by farmer on voluntary basis *Ans*. Cooperative farming

Quest. The cooperative farming in which Ownership and operations both Individual *Ans*. Cooperative better farming

Quest. The cooperative farming in which Ownership is individual and operations is collectively *Ans*. **Cooperative joint farming**

Quest. The farming in which investment of land and capital is done by big businessperson or capitalist

Ans.Capitalistic farming

Quest.Government carries out farming is

Ans.State farming

Quest. When farmers follows agricultural practices in their own way and managers and organizers of their farm business

Ans.Peasant faming

Quest.A process of deciding in the present what to do in the future about the best combination of crops and live stock to be raised

Ans.Farm Planning

Quest.Long-term planning is done for

Ans.5-10 years

Quest.A process of estimating costs, returns and net profit of a farm or a particular enterprise

Ans.Farm Budgeting

Quest. The basis of farm budgeting is

Ans.Cost benefit analysis

Quest. When new variety is recommended, which type of budget should be prepared?

Ans.Partial budget

Quest.Net worth is calculated from

Ans.Balance Sheet

Quest. The farm accounting/accountancy is also called as *Ans*. Farm Book keeping

Chapter 10 Agricultural Statistics

(I) Elements of Statistics

Quest.Mean, Median and Mode are

Ans.Measures of Central tendency

Quest. A figure obtained by dividing the sum of all variable by their total number of variables. *Ans*. Averages/Arithmetic Mean

Quest.Sum of deviation of items from the A.M. is *Ans.*0

Quest. Which mean is affected by change in origin and scale both? *Ans*.AM

Quest.Middle most value of the series

Ans.Median

Quest. Which one represents median?

Ans.50th Percentile

Quest.Most frequently occurred item *Ans*.Mode

Quest.Relationship between AM, median and Mode in asymmetrical distribution Ans.Mode = 3 Median - 2 Mean

Quest. The best measures of central tendency

Ans.Arithmetic Mean (AM)

Quest. The ratio of no. of observations to the sum of the reciprocal of the value of the different observations.

Ans.Harmonic Mean

Quest. The order of three averages for a given data *Ans*. AM > GM > HM

Quest.Mean applied when deals with rate, price and speed of a vehicle *Ans*.HM

Quest.Mean applied when deals with relative changes eg. Bacterial growth, cell division, population

Ans.GM

Quest. The average of the sum of squares of the deviation about mean

Ans.Variance

Quest. The degree of scatterness or variation of the variable about a central tendency *Ans*. **Disperson**

Quest.MD, SD and Variance are

Ans.Measures of Disperson/Spread

Quest.¹/₂ of the interquartile range is

Ans.Quartile deviation

Quest. The best measure of Disperson is *Ans*. **Standard Deviation (SD)**

Quest.SD is always calculated by *Ans*.AM

Quest.SD is ranges from *Ans*.0 to ∞

Quest. The difference between highest and lowest value of the series *Ans*. Range

Quest.Unit less figure based on two values *Ans*.Range

Quest.Coefficient of variation calculated by *Ans*.CV = (SD/Mean) x 100

Quest. The variation used to compare the variability between two series *Ans*.CV

Quest. Which is not a measure of Disperson? *Ans*.CV

Quest. The measures of the direction and degree of asymmetry

Ans.Skewness

Quest. The formulae of Karl pearson's coefficient of Skewness

Ans.CSK= (Mean - Mode)

Quest.Coefficient of skewness for normal distribution is *Ans*.0

Quest.An idea about the flatness/peakedness of the curve *Ans*.Kurtosis

Quest. The term 'Kurtosis' was introduced by Ans. Karl Pearson (1906)

Quest. The curve have $\beta_2 > 3$ or $Y_2 > 0$ is

Ans.Leptokurtic curve

Quest. The curve have $b_2 = 3$ or $Y_2 = 0$ is

Ans.Mesokurtic curve

Quest. The study the association or degree and deviation between two or more variables. *Ans*.Correlation

Quest.Correlation lies between *Ans.*-1 to +1

Quest. Which is used to measure the average relationship between two or more variables? *Ans*.Regression

Quest.Regression coefficient is independent of *Ans*.Origin

Quest. The distribution in which Mean > Variance

Ans.Bionomial distribution

Quest. The distribution in which Mean = Variance

Ans.Poison distribution

Quest. The degree of freedom of Normal distribution *Ans.n-3*

Quest. The term used to denote chance of happening or not happening of an event. *Ans*.**Probability**

Quest.Probability is formulated by $Ans.Probability = \frac{No. of favourable cases}{Total no. of equally likely cases}$

Quest.Probability ranges from *Ans.***0 to 1**

Quest. The test used for comparing two means when sample size is small (up to 30) *Ans*. **'T' test**

Quest.Students t test is used when

Ans.Small samples size and SD is unknown

Quest.Students t test was proposed by

Ans.W.S. Gosset

Quest. To test the proportions and variance, we use

Ans.'F' test

Quest. To test the goodness of fit or homogeneity, we use

Ans.CHI² test

Quest.CHI² test was given by

Ans.Karlpierson

Quest. When the calculated F is greater than table F value at 5% only, the differences in treatments is considered.

Ans.Significant

Quest. With increasing number of error degree of freedom, table F value follow ______ trend. *Ans*. Gradually decreased

(II) Field Experimentation

Quest.Logical constructions of the experiments in which the degree of uncertainty with which the inference (Result/confusion) on may be well defined.

Ans.Design of Experiments

Quest. The objects of comparison, which an experiment has to try in the field for assessing their value.

Ans.Treatment

Quest. The 3 basic principles of field experimentation

Ans.Replication, Randomization and Local control

Quest.Repeated application of treatments *Ans*.Replication

Quest.Allocation of treatments to the different experimental units by a random process *Ans*.Randomization

Quest. Which principle of experimentation eliminates human biases *Ans*. Randomization

Quest.Local control helps in reducing the *Ans*.Experimental error

Quest. The transformation required when data not follow normal distribution. *Ans*. **Data transformation**

Quest. The most appropriate transformation for percentage

Ans.Angular transformation

Quest. Which transformation is applied when mean a variance *Ans*. Square root

Quest. The hypothesis under test *Ans*. Null hypothesis

Quest. The variation due to uncontrolled factors *Ans*. Experimental error

Quest. The error in which hypothesis is true but our test rejects it. *Ans*. Type I error

Quest.Out of the two types of error in testing, the more severe error is *Ans*.Type II error

Quest. The simplest experimental design

Ans.Complete Randomized Design (CRD)

Quest. The experimental design which provides maximum degree of freedom for error **Ans.CRD**

Quest. Which design is applied when experimental material are limited and homogenous *Ans*.**CRD**

Quest. The error degree of freedom in CRD is formulated as *Ans*.N - t
Quest. The most commonly used design *Ans*. Randomized Block Design (RBD)

Quest.RBD is also called as

Ans.One way elimination of heterogeneity design/Two way classification of ANOVA

Quest. When fertility gradient in one direction, the statistical design to be used *Ans*.**RBD**

Quest. The maximum no. of treatments adopted in RBD *Ans*.20

Quest. In RBD, the number of blocks is equal to *Ans*. No. of replications (b = r)

Quest. The error degree of freedom of RBD is formulated as *Ans.*(t-1) (r-1)

Quest. The design in which fertility gradient is in two way direction *Ans*. Latin Square Design (LSD)

Quest.LSD is also known as

Ans. Two way elimination of heterogeneity design/Three way classification of ANOVA

Quest.In LSD, the no. of row or column or treatment is equal to

Ans.No. of replications (r = c = t)

Quest. The optimum number of treatments studied in latin square design Ans.5 to 12

Quest. The error degree of freedom of LSD is formulated as *Ans*.(t-2) (t-1)

Quest. Which design provides main effects and interactions *Ans*. Factorial RBD

Quest. The treatment df for 3 factors each at 2 levels is

$Ans.2^3 = 6-1 = 5$

Quest. The technique of reducing the size of replication over a number of blocks at the cost of loosing some informations on same effect

Ans.Confounding Design

Quest. Which are unimportant in Confounding Design?

Ans.Interactions

Quest.Confounding Design is adopted when the number of treatments is *Ans*.10

Quest. If an interaction effect is confounded with all the replicates of the treatment

Ans.Complete/total confounding

Quest. The most appropriate design, when all factors are not of equally important in experimentation.

Ans.Split Plot Design (SPD)

Quest. To study two factors with different level of precision, which design is used *Ans*. Split plot design

Quest. The factor requires larger units to be applied and may produce larger differences *Ans*. Main plot

Quest. The error degree of freedom of SPD is formulated as *Ans*.**D** (r-1) (d-1)

Quest.In a split plot design, 5 levels of main plot and 4 levels of sub plot treatments studied with 3 replications. What will be the d.f. for error b source?

Ans.30

Quest. If sub treatments are laid out in strips then the design is called

Ans.Strip Plot Design

Quest. How many no. of error variance are applied in Strip Plot Design *Ans*.3

Quest.In Strip Plot Design, which one is to be tested with higher precision *Ans*.Interaction

Chapter 11 Agroforestry

Quest. A system where agriculture and forestry are practised either simultaneously or separately on the same unit of land

Ans.Agroforestry

Quest.Agroforestry is a form of

Ans.Multiple cropping

Quest. The area under forest land in India *Ans*.67 mha (20.36%)

Quest.Optimum area under forest required *Ans*.33% of total geographical area

Quest.Contribution of forest product in world GDP *Ans*.1 %

Quest.Indian Forest Act was come in existence Ans.1927

Quest.Forest Conservation Act was made in Ans.1980

Quest.Forest school is established at

Ans.Dehradun

Quest. The Van Mahotsav Day in India is observed on *Ans*.1 July

Quest.State having highest forest area in India *Ans*.M.P.

Quest.Forest type found maximum in India *Ans*.Tropical dry deciduous forest

Quest.National Research Centre for Agroforestry is situated at

Ans.Jhansi (1988)

Quest.International Centre for Research in Agroforestry (ICRAF) is situated at *Ans*.Nairobi, Kenya

Quest. The most important Agroforestry practice is *Ans.Acacia leucophloea* + *Cenchrus setigerus*

Quest. The oldest known agro forestry practice *Ans*. Shifting cultivation

Quest.Cultivation of Trees + Crops is known as *Ans*.Agri-Silviculture

Quest.Perennial hedges + crops *Ans*.Alley cropping

Quest.Fruit trees + crops *Ans*.Agri-horticulture

Quest.Trees + fruit trees + crops *Ans*.Agri-silvi-horticulture

Quest.Trees + crops + pasture/animals *Ans*.Agri-silviculture

Quest.Trees+ pasture/animals *Ans*.Silvi-pasture

Quest.Fruit trees + honeybees *Ans*.Horti-apiculture

Quest.Trees + fishes *Ans*.Aqua-forestry

Quest.Forage trees + pasture *Ans*.Forage forestry

Quest.Trees + crops during initial years *Ans*.Energy plantation

Quest.Multiple combination of trees, fruit trees, vegetables atc. *Ans*.Homestead

Quest.Trees is on boundary + crops *Ans*.Boundary plantation

Quest.Taungya system means *Ans*.Hill cultivation

Quest.Most common example of taungya system *Ans*.Planting of Teak in Myanmar

Quest.Nitrogen fixing tree *Ans.Leucaena leucocephala*

Quest.Non leguminous nitrogen fixing trees *Ans.Alnus nepalensis*

Quest.Bio-drainage plant *Ans.Eucalyptus tereticornis*

Quest.Most suitable woodlot trees in India *Ans.Casuarina and Leucaena*

Quest.Fodder producing tree Ans.Prosopis cineraria

Quest.Fuel wood tree Ans.Albizia lebbeck

Quest.Green manuring tree *Ans.Thespesia populnea*

Quest.Shifting cultivation causes *Ans*.Deforestation

Quest.Miracle forest tree (as it provides fodder, fuel, pulpwood and timber) Ans.Subabul

Quest.Fast growing forest tree species Ans.Eucalyptus sp.

Quest.Multipurpose tree species *Ans*.*Albizia lebbeck*

Quest. The most appropriate and effective type of crop cultivation in forests *Ans*. Intercropping

Quest.Ratanjot and Karanj are *Ans*.Biofuel plants

Quest.Oil percentage in Ratanjot (*Jatropha sp.*) *Ans*.35% (from seed)

Quest.Spacing maintained between hedge row intercropping in alley cropping *Ans.***4-8 meter**

Quest. Tree species suitable for alley cropping

Ans.Cassia siamea, Leucaena and Sesbania

Quest.Forestry outside the conventional forests which primarily aim at providing continuous flow of goods and services for the benefit of people

Ans.Social forestry

Quest. A forest system which promote commercial tree growing by farmers on their own land *Ans*.Farm Forestry

Quest.Pollarding is done at

Ans.2 m height from ground

Quest. A belt of trees and or shrubs maintained for the purpose of shelter from wind, sun, snow drift, etc.

Ans.Shelterbelts

Quest.A protective plantation in a certain area, against strong winds. It is usually comprised of a few rows of trees (or shrubs)

Ans.Wind breaks

Quest.Raising of forests of public or community land

Ans.Community forestry

Quest. The ratio of height, width and length in shelterbelt system

Ans.1:25:10 meter

Quest. A process in which the branch of a plant is cut off in order to produce a flush of new shoots

Ans.Pollarding

Quest. The main stem of a tree is called

Ans.Bol

Quest.Full form of ICARF

Ans.International Centre for Research in Agroforestry

Chapter 12

Environmental Science and Ecology

Quest. The sum total condition in which organisms live is called as

Ans.Environment

Quest.A self supporting community - plants and animals interacting with each other and the nonliving environment to provide a balanced system is a

Ans.Ecosystem

Quest. The word 'ecosystem' was coined by

Ans.A.G.Tansley

Quest. The region existing between two ecosystems which contain species of both ecosystems is *Ans*. Ecotone

Quest. The study of interactions between living organism and environment is called as *Ans*. Ecology

Quest. The term ecology was introduced by

Ans.Hackel

Quest.Large portions of the earth with similar climate, soil, plant and animal life community is known as

Ans.Biosphere

Quest. The earth contains a thin region known as the biosphere, in which life exists. The three parts of the biosphere are

Ans.Atmosphere, hydrosphere and lithosphere

Quest.Sphere of Water or 70% of global is occupied by *Ans*.Hydrosphere

Quest. The characteristics of the type of environment where an organism normally lives? *Ans*. Habitat

Quest.All the populations of the different species living and inter-acting in the same ecosystem? *Ans*.Community

Quest. The variety of living organisms (flora and fauna) is called as *Ans*. **Biodiversity**

Quest. The environment which includes producers, consumers and decomposers? *Ans*.Biotic environment

Quest. Abiotic environment does not include *Ans*. Plants

Quest. The environment which has been modified by human activities is called *Ans*. Anthropogenic environment

Quest. The group of organisms which convert light into food are called *Ans*. Autotrophs

Quest. The plants, which produce food themselves through photosynthesis? *Ans*. Phototrophs

Quest. The ecosystem component, feed on producer or consumers? *Ans*. Heterotrophs

Quest. The Heterotrophs, feed on plants and called primary consumers? *Ans*. Herbivores

Quest. The Heterotrophs, feed on meats and called secondary consumers? *Ans*. Carnivores

Quest. The main constituent of CNG is *Ans*. Methane

Quest. The Heterotrophs, feed on both plants and meats? *Ans*.Omnivores

Quest. The base of the food chain in the ocean is the

Ans.Phytoplankton

Quest.Primary consumers in aquatic system are? *Ans*.Zooplanktons

Quest. The ecosystem component, which break down dead organic matter and wastes? *Ans*.Decomposers

Quest.Decomposers include *Ans*.Bacteria and Fungi

Quest.In which ecosystem, producers are of large size *Ans*.Grassland ecosystem

Quest.Natural resources which are renewable *Ans*.Water and wood

Quest.Non Renewable resources are *Ans*.Minerals, fossil, fuels.

Quest. The main constituent of LPG is *Ans*. **Butane**

Quest. The source of energy for all plants is *Ans*.Sun

Quest. The ecological factors, related to soil and substratum, are called *Ans*. Edaphic Factor

Quest. The term used to refer the weight of all the organisms at a tropical level. *Ans*.Biomass

Quest. The unit of energy is

Ans.Joule

Quest. Which is not included under biomass? *Ans*. Water

Quest.Plants which grow on other plants are called *Ans*.Epiphytes

Quest.Increasing industrialisation is causing much danger to man's life by *Ans*.Polluting the environment

Quest.Major pollutants that contribute to 90% of global air pollution *Ans*.CO and CO₂

Quest.Global warming focuses on an increase in the level of which gas in the atmosphere? *Ans*.Carbon dioxide

Quest.Colourless and odourless air pollutant is *Ans*.SO₂

Quest.Most poisonous pollutant in water *Ans*.Arsenic

Quest.Most commonly used disinfectant in water purification *Ans*.Chlorine

Quest. The test which has self purification capacity of water body *Ans*.BOD (Biochemical Oxygen Demand) test

Quest.Materials that cause BOD include *Ans*.Wood, animal wastes, sewage

Quest.Permissible limit of iron in drinking water *Ans*.1 ppm

Quest.A disease caused by mercury (Hg) poisoning of water at Japan in 1953 Ans.Minamata

Quest.Manimata disease is due to *Ans.Mercury toxicity*

Quest.Itai-Itai disease is due to *Ans*.Cadmium (Cd) toxicity

Quest. The chief green house gases are *Ans*. CO₂ and CH₄

Chapter 13 About ICAR and IARI

I.C.A.R.

- The highest body controlling agricultural research and education in India is" Indian Council of Agricultural Research (ICAR)."
- It was established on July 16, 1929 with the name "Imperial Council of Agricultural Research" under the Societies Registration Act, 1860 in pursuance of the report of the Royal Commission on Agriculture.
- ICAR headquarters at Krishi Bhavan, New Delhi.
- The ICAR was bestowed with the **King Baudouin Award** in 1989 for its valuable contribution in the Green Revolution. Again awarded King Baudouin Award in 2004 for research and development efforts made under partnership in Rice Wheat Consortium.
- First Director-General was Dr. B.P. Pal (1965)
- Union Minister of Agriculture is the ex-officio President of the ICAR Society. (Present-Sharad Pawar)
- New Director-General of ICAR: Dr. S. Ayyappan (from 01.01.2011)
- 4 Deemed universities are part of the ICAR.

I.A.R.I.

- 1905: Agricultural Research Institute was established at Pusa, Bihar by Lord Curzon. The land was donated by Mr. Phipps of USA after whom the place was named as Pusa. The Phipps laboratory in division of Soil Science and Agricultural Chemistry.
- 1911: Renamed as Imperial Agricultural Research Institute.
- 1923: Institute started offering Diploma of Associateship.
- 1934: Major Earth quake damages the buildings at Pusa.
- 1936: Shifted to New Delhi.
- 1936: **B. Vishwanath** became the first Indian Director of the Institute.
- 1946: The Diploma of Associateship was recognised equivalent to M.Sc.

- 1947: Name has been changed from Imperial Agricultural Research Institute to Indian Agricultural Research Institute.
- 1958: Recognized as "Deemed University" under UGC Act of 1956.

Chapter 14

Agricultural Research, Education and Extension

DEEMED UNIVERSITIES - 4

- 1. Indian Agricultural Research Institute (IARI) : New Delhi
- 2. National Dairy Research Institute (NDRI) : Karnal
- 3. Indian Veterinary Research Institute (IVRI) : Izatnagar
- 4. Central Institute on Fisheries Education (CIFE) : Mumbai

NATIONAL RESEARCH INSTITUTES - 45

1.	Central Rice Research Institute (CRRI)	:	Cuttack
2.	Vivekananda Parvatiya Krishi Anusandhan Sansthan (VPKAS)	:	Almora
3.	Indian Institute of Pulses Research (IIPR)	:	Kanpur
4.	Central Tobacco Research Institute (CTRI)	:	Rajahmundry
5.	Indian Institute of Sugarcane Research (IISR)	:	Lucknow
6.	Sugarcane Breeding Institute (SBI)	:	Coimbatore
7.	Central Institute of Cotton Research (CICR)	:	Nagpur
8.	Central Research Institute for Jute and Allied Fibres (CRIJAF)	:	Barrackpore
9.	Indian Grassland and Fodder Research Institute (IGFRI)	:	Jhansi
10.	Indian Institute of Horticultural Research (IIHR)	:	Bangalore
11.	Central Institute of Sub Tropical Horticulture (CISTH)	:	Lucknow
12.	Central Institute of Temperate Horticulture (CITH)	:	Srinagar
13.	Central Institute of Arid Horticulture (CIAR)	:	Bikaner
14.	Indian Institute of Vegetable Research (IIVR)	:	Varanasi
15.	Central Potato Research Institute (IPRI)	:	Shimla
16.	Central Tuber Crops Research Institute (CTCRI)	:	Trivandrum
17.	Central Plantation Crops Research Institute (CPCRI)	:	Kasargod
18.	Central Agricultural Research Institute (CARI)	:	Port Blair
19.	Indian Institute of Spices Research (IISR)	:	Calicut
20.	Central Soil and Water Conservation Research & Training Institute (CSWCRTI)	:	Dehradun

21.	Indian Institute of Soil Sciences (IISS)	:	Bhopal
22.	Central Soil Salinity Research Institute (CSSRI)	:	Karnal
23.	ICAR Research Complex for Eastern Region including Centre of Makhana	:	Patna
24.	Central Research Institute of Dryland Agriculture (CRIDA)	:	Hyderabad
25.	Central Arid Zone Research Institute (CAZRI)	:	Jodhpur
26.	ICAR Research Complex	:	Goa
27.	ICAR Research Complex for NEH Region	:	Barapani
28.	National Institute of Abiotic Stress Management (NIASM)	:	Malegaon
29.	Central Institute of Agricultural Engineering (CIAE)	:	Bhopal
30.	Central Institute on Post-harvest Engineering and Technology (CIPET)	:	Ludhiana
31.	Indian Institute of Natural Resins and Gums (IINRG)	:	Ranchi
32.	Central Institute of Research on Cotton Technology (CIRCT)	:	Mumbai
33.	National Institute of Research on Jute & Allied Fibre Technology (NIRJAFT)	:	Kolkata
34.	Indian Agricultural Statistical Research Institute (IASRI)	:	New Delhi
35.	Central Sheep and Wool Research Institute (CSWRI)	:	Avikanagar
36.	Central Institute for Research on Goats (CIRG)	:	Makhdoom
37.	Central Institute for Research on Buffaloes (CIRB)	:	Hissar
38.	National Institute of Animal Nutrition and Physiology (NIANP)	:	Bangalore
39.	Central Avian Research Institute (CARI)	:	Izatnagar
40.	Central Marine Fisheries Research Institute (CMFRI)	:	Kochi
41.	Central Institute Brackishwater Aquaculture (CIBA)	:	Chennai
42.	Central Inland Fisheries Research Institute (CIFRI)	:	Barrackpore
43.	Central Institute of Fisheries Technology (CIFT)	:	Cochin
44.	Central Institute of Freshwater Aquaculture (CIFA)	:	Bhubneshwar
45.	National Academy of Agricultural Research & Management (CAARM)	:	Hyderabad

NATIONAL RESEARCH CENTRES - 17

1.	National Research Centre on Plant Biotechnology (NRCPB)	: New Delhi
2.	National Centre for Integrated Pest Management (NCIPM)	: New Delhi
3.	National Research Centre for Litchi (NRCL)	: Muzaffarpur
4.	National Research Centre for Citrus (NRCC)	: Nagpur
5.	National Research Centre for Grapes (NRCG)	: Pune
6.	National Research Centre for Banana (NRCB)	: Trichi
7.	National Research Centre Seed Spices (NRCSS)	: Ajmer
8.	National Research Centre for Pomegranate (NRCP)	: Solapur
9.	National Research Centre on Orchids (NRCO)	: Pakyong, Sikkim

10.	National Research Centre Agroforestry (NRCA)	: Jhansi
11.	National Research Centre on Camel (NRCC)	: Bikaner
12.	National Research Centre on Equines (NRCE)	: Hisar
13.	National Research Centre on Meat (NRCM)	: Hyderabad
14.	National Research Centre on Pig (NRCP)	: Guwahati
15.	National Research Centre on Yak (NRCY)	: West Kemang
16.	National Research Centre on Mithun (NRCM)	: Medziphema
17.	National Centre for Agril. Economics & Policy Research (NCAEPR)	: New Delhi

NATIONAL BUREAUX - 6

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1.	National Bureau of Plant Genetics Resources (NBPGR)	:	New Delhi
2.	National Bureau of Agriculturally Important Micro-organisms (NBAIM)	:	Mau
З.	National Bureau of Agriculturally Important Insects (NBAII)	:	Bangalore
4.	National Bureau of Soil Survey and Land Use Planning (NBSSLUP)	:	Nagpur
5.	National Bureau of Animal Genetic Resources (NBAGR)	:	Karnal
6.	National Bureau of Fish Genetic Resources (NBFGR)	:	Lucknow

INTERNATIONAL ORGANIZATIONS OF CROP IMPROVEMENT

CIAT	International Centre for Tropical Agriculture	:	Cali, Columbia
CIFOR	Center for International Forestry Research	:	Jakarta, Indonesia
СІММҮТ	International Centre for Wheat and Maize Improvement	:	Baton, Mexico
CIP	International Potato Centre	:	Lima, Peru
IBPGR	International Board for Plant Genetic Resources	:	Rome, Italy
ICARDA	International Centre for Agricultural Research in the Dry Areas	:	Alleppo, Syria
ICGES	International Centre for Genetic Engineering and Biotechnology	:	Triesta, Italy
ICRAF	International Centre for Research in Agroforestry	:	Nairobi, Kenya
ICRISAT	International Crops Research Institute for the Semi-Arid Tropics	:	Hyderabad, India
IFPRI	International Food Policy Research Institute	:	Washington, USA
IITA	International Institute of Tropical Agriculture	:	Ibadan, Nigeria
IIMI	International Irrigation Management Institute	:	Colombo, Srilanka
ILRI	International Livestock Research Institute	:	Nairobi, Kenya
INSFFER	International Network on Soil Fertility and Fertilizer Evaluation on Rice	:	New Delhi, India
IPGRI	International Plant Genetic Resource Institute	:	Rome, Italy
ISNAR	International Service for National Agricultural Research	:	Netherlands
IRRI	International Rice Research Institute	:	Manila, Phillipines
	International Water Management Institute	:	Columbo, Sri Lanka

: Monrovia, Liberia

STATE AGRICULTURE UNIVERSITIES - 50

1.	Acharya NG Ranga Agricultural University	:	Rajendra Nagar, Hyderabad (AP)
2.	Anand Agricultural University	:	Anand, Gujarat
3.	Assam Agricultural University	:	Jorhat, Assam
4.	Bidhan Chandra Krishi Viswavidyalaya	:	Mohanpur, Nadia, (WB)
5.	Birsa Agricultural University	:	Ranchi, Jharkhand
6.	Central Agricultural University	:	Imphal, Manipur
7.	Chandra Shekar Azad University of Agriculture & Technology	:	Kanpur (UP)
8.	Chaudhary Charan Singh Haryana Agricultural University	:	Hisar, Haryana
9.	CSK Himachal Pradesh Krishi Vishvavidyalaya	:	Palampur, Himachal Pradesh
10.	Dr Balasaheb Sawant Konkan Krishi Vidyapeeth	:	Dapoli Distt, Maharashtra
11.	Dr Panjabrao Deshmukh Krishi Vidyapeeth	:	Akola, Maharashtra
12.	Dr Yashwant Singh Parmar Univ of Horticulture & Forestry	:	Solan, Himachal Pradesh
13.	Govind Ballabh Pant University of Agriculture & Technology	:	Pantnagar, Uttaranchal
14.	Guru Angad Dev Veterinary and Animal Science University	:	Ludhiana, Punjab
15.	Indira Gandhi Krishi Vishwavidyalaya	:	Raipur, Chhattisgarh
16.	Jawaharlal Nehru Krishi Viswavidyalaya	:	Jabalpur (MP)
17.	Junagadh Agricultural University	:	Junagad, Gujarat
18.	Kerala Agricultural University	:	Trichur, Kerala
19.	Maharana Pratap Univ. of Agriculture & Technology	:	Udaipur, Rajasthan
20.	Maharashtra Animal Science & Fishery University	:	Nagpur, Maharashtra
21.	Mahatma Phule Krishi Vidyapeeth	:	Rahuri, Maharashtra
22.	Marathwada Agricultural University	:	Parbhani, Maharashtra
23.	Narendra Deva University of Agriculture & Technology	:	Faizabad (UP)
24.	Navsari Agricultural University	:	Navsari, Gujarat
25.	Orissa Univ. of Agriculture & Technology	:	Bhubaneshwar, Orissa
26.	Punjab Agricultural University	:	Ludhiana, Punjab
27.	Rajasthan Agricultural University	:	Bikaner, Rajasthan
28.	Rajendra Agricultural University	:	Pusa, Bihar
29.	Sardarkrushinagar-Dantiwada Agricultural University	:	Sardar Krushinagar,

			Gujarat
30.	Sardar Ballabh Bhai Patel Univ. of Agriculture & Technology	:	Modipuram (UP)
31.	Sher-E-Kashmir Univ of Agricultural Sciences & Technology	:	Railway Road, Jammu
32.	Sher-E-Kashmir Univ of Agricultural Sciences & Technology of Kashmir	:	Srinagar, J &K
33.	Sri Venkateswara Veterinary University	:	Tirupati
34.	Tamil Nadu Agricultural University	:	Coimbatore, Tamil Nadu
35.	Tamil Nadu Veterinary & Animal Science University	:	Chennai, Tamil Nadu
36.	University of Agricultural Sciences	:	Bangalore, Karnataka
37.	University of Agricultural Sciences	:	Dharwad, Karnataka
38.	U.P. Pandit Deen Dayal Upadhaya Pashu Chikitsa Vigyan Vishwa Vidhyalaya evam Go Anusandhan Sansthan	:	Mathura (UP)
39.	Uttar Banga Krishi Viswavidyalaya	:	Coach Bihar (WB)
40.	West Bengal University of Animal & Fishery Sciences	:	Kolkata, (WB)
41.	Karnataka Veterinary, Animal and Fisheries Sciences University	:	BIDAR, Karnataka
42.	University of Agricultural Sciences	:	Raichur, Karnataka
43.	University of Horticultural Sciences	:	Bagalkot, Karnataka
44.	Andhra Pradesh Horticultural University	:	Tadepalligudem, Andhra Pradesh
45.	Rajmata Vijay Raje Sciendia Krishi Vishwa- vidyalaya	:	Gwalior (MP)
Ne	w Approved Universities		
46.	Bihar Agricultural University	:	Bhagalpur, Bihar
47.	Kerala University of Fisheries and Oceanography	:	Kochi (Kerala)
48.	Manyavar Shri Kanshi Ramji Agriculture Technology	:	Banda (U.P.)
49.	Rajasthan University of Veterinary Sciences	:	Bikaner (Rajasthan)
50.	Tamilnadu Horticultural University	:	Krishnagiri (TN)

Chapter 15 Useful Information

FATHERS OF DIFFERENT DISCIPLINES

Fatherof		Name	_	
Agronomy	:	Pietro Decrescenzi	_	
🕁 Agro meteorology	:	D. N. Walia		
🔄 Agricultural chemistry	:	Justus von Liebig		
🕁 Bacteriology	:	Leuwenhoek		
🕁 Biochemistry	:	Justus von Liebig		
A Cooperative movement in India	:	F. Nicholson	elegram	1.1
A Extension education	:	A. Seaman/Leagnes		
A Experimental genetics	:	Thomas Hunt Morgan		
Field plot experiment	:	J. B. Boussingault		
☆ Fruit and vegetable preservation	ו :	M. Nicholas Apart		
☆ Genetics	:	Gregor Johann Mendel	I	
A Green revolution	:	Dr. N. E. Borlaug		
Streen revolution in India	:	M.S.Swaminathan		
Solden revolution in India	:	Dr. K.C. Chadha		
🕁 Golden rice	:	Dr. Ingo Potrykus		
🕁 Hybrid rice	:	Yuan Long Ping		
A Hybrid cotton	:	C.T. Patel		
🍄 Indian plant pathology	:	E.J. Butler		
🔄 Indian Rust	:	Dr. K.C. Mehta		
A Microbiology	:	Louis Pasture		
A Modern Genetics	:	T.H. Morgan		
A Mutation Theory	:	Hugo de vries		
A Ornamental Gardening	:	M. S. Randhawa		
A Plant Pathology	:	Anton De Bary		
A Plant Physiology	:	Stephen Hales		
A Pedology	:	V.V. Dokuchalev		

Plant Tissue Culture	: G. Haberlandt
☆ Sociology	: Auguste compte
Statistics	: R.A. Fisher
Soil Science	: Dokuchalev
Soil Microbiology	: S.N. Winogradsky
🕁 Super Rice	: Dr. G.H. Khush
State Tillage and Weeds	: Jethro Tull
☆ White Revolution	: Dr. Varghese Kurien

BOTANICAL NAME OF CROPS

Crops	Botanical Name					
☆ Cereal Crops						
Rice	: <i>Oryza sativa</i> L.					
Wheat	: Triticum aestivum L.					
Maize	: <i>Zea mays</i> L.					
Bajra/Pearlmillet	: Pennisetum typhoides/P. glaucum L.					
Sorghum/Jowar	: Sorghum bicolor/S. vulgare L. Moench					
Barley	: Hordeum vulgare L.					
Triticale	: Secale cereal					
Buckwheat/Pseudo cereal	: Fagopyrum esculentum					
☆ Millet Crops	:					
Cheena/Proso millet	: Panicum miliacearum					
Foxtail/Italian /Jerman millet /	: Seteria italica L. Beauv.					
Kakun						
Kodo/Coarsest millet	: Paspulum scrobiculatum L.					
Little millet	: Panicum sumatrense					
Madua/Ragi/Finger millet	: Eleusine coracana Gaertn					
Sawan/Barnyard millet	: Echinochloa frumentance L.					
☆ Pulse Crops	:					
Gram/Chickpea/Bengal gram	: Cicer aeritinum L.					
Field Pea/Grain pea	: Pisum sativum var. arvense					
Arhar/Pigeon pea/Red gram	: <i>Cajanus cajan</i> L. Millsp.					
Soybean	: Glycine max L. Merril					
Black gram/Urdbean	: Vigna mungo/Phaseolus mungo L. Hepper					
Green gram/Moong/Moongbean	: Vigna radiate/Phaseolus aureus L. Wilczek					
French bean/Rajmash	: Phaseolus vulgaris					

Indian Cowpea/Lobia	: Vigna unguiculata/V. sinensis L.
Lentil	: <i>Lens esculantum/L. culinaris</i> Moench
Lathyrus/Chickling pea/Grasspea	: Lathyrus sativus
Mothbean	: Vigna/Phaseolus aconotifolia
Horse gram/Kulthi	: Macrotyloma uniflorum
☆ Edible Oilseed Crops	:
Groundnut/Peanut/Monkeynut	: Arachis hypogea L.
Sunflower	: Helianthus annus L.
Safflower	: Carthamus tinctorius L.
Rapseed and Mustard	: <i>Brassica spp.</i> L.
Sesamum/Til	: Sesamum indicum L.
Niger	: Guzotta abssicinia
Non edible Oilseed Crops	:
Castor	: Ricinus communis L.
Linseed/Flex	: Linnum ussitatisimum L.
☆ Fiber Crops	:
Cotton	: Gossipium spp.
Jute/tita pat	: Corchorus capsularis
Sunhemp	: <i>Crotolaria juncea</i> L.
☆ Forage Crops	
Berseem	: Trifolium alexandrinum L.
Lucerne/Alfalfa	: Medicago sativa L.
Oat	: Avena sativa L.
Napier grass	: Pennisetum purpureum L.
Clusterbean/Gaur	: Cymopsis tetragonalaba L.
🕁 Sugar Crops	:
Sugarcane/Cane	: Saccharum officinarum L.
Sugarbeet	: Beta vulgaris L.
🗄 Tuber Crops	:
Potato	: Solanum tuberosum L.
Tapioca	: Manihot utilissima
☆ Stimulate Crops	:
Tobacco	: Nicotiana spp.
Opium	: Papaver somniferum
☆ Medicinal Crops	:
Safed musli	: Chlorophytum borivilianum

Ashwagandha/Winter cherry	: Withania somnifera
Rouvolfia/Sarpagandha	: Rouvolfia serpentina
Isabgol	: Plantago ovata
Butch	: Acorus calamus
Bramhi	: Bacopa morriei
Nux vomica	: Strychnos Nuxvomica
🔄 Aromatic Crops	:
Lemon grass	: Cymbopogan flexuasus
Mentha/Mint	: Menthe arvensis
Khus/Vetivar	: Vetiveria zizanoides
Citronella	: Cymbopogan winterianus
Tulsi/Basil	: Ocimum sanctum
🕁 Fruit Crops	:
Kiwi fruits	: Actinidia chinensis
Bael	: Aegle marmelos
Custard apple	: Annona squamosa
Pineapple	: Annanas comosus
Jackfruit	: Autocarpus heterophyllus
(Kair)	: Capparis decidue
Papaya	: Carica papaya
Karonda	: Carissa carandus
Pecanut	: Carya illinoensis
Lime	: Citrus aurantifolium
Kinnow	: Citrus deliciosa
Lemon	: Citrus limon
Orange	: Citrus reticulata
Sweet orange	: Citrus sinensis
Aonla	: Emblica officinalis
Wood apple	: Feronia limonia
Fig	: Ficus carica
Strawberry	: Fragaria sp.
Phalsa	: Grewia subinaequalis
Walnut	: Juglans regia
Litchi	: Litchi chinensis
Apple	: Malus domestica
Mango	: Mangifera indica

Mulberry :	Morus sp.
Banana :	Musa paradisiaca
Date palm :	Phoenix dactylifera
Almond :	Prunus amygdalus
Apricot :	Prunus armeniaca
Pear :	Prunus communis
Plum :	Prunus domestica
Peach :	Prunus persica
Guava :	Psidium guajava
Pomegranate :	Punica granatum
Raspberry :	Rubus idaeus
Jamun :	Syzygium cumini
Tamarind :	Tamarindus indica
Ber :	Zizyphus mauritiana
Grape :	Vitis vinifera
Strange Vegetable Crops	
Onion :	Allium cepa
Garlic :	Allium sativum
Elephant foot yam :	Amorphophyllus campanulatus
Asparagus :	A. officinalis
Beetroot :	Beeta vulgaris
Palak :	B. vulgaris var. bengalensis
Spinach :	Spinacea oleraceae
Sweet Potato :	Ipomea batatas
Cabbage :	Brassica oleracea var. capitata
Cauliflower :	B. o. var. botrytis
Brussel's Broccoli :	B. o. var. gemmifera
Knol-khol :	B. caulorapa
Turnip :	B. rapa
Raddish :	Raphanus sativus
Cucumber :	Cucumis sativus
Musk melon :	Cucumis melo
Snap melon (foot) :	Cucumis melo var. momordica
Long melon (Kakri) :	C. melo var. utillisium
Gherkin :	C. anguria
Water melon :	Citrullus latanus

Round melon	: C. I. var. fistulosus
Pumpkin	: Cucurbita moschata
Bottle gourd	: Lagenaria siceraria
Ridge gourd	: Luffa acutangula
Sponge gourd	: L. cylindrica
Pointed gourd	: Trichosanthus dioca
Snake gourd	: T. anguina
Ash gourd	: Benincasa hispida
Ivy gourd	: Coccinia indica
Spine gourd	: Momordica chinensis
Bitter gourd	: M. charantia
Peas	: Pisum sativum var hartense
French bean	: Phaseolus vulgaris
Cluster bean	: Cymopsis tetragonalabus
Cowpea	: Vigna unguiculata
Fenugreek	: Trigonella foenugraecum
Okra	: Abelmoschus esculantus
Potato	: Solanum tuberosum
Tomato	: S. lycopersicon
Brinjal	: S. melongena
Chilli	: Capsicum annum
Sweet pepper	: C. annum
Carrot	: Daucus carota
Coriander	: Coriandrum sativum
Celery	: Apium graveolens
☆ Flower Crops	:
Rosa	: Rosa indica
Chrysanthemum	: Chrysanthemum spp
Gladiolus	: Gladiolus spp.
Carnation	: Dianthus spp.
Marigold	: Tagetes spp
Tuberose	: Polianthes tuberose
Dahlia	: Dahlia pinnata
Jasmine	: Jasminum spp.
Bougainvillea	: Bougainvillea spp.

FAMOUS NAME OF CROPS

FamousName	Crops
☆ King of cereals	: Wheat
☆ Queen of cereals	: Maize
☆ King of pulses	: Chickpea
☆ Queen of pulses	: Pea
☆ King of oilseeds	: Groundnut
Queen of oilseeds	: Sesame (Til)
Coarsest of all food grains	: Kodo (Paspulum scrobiculatum)
☆ King of fruits	: Mango
☆ Queen of fruits	: Pineapple
King of temperate fruits	: Apple
☆ King of spices	: Black Pepper
✿ Queen of spices	: Cardamom
King of vegetables	: Potato
Queen of vegetables	: Okra
☆ Wonder crop	: Soybean
King of fodder crops	: Berseem
Queen of fodder crops	: Lucerne
Sting of Arid and semi fruits	: Ber
A National fruits of India	: Mango
☆ Wonder tree	: Neem
☆ Bio energy plant	: Jatropha
☆ King of flower crops	: Rose
✿ Queen of flower crops	: Gladiolus
☆ Adams fig	: Banana
Oldest cultivated tropical fruits	: Banana
☆ Tree of heaven	: Coconut
☆ King of nut crops	: Walnut
✿ Queen of nut crops	: Peanut
Solution White gold of America	: Cotton
A Yellow jewel of America	: Soybean
A Backbone of America	: Maize
☆ Sugar bowl	: Cuba

TERMS AND ASSOCIATED CROPS

Terms		Associated Crops
🛧 Curing	:	Tobacco, Tea
🕁 Nipping	:	Gram
🍄 Wrapping	:	Sugarcane
☆ Dapog seedling	:	Rice seedling
🍄 De- suckering	:	Tobacco
🍄 De- tasseling	:	Maize
A Pegging	:	Groundnut
A Retting	:	Jute
🕁 Ginning	:	Cotton
🏠 Topping	:	Cotton
Arrowing	:	Sugarcane
A Ratooning	:	Sugarcane
🛧 Parboiling	:	Rice
🕁 Earthing-up	:	Potato, Sugarcane

Telegram.me/agricoss

SEED RATE AND NATIVITY OF CROPS

(I) Recommended Seed Rate of Field Crops

	Crops		SeedRate (kg/ha)
삵	Rice		
	a) Transplanting	:	50 - 60
	b) Broadcasting	:	80 - 100
4	Wheat	:	100 - 125
4	Maize		
	a) Hybrid	:	20 - 25
	b) Composite	:	15 - 20
4	Sorghum, Moong, Arhar	:	12 - 15
4	Pearlmillet	:	2 - 3
4	Gram	:	60 - 80
삵	Field Pea	:	75 - 100
4	Urd, Cowpea, Sunhemp	:	20 - 25
삵	Lathyrus		
	a) Pure crop	:	40 - 50
	b) Mixed crop	:	8 - 10
4	Lentil, Linseed	:	30 - 40

4	Soybean	:	70 - 80
4	Safflower	:	15
4	Sunflower, Sugarbeet, Jute	:	8 - 10
4	Groundnut		
	a) Bunch type	:	100 - 120
	b) Spreading type	:	80 - 100
ጎ	Til	:	3 - 4
삵	Rapseed and Mustard		
	a) Pure cropping	:	4 - 6
	b) Mixed cropping	:	2 - 3
삵	Castor	:	10
ጎ	Cotton	:	10 - 12
ጎ	Hybrid cotton, Tobacco	:	2.5 - 3
삵	Potato	:	10 - 15 qt
ጎ	Kodo	:	6 - 8
삵	Lucerne	:	20
4	Berseem		
	a) Diploid spp	:	20 - 25
	b) Tetraploid spp	:	30 - 35
ጎ	Fodder maize	:	40 - 60
ጎ	Fodder Bajra	:	20 - 30
ጎ	Oat		
	a) Small seeded	:	80 - 100
	b) Bold seeded	:	100 - 120

(II) Nativity of Field Crops

Crops	Nativity
Rice, Sugarcane :	: South East Asia
🕸 Wheat, Barley, Buckwheat, Gram, Lucerne	: South West Asia
🕁 Soybean, Rapseed and Mustard, Tea	: China
☆ Tobacco	: America
☆ Maize, Teosinate	: Mexico
🕸 Potato, Tomato	: Peru
☆ Linseed	: Afghanistan
☆ Sunflower,	: USA
🕸 Arhar, Mung, Urd, Cotton, Jute, Kodo, Kutki, Oat, Mango	: India

🍄 Sorghum, Bajra, Sunhemp, Sesamum, Cowpea, Castor, Clusterbean	: Africa
🕁 Groundnut	: Brazil
☆ Berseem	: Egypt
☆ Napier grass	: Rhodesia

IMPORTANT VARIETIES OF FIELD CROPS

🕁 Paddy	: Aaditya, Purnima, IR36, 64, 20, MTU1001, 1010, Indira sona, Kranti, Mahamaya, Safri17, Bumleshwari, Pusa basmati-1, Shyamla, etc.
🕁 Wheat	: Lok-1, C306, HW 2004, WH 147, Sujata, GW 173, 273, Kanchan, Raj.
🕁 Maize	: Ganga-1, 3, 5, 101, Ganga safed-2, Ranjit, Himalaya, VL-54, Ganga-4., Navjot, Chandan makka-3, Chandan safed makka-1 etc.
🕁 Kodo	: GPUK-3, ICCK 737, IPS 147-1, JK 1, 155, Pali.
🕁 Kutki	: PRC3, IGL4, 10
🕁 Kulthi	: BK-1, AK-21, JND-2
🕁 Ragi	: VL-147, PR 202, HR-374
🕁 Arhar	: Type-21, Prabhat, UPAS-120, pragati, Asha, Gwalior-3, Bahar, Rajiv Lochan
🕁 Moong	:Pairy moong 2, pragya, Pusa Baisakhi, JM-721, K-851, PDM-1, 3,11
🕁 Urd	: Pant U-30, JU-2, Type-9, Gwalior-2, Sarla, Barkha, Prabha, CO-1
🕁 Gram	:JG-11, 74, 315, Vijay, Vaibhav, Shweta, JGK-1, 2, JGG-1
🕁 Pea	:Rachna, Ambika, Subhra, Aparna, Paras, JP 855, KPMR 144-1, Vikash
🕁 Lathyrus	: Ratan, Pratik, Mahativda.
🕁 Lentil	: K 75, Lens 4076, Nuri, Sheri, JL-3.
🍄 Soybean	:Indira soya-9, JS-2, 335, 93-05, PK 472, Gourav, Ankur, Durga
🕁 Groundnut	t:ICGS 1, 10, 11, 37, 44, SB-11, JL24, Chandra, Junagarh-11, Vikram, Verginia
🕸 Sunflower	: Modern, Jwalamukhi, MSFH-8, 17, KBSH-1, 44
🕸 Safflower	: JSF1, 2, 5, JS I7, JSH 129, Annagiri,
🕁 Mustard	:Pusa kalyani, Sufla, Kranti, Varuna, Krishna, Pusa bold, Vardan, Rohni
⇔ Til	: Selection-5, Krishna, JT-21, TC-25
🖈 Ramtil	: IGP-76, GP 10, JNS-1, 6
🕁 Castor	: Kranti, Jwala, Jyoti, JCH-4, DCH-32
🍄 Linseed	: RLC 92 (Indravati), Deepika, Kiran, Indira Alsi-32 (RLC-81), Jwahar 552
🕁 Cotton	: Anjali, Khandwa-2, Jwahar tapti, JKH-2, Pratima.
🕁 Sugarcane	e : CO 671, COJ 64, 8338, 86-141, CO 86032, 62175

MUTANT VARIETIES OF CROPS

A Rice : Jaganna th, Prabha va ti

☆ Chickpea : BGM-48, BGM-413,

🔂 Pea	: Hans
🕁 Arhar	: Trombay, Vishakha-1
🖈 Wheat	: Sarbati sanora
A Cotton	: MCU-7, MCU-10
🖈 Tobacco	: Jayshri, Bhavya
🖈 Moong	: Dhulli, Pant mung 2, MUM 2
🕁 Urd	: CO1, Sarla
🕁 Mango	: Rosica

IMPORTANT WEED FLORA OF CROPS

SI.No.	Botanical Name	Family	English Name	Common Name
1.	Achyranthes aspera	Amaranthceae	Prickly chafflower	चिरचिटा / लटजीरा
2.	Ageratum conyzoides	Compositae	Bill goat weed	महकुआ∕फुलनी
3.	Amaranthus spinosus	Amaranthceae	Spiny amaranthus	कांटेदार चौलाई
4.	Amaranthus viridis	Amaranthceae	Slender amaranthus	जंगली चौलाई
5.	Agremone maxicana	Papaveraceae	Mexican prickly poppy	सत्यानासी
6.	Avena fatua	Gramineae	Wild oat	जंगली जई
7.	Boerhavia diffusa	Nyctaginaceae	Spreading hog weed	विषखपरा
8.	Brassica sinensis	Cruciferae	Wild mustard	जंगली सरसों
9.	Calotropis gigantean	Ascletiabaceae	Giant swallow wort	आंक / मदार
10.	Carthamus oxyacanthe	Compositae	Wild safflower	जंगली कुसुम
11.	Cassia tora	Leguminosae	Buffalo gram	चरोटा / चकौड़ा
12.	Celosia argentea	Amaranthceae	White cock's comb	सिलयारी
13.	Chenopodium album	Chenopodiaceae	Lambsquate/Dog tooth grass	बथुआ
14.	Cichorium intybus	Compositae	Chicory/Blue daisy	कासनी
15.	Convolvulus arvensis	Convolvulaceae	Bind weed	हिरणखुरी
16.	Corchorus acutangulus	Tilliaceae	Wild jute	चेज
17.	Cuscuta sp.	Convolvulaceae	Dodder	अमरबेल
18.	Cynodon dactylon	Gramineae	Bermuda grass	दुब घास
19.	Cyperyus rotundus	Cyperaceae	Purple nutsedge	मोथा
20.	Cyperus iria	Cyperaceae	Yellow nutsedge/Rice flat sedge	मोथा
21.	Cyperyus difformis	Cyperaceae	Umbrella sedge	मोथा
22.	Datura alba	Solanceae	Thorne apple	कांटेदार धतुरा
23.	Datura stramonium	Solanceae	Jimson weed	धतुरा
24.	Dicanthum annulatum	Gramineae	Marvel grass	कांदी
25.	Digitaria sanguinalis	Gramineae	Crab grass	घुङ—दुब

26.	Echinochloa colonum	Gramineae	Jungle rice	सांवा
27.	Echinochloa crusgalli	Gramineae Barnyard grass		सांवा ;मुंछवालाद्ध
28.	Eclipta alba	Compositea	False daisy	भृंगराज / भंगडा
29.	Eichhonia crassipes	Pontederiaceae	Water hyacinth	जलकुंभी
30.	Eleusine indica	Gramineae	Goose grass	जंगली रागी
31.	Euphorbia geniculata	Compositae	Garden spurge	बडी दुधी
32.	Euphorbia hirta	Compositae	Pill pod spurge	छोटी दुधी
33.	lpomea repens	Convolvulaceae	Swamp morning glory	जलकर्मी
34.	lschoemum rugosum	Gramineae	Wrinkle grass	टोरा–टोरी
35.	Lantana camara	Verbenaceae	Prickly lantana	जरायन
36.	Lathyrus sativus	Leguminoceae	Lathyrus	खेसारी
37.	Melilotus alba	Leguminoceae	White sweet clover	सफेद सेंजी
38.	Melilotus indica	Leguminoceae	Yellow sweet clover	पीली सेंजी
39.	Mimosa pudica	Leguminoceae	Touch me not	लाजवंती
40.	Mimosa spinosa	Leguminoceae	Touch me not	लाजवंती ;कांटेदारद्ध
41.	Ocimum camum	Labiatae	Haory basin	बनतुलसी
42.	Opuntia dilenaii	Cacaceae	Prickly pear	नागफनी
43.	Oryza sativa var fatua	Gramineae	Wild rice	जंगली धान
44.	Orobanche sp.	Orobanchaceae	Broom rape	बिल्ली
45.	Oxalis ocetorella	Oxalidaceae	Sorrel	खट्टी–बुटी
46.	Oxalis corniculata	Oxalidaceae	Indian sorel	खट्टी–बुटी
47.	Parthenium hysterophorus	Compositae	Congress grass/Wild carrot grass	गाजर घास
48.	Paspalum sanguinale	Gramineae	Knot grass	-
49.	Phalaris minor	Gramineae	Canary grass	गेहूं का मामा
50.	Portulaca oleracea	Portulaceae	Purslane	जंगली पालक
51.	Portulaca quodrifolia	Portulaceae	Purslane	नुनिया
52.	Phyllanthus nururi	Euphorbiaceae	Corn spurry/Niruri	हजारदाना
53.	Physalis minima	Solanaceae	Ground cherry/Hog weed	चिरपोटी
54.	Saccharum spontaneum	Gramineae	Tiger grass	का स
55.	Sataria glauca	Gramineae	Green fox tail	बंदरा–बंदरी
56.	Sida rhombifolia	Malvaceae	Sida	बरयारा ;पीलीद्ध
57.	Sida spinosa	Malvaceae	Sida	बरयारा ;डराद्ध
58.	Solanum nigrum	Solanaceae	Black night shade	म को ई
59.	Solanum xanthocarpum	Solanaceae	Prickly brinjal	भटकटैया
60.	Sorghum halepanse	Gramineae	Johnson grass	ৰ হৃ
61.	Spilanthus comelia	Compositae	Wild mint	जंगली अकरकरा

62.	Striga lutea	Scrophulariaceae	Witch weed	अगिया
63.	Trianthema monegyna	_	Carpet weed	पथरचटा
64.	Tridex procumbens	Compositae	Mexican daisy	बारडमासी
65.	Typha sp.	Typhaceae	Cattail	टायफा
66.	Vicia hirsute	Leguminoceae	Common vetches	मुनमुना
67.	Vicia sativa	Leguminoceae	Vetches	टकरा अकरी
68.	Xanthium strumerium	Compositae	Cocklebur/Bur-weed	बडी गोखरु
69.	Zizyphus rotundifolis	Rhamnaceae	Wild ber	झरबेरी

IMPORTANT FOREST TREES

SI.No.	Botanical Name	Common Name	Toxicant Present
1.	Acacia catechu	खैर	Tannin
2.	Acacia leucophloea	सफेद बबूल	Tannin
3.	Acacia nilotica	बबूल	Tannin
4.	Aegle marmelos	बे ल	Tannin
5.	Albizia lebbeck	काला सिरस	Tannin
6.	Albizia procera	सफेद सिरस	Tannin
7.	Anthocephalus indicus	क द म	_
8.	Azadirachta indica	नीम	Azadirachtin, Nimbin
9.	Bambusa arundinacea	बांस	HCN
10.	Bauhinia variegata	कचनार	Tannin
11.	Butea monosperma	पलास	_
12.	Cassia fistula	अमलतास	_
13.	Delbergia sissoo	शीशम	Tannin
14.	Delonix regia	गुलमोहर	_
15.	Emblica officinalis	आंवला	_
16.	Eucalyptus tereticornis	नीलगीरी	_
17.	Ficus banghalensis	बरगद	Tannin
18.	Ficus religiosa	पीपल	Tannin
19.	Leucaena leucocephala	सूबबूल	Mimosine
20.	Madhuca latifolia	महुआ	Saponin
21.	Mangifera indica	आम	Amylase inhibitors
22.	Morus alba	मलबेरी	Tannin
23.	Musa paradisiaca	केला, बनाना	Amylase inhibitors, Seratonin
24.	Polyalthia longifolia	आोक	_
25.	Pongamia pinnata	कर ज	Karanjin, Pongamol

26.	Populus deltoides	पोपुलर	—
27.	Psidium guajava	अमरूद	_
28.	Pterocarpus marsupium	बीजा	—
29.	Shorea robusta	साल	—
30.	Syzygium cuminii	जामुन	Tannin
31.	Tamarandus indica	इमली	—
32.	Tectona grandis	सागोन ;Teakद्ध	—
33.	Terminalia arjuna	अर्जुन	—
34.	Terminalia belirica	ब हे ड ा	—
35.	Terminalia chaibula	डर्रा	_

IMPORTANT MEDICINAL AND AROMATIC CROPS

SI.No	Botanical Name	Common Name	Plant Part Used	Chemical Found
Medic	cinal crops			
1	Chlorophytum borivilianum	Safed Musli	Root	Saponins
2.	Withania somnifera	Ashwagandha	Leaves & Root	Alkaloids
3.	Rauvolfia serpentina	Sarpagandha	Root (Dried)	Serpentine (alklo.)
4.	Plantago ovata	Isabgol	Husk of the seed	Glycoside
5.	Acorus calamus	Buch	Rhizome (Dried)	_
6.	Bacopa morrieri	Bramhi	Whole plant	Hydrolytin (alklo.)
7.	Papaver somniferum	Opium poppy	Latex & Seeds	Alkaloids
8.	Strychnos nuxvomica	Nux vomica	Seeds	Strychnine (alklo.)
Arom	atic crops			
9.	Cymbopogan flexuosus	Lemon grass	Fresh grasses	Citral a & b
10.	Mentha arvensis	Pudina or Mint	Herbage	Menthol
11.	Hibiscus sabadriffa	Roselle	Fresh Calyces	Fatty oils
12.	Vetiveria zizanoides	Khus/Vetiver	Root	Khusol, Vetiverone
13.	Cymbopogan winterianus	Citronella	Fresh herbage	Citronellol, Geraniol
14.	Ferula foetida	Asafoetida/Hing	Gum resin	Organic sulpher
15.	Ocimum sanctum	Tulsi/Basil	Leaves	Eugenol
16.	Cymbopogon martini	Palmarosa	Floral shoots	Geraniol

TEST WEIGHT OF CROPS

Crop	Test Weight	Crop	Test Weight
🔄 Rice	:25	Linseed, Safflower	:10
🖈 Basmati rice	:21	Lucerne	:2-4

😘 Wheat, Barley, Oat	: :30-40	Sunflower	:40-50
		Soybean	:55
🕁 Cotton, Arhar	:70-72	Moong	:34-36
🕁 Pea	:100	Cowpea	:80
🕁 Mustard	:3-5	Bajra	:5-7
🕁 Sorghum	:25-30	French bean	:38-44/1000 seeds
☆ Tobacco :2.5-3/10000 seeds			

Test weight: weight of 1000 seeds of a crop

Seed Index: weight of 100 seeds of a crop (used for bold seeded)

FRUIT TYPES AND EDIBLE PARTS OF DIFFERENT CROPS

Crops/Fruits	Fruit Types	Edible Parts
All cereals crops and grasses	Caryopsis	Endosperm and Embryo
☆ Most of leguminous crops <i>i.e.</i> gram, Pea, Arhar	Legume/Pod	Seed/Cotyledons
☆ Groundnut	Lomentum	Seed/Cotyledons
☆ Mango	Drupe	Mesocarp
🕁 Ber, Plum, Datpalm	Drupe	Apicarp and Mesocarp
🕁 Tomato, Grape, Brinjal, Banana, Chilli	Berry	Pericarp and Placenta
🕆 Papaya	Berry	Mesocarp
☆ Citrus spp.	Hesperidium	Endocarpic juicy hairs
A Pomegranate	Blusta	Aril
🕁 Apple, Pear	Pome	Mansal thalamus
☆ Bael	Amphisarca	Succulent Placenta
☆ Cucurbits	Pipo	Apicarp and Mesocarp
☆ Coconut	Nut	Endosperm
🕁 Jackfruit, Pineapple	Sorosis	Bracts/Perianth

ANTITRANSPIRENTS

1.	Stomatal closure type	: 2,4-D, Atrazine, PMA, Phosphon D, Potassium metabisulphate
2.	Film farming type	: Hexadeconol, Cetyl alcohol, Paclobutrazole Mobileaf, Waxol, S-800, Hico-110R, Folicot, Silicon
3.	Reflectant type	: Kaoline (5 per cent), China clay, Ca. bicarbonate, Lime water
4.	Growth retardant type	: Cycocel (CCC), Phosphor

IMPORTANT METEOROLOGICAL INSTRUMENTS AND THEIR USES

Instruments		Uses/Measures
Altimeter	:	Height
Aneroid barometer	:	Atmospheric pressure
Anemometer	:	Wind speed/velocity
Auxanometer	:	Growth of plant
🕁 Barograph	:	Continuous atmospheric pressure
🕁 Crescograph	:	Growth of plant
Sambel stokes recorder	:	Sunshine duration
☆ Drosometer	:	Dew
Star Hygrometer/Psychrometer	:	Relative humidity (RH)
Se Evaporometer	:	Evapotranspiration
☆ Irrometer	:	Water stress, soil moisture tension
☆ Infiltrometer	:	Infiltration
☆ Lactometer	:	Fats % in milk
🏤 Lysimeter	:	Evapotranspiration
Star Pyrheliometer	:	Direct solar radiation elegram me/agricoss
☆ PAR	:	Quantum sensor
A Psychrometer	:	Leaf water potential/RH
☆ Porometer	:	Transpiration rate (ET)
A Pyranometer	:	Total incoming solar radiation
☆ Peizometer	:	Depth of water table
🖈 Rain gauge	:	Amount of rainfall
A Tensiometer	:	Soil moisture tension (0.8 bar)
🔂 Wind vane	:	Wind direction
Stransiometer	:	Soil moisture tension (0.8 bar)
🍄 Wind vane	:	Wind direction

CLASSIFICATION OF SOIL PARTICLES Based on size (mm)

Classification		IISS	USDA
Stone	:	> 250	> 250
Cobble	:	75–250	75–250
Gravel	:	2–75	2–75

Very course sand :		—	1.0-2.0
Course sand	:	2-0.2	0.5-1.0
Fine sand	:	0.2-0.02	0.1-0.25
Very Fine sand	:	_	0.05-0.1
Silt	:	0.02-0.002	0.002-0.05
Clay	:	< 0.002	< 0.002

NUTRIENT CONTENTS OF COMMON FERTILIZERS

SI.No.	Fertilizers		Nutrient Content (%			%)
			Ν	P ₂ O ₅	K ₂ O	S
Nitrog	jenous Fertilizers					
(A)	Nitrate form					
1.	Sodium nitrate	:	16.0	-	-	-
2.	Calcium nitrate	:	15.5	-	-	-
(B)	Ammomcal form					
1.	Ammonium phosphate	:	16.0	20.0	-	-
2.	Ammonium chloride	:	24-26	-	-	-
3.	Ammonium sulphate	:	20.6	-	-	24
4.	Anhydrous ammonia	:	81.0	-	-	-
(C)	Ammonical Nitrate fo	r	m			
1.	Ammonium nitrate	:	33-34	-	-	-
2.	CAN	:	26.0	-	-	-
3.	Amm. sulphate nitrate	:	26.0	-	-	15
(D)	Ammide form					
1.	Urea	:	46.0	-	-	-
2.	Calcium cyanide	:	21.0	-	-	-
Phosphatic Fertilizers						
(A)	Water soluble					
1.	SSP (single)	:	-	16-18	-	-
2.	DSP (double)	:	-	32.0	-	-
3.	TSP (triple)	:	-	46-48	-	-
4.	DAP	:	18	46	-	-
(B)	Citric acid soluble					
1.	Di calcium phosphate	:	-	34-39	-	-
2.	Basic slag	:	-	14-18	-	-
	Bone meal	:	-	23-30	-	-

З.

(C) Insoluble

1.	Rock phosphate	: -	20-40	-	-
2.	Rock bone meal	: -	20-25	-	-
3.	Steamed bone meal	: -	22.0	-	-
Phosphatic Fertilizers					
1.	Murate of potash/KCI	: -	-	60.0	- (
2.	Sulphate of potash	: -	-	48.0	- (
3.	Potassium nitrate	: -	-	44.0) -

CHEMICAL PROPERTIES OF SALINE, SODIC and ALKALINE SOILS

Types of Soil		EC (dSm) at 25°C	ESP (%)	pН
Saline soil	:	> 4	< 15	< 8.5
Saline alkaline soil/Sodic	:	> 4	> 15	< 8.5
Alkaline soil	:	< 4	> 15	8.5 - 10.0

FUNCTIONS OF PGRs

1.	Auxins	:	Cell division and root formation.
2.	Gibberellin	:	Cell division, breaking dormancy and cell elongation.
3.	Cytokinin	:	Delay senescence, breaking dormancy of seed and development of embryos in seed.
4.	Abscisic acid	:	Abscission of leaf and fruit, induce dormancy & maintain cell turgidity, facilitate stomata closure.
5.	Ethylene	:	Fruit ripening, iso-diametric growth of stems and roots.

DISEASES OR SYMPTOMS CAUSED DUE TO DEFICIENCY OF NUTRIENTS IN PLANTS

Deficiency of Nutrient	CausesDiseases/Symptoms			
Ν	- Buttoning in cauliflower			
Р	- Sickle leaf disease.			
K	 Scorching and burning of leaves. 			
Ca	 Blossom end rot in tomato and Ber, Tip hooking/burning in Cauliflower. 			
Mg	 Sand drawn disease of Tobacco. 			
S	- Tea yellow disease.			
Fe	 White eye of Paddy, Leaf bleaching in Sugarcane 			
Mn	 Water core in Brassica, Marsh disease in Pea, Spotted yellow disease in Sugarbeet. 			
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Cu	 Dieback and little leaf in Citrus, Reclaimation disease in cereals. 			
Мо	 Yellow spot disorder in Citrus, Whiptail disease in Cauliflower. 			
Zn	- Little leaf in Brinjal and Mango, Bronzing in Guava, White bud in Maize, Khaira disease in Paddy.			
Во	 Internal necrosis in Aonla and Mango, Browning in Cauliflower, Heat rot in Sugarbeet, Hen and Chicken disorder in Grape. 			

REVOLUTION IN AGRICULTURE

Revolution	Related to
Green revolution	: Food grain production
A White revolution	: Milk production
A Yellow revolution	: Oilseeds production
Sray revolution	: Manures and Fertilizers
A Blue revolution	: Fish production
A Red revolution	: Meat/Tomato production
A Round revolution	: Potato production
Silver revolution	: Egg production/Poultry
A Pink revolution	: Prawn production
Solden revolution	: Fruit production (apple)
Srown revolution	: Non-conventional energy source
Sack revolution	: Bio fuel (Jatropha) production
A Rainbow revolution	: Agriculture (1996)
Second chain revolution	: Food grain production
A Evergreen revolution	: Reduction in wastage of food grains, fruits and vegetables
🛧 Parbhani revolution	: Okra

IMPORTANT AGRICULTURAL DAYS

Feb., 2 : National Wetland day	🕸 Mar., 11 : Water Resources day
☆ Mar., 21 : World Forest day	🕸 Mar., 22 : World Water day
🕁 Apr., 22 : World Earth day	🍄 May, 1 : International Labour day
🖈 Jun., 5 : World Environment day	🕸 Jul., 1 : National Agricultural day
🕁 Jul., 1-7th : Van Mahotsava	☆ Jul., 16 : ICAR day
🕸 Sept., 16 : World Ozone day	A Oct. 4 : World Animal Welfare day
🕸 Oct., 16 : World Food day	🍄 Dec., 4 : Agriculture Women day
☆ Dec., 23 : National Farmer's day	

SI.No.	Crops	Final Estir	2nd Advance	
		Production (Mt.) 2008-09 P	roduction (Mt.) 2009-10	Estimates of Production (Mt.) 2010-11
1.	Rice	99.02	89.13	94.01
2.	Wheat	80.70	80.80	81.47
3.	Maize	19.70	16.70	-
4.	Sorghum	7.2	7.0	-
5.	Bajra	8.9	6.5	-
6.	Course cereals	39.48	33.77	40.08
7.	Arhar	2.3	2.6	-
8.	Gram	7.1	7.3	-
9.	Total pulses	14.60	14.66	16.51
10.	Total foodgrains	234.40	218.20	232.07
11.	Groundnut	7.2	5.5	-
12.	Rapseed & Mustard	7.2	6.4	-
13.	9 oilseeds (Total)	27.70	24.93	27.85
14.	Cotton	22.30	24.22	33.93
15.	Sugarcane	295.00	292.30	336.70
16.	Jute & Mesta	10.30	11.82	10.08

PRODUCTION OF FIELD CROPS IN INDIA (2010-11)

AREA, PRODUCTION & PRODUCTIVITY OF HORTICULTURAL CROPS IN INDIA

SI.No.	Crops	2009-10 Final			
		Area (000Mha)	Production (000 Mt.)	Productivity (Mt/ha)	
Fruits					
1.	Mango	2312	15027	6.5	
2.	Banana	770	26470	34.4	
3.	Citrus	987	9638	9.8	
4.	Guava	220	2572	11.4	
5.	Grapes	106	881	8.3	
6.	Litchi	74	483	6.5	
7.	Papaya	96	3913	40.9	
8.	Pineapple	92	1387	15.1	
9.	Pomegranate	125	820	6.6	

10.	Sapota	159	1347	8.5
11.	Apple	283	1777	6.3
12.	Others	1105	7201	6.5
	Total	6329	71516	11.3
Vegetables				
1.	Potato	1835	36577	19.9
2.	Onion	756	12159	19.6
3.	Tomato	634	12433	16.6
4.	Brinjal	612	10563	17.2
5.	Cabbage	331	7281	22.0
6.	Cauliflower	348	6569	18.9
7.	Okra	452	4803	10.6
8.	Peas	365	3029	8.3
9.	Sweet Potato	119	1095	9.2
10.	Others	2300	31168	13.6
	Total	7985	133738	16.7
Aromatic:		509	573	1.1
Almond/Walnut:		142	193	1.4
Flowers Loose:		183	1021	-
Plant	ation Crops:	3265	11928	3.7
Spices:		2464	4016	1.6

% GROWTH OF HORTICULTURAL CROPS

SI.No.	Crops	09-10 over 08-09	
		Area	Production
1.	Horticulture	1.0	3.9
2.	Fruit	3.7	4.5
3.	Vegetable	0.1	3.6

Availability of Agriculture Products/Capita/Day

SI.No.	Particular	Requirement
1.	Cereals	407 g
2.	Pulses	37 g
3.	Fruits	120 g
4.	Vegetables	240 g

5. N	Milk	263 g
6. E	Egg	45 (no.)

Chapter 16

Recent Research/Technologies in Agriculture

NANOTECHNOLOGY

- The term 'Nanotechnology' was The term 'Nanotechnology' was coined by **Nario Taniguchi** in 1974 at Univ. of Tokyo.
- Nanotechnology is understanding and control of matter of dimension of 1-100 nm.
- Example of Nano based Smart Delivery System Halloysite
- Nano Pesticide Nano Particles (NPs) of ZnO, SiO_2 and TiO_2 used for Bacterial and Green algae.

BIO-INFORMATICS

- **Bio-informatics** is the application of computer science and information technology to the field of biology to the management of biological information.
- Computers are used to gather, store, analyze and integrate biological and genetic information which can then be applied to gene-based drug discovery and development.
- The primary goal of bioinformatics is to increase the understanding of biological processes and developing and applying computationally intensive techniques (*e.g.*, pattern recognition, data mining, machine learning algorithms, and visualization) to achieve this goal.

TRANSGENIC PLANTS/CROPS (GMO)

- **Transgenic plants** are crops which have been genetically modified with genes from another organism to make the plants more agriculturally productive.
- Transgenic plants are only those with genes from other species, whereas genetically modified plants can have both new genes and a re-arrangement of the genes already found in the plant.
- Transgenic plants have been developed for a variety of reasons: longer shelf life, disease resistance, herbicide resistance, pest resistance, and improved product quality.
- The First transgenic plant Flavr SavrTM tomato for *delayed ripening* was released for commercial cultivation in 1994 by Calgene (Company).

• Crop having highest transgenic plant cultivation area – **Soybean** > Corn > Cotton

TERMINATOR TECHNOLOGY

- Terminator technology refers to research of seeds/plants that produce sterile seeds.
- This technology could be used to prevent any gene flow between biotechnology and traditional crops.
- Recently, it is used in Cotton.

HYDROPONICS

- Hydroponics is a method of growing plants using mineral nutrient solutions, in water, without soil.
- Terrestrial plants may be grown with their roots in the mineral nutrient solution only or in an inert medium, such as gravel, mineral wool or coconut husk.
- Hydroponics is a *subset of soil less culture*.

AEROPONICS

- Aeroponics is a system wherein roots are continuously or discontinuously kept in an environment saturated with fine drops (a mist or aerosol) of nutrient solution.
- The method requires no substrate and entails growing plants with their roots suspended in a deep air or growth chamber with the roots periodically wetted with a fine mist of atomized nutrients.
- Excellent aeration is the main advantage of aeroponics.

VERTICAL FARMING

• Vertical farming is a concept that argues that it is economically and environmentally viable to cultivate plant or animal life within skyscrapers, or on vertically inclined surfaces.

SYSTEM OF RICE INTENSIFICATION (SRI)

- The System of Rice Intensification is an alternative system for growing rice that produces substantially higher yields with **fewer plants** (planting far fewer seedlings per hill and per square meter) and with **fewer inputs** than either traditional methods, *ie.*, using less water, or more "modern" methods, requiring chemical fertilizer or agrochemicals.
- SRI is a combination of few practices that include changes in nursery management, seedling age while planting, planting method, spacing, water and nutrients management.
- The major components of SRI method are:

DI / C II / O 10 1 II

- Planting of young seedlings (8-12 days old).
- Planting single seedlings/hill along with soil carefully.
- Wider spacing of 25cm×25cm.
- Weeding with conoweeder to provide aeration and incorporation of biomass.
- Applying mostly organic manures.
- Water just at saturation point but no flooding.

AEROBIC RICE

• The main objectives are to improve the productivity and sustainability of rice-wheat cropping systems through increased efficiency of water and nutrient use.

The aerobic rice practice includes:

- Dry sowing of rice with minimum land preparation *i.e.* in non-puddled and non-flooded soil.
- Efficient seed coating technology either with suitable Phosphobacterium and or Rhizobium cultures.
- Square sowing with wider spacing to avoid root competition for crop growth.
- Maintenance of moist soil but aerated soil during vegetative growth period.
- Efficient weed management either by use of herbicide or by use of frequent hand weeding especially in the early stages of crop.
- Allowing a thin film of water (1-2 cm) to be maintained after panicle initiation.

SUPER RICE

- Super rice" is also k/s New Plant Type (NPT).
- *"Super rice"* is a redesigned rice plant to break the yield –barriers of popular grown dwarf rice plant types and to face the new challenges of ever increasing population. In the 21st century. (acc. to Dr. G.S.KHUS)
- *Super* rice is a N.P.T. developed by IRRI that can produce yield of 12-15 tones/ha has 2-3 times greater no. of grains/panicle and thicker and sturdy stem.

The key aim of development of Super rice varieties is to increase per capita availability of rice and to a decline in real price of rice in International and Domestic markets.

SCUBA RICE

• Flooding affects 15–20 million hectares of lowland rice fields in Asia each year, it is a major contributor to the food insecurity and widespread poverty in these areas.

- IRRI scientists incorporated the *SUB1 gene* into popular local rice varieties collectively known as "scuba rice.
- Scuba rice varieties, which can survive up to 2 weeks of being under water, are now used by millions of farmers and serve as their first line of defence against flooding.

GOLDEN RICE

- Golden rice or GM rice is genetically engineered vitamin A rich rice.
- It was engineered to save million of children from blindness.

SUPER WHEAT

• 'Super varieties' of wheat resistant to the deadly stem rust fungus Ug99 and with up to 15 per cent better yields than today's varieties.

KISHAN KHAD

- It is also known as CAN (Calcium Ammonium Nitrate)
- Kishan khad is commercially prepared from ammonium nitrate and ground limestone or dolomite containing 20% nitrogen.
- It contains 26% nitrogen.
- One half of the nitrogen is in nitrate form and the remaining half in the ammonical form.
- It is almost neutral in nature.

Bt COTTON

- Cotton with Bt gene (Bacillus thuringiensis) is resistance against the pest, Helicoverpa.
- It is developed by U.S. based seed company 'Monsanto' and registered the name 'Bollgard'.
- Bt variety obtained 25-27% more cotton along with reduced the cost of pesticides and protect environment from pesticidal hazards.

KISAN CALL CENTRE

• Kisan Call Centre (KCC), started since 21st Jan 2004 (toll free No. 1551).

KISAN CREDIT CARD SCHEME (KCC)

- Kisan Credit Card Scheme was introduced in August 1998.
- KCC aims at providing adequate and timely support from the banking system to the farmers for their short-term credit needs for cultivation of crops.

- This mainly helps farmer for purchase of inputs etc., during the cropping season.
- Credit card scheme proposed to introduce flexibility to the system and improve cost efficiency.

NATIONAL AGRICULTURAL INSURANCE SCHEME

- National Agricultural Insurance Scheme was introduced in 1999-2000.
- Crop insurance is purchased by agricultural producers, including farmers, ranchers, and others to protect themselves against either the loss of their crops due to natural disasters, such as hail, drought, and floods, or the loss of revenue due to declines in the prices of agricultural commodities.
- The two general categories of crop insurance are called crop-yield insurance and crop-revenue insurance.

PRECISION FARMING

- Precision farming means high tech agriculture, spatial variability management.
- It is the technique or method to find out the use of appropriate inputs, appropriate technology, decreasing cost of cultivation decisions, optimizing outputs for safety and security of food according to site or soil condition.

CONTRACT FARMING

- Contract farming is a system for the production and supply of agricultural products under forward contracts between cultivators and buyers.
- Here, the cultivator commits to provide an agricultural product of a specific type at a specific time and at a specified price that is required by the committed buyers.
- The main feature is that the contractor supplies all the material inputs and technical advice required for cultivation to the cultivator. In turn, the cultivator supplies the required land and labour.

LEISA

- LEISA stands for Low-External-Input Sustainable Agriculture.
- LEISA is an agricultural technique which makes optimal use of locally available natural and human resources (such as soil, water, vegetation, local plants and animals, and human labour, knowledge and skill) and which is economically feasible, ecologically sound, culturally adapted and socially just.

GLOBAL WARMING

- "Global warming is the extraordinary increase of Earth's surface temperature due to the increase of greenhouse gases concentration on the atmosphere."
- Greenhouse gases (carbon dioxide, methane, nitrous oxide, and CFC) are the heat-trapping gases in the atmosphere.
- They trap the heat that came from the solar energy (sun radiation) which results continually warming of the earth.

OZONE DEPLETION

- Ozone layer is a protective layer in our atmosphere.
- It's about 19 to 30 km in distance from the Earth surface.
- It blocks the harmful ultraviolet (UV) rays that come from the sun.
- The concentration of the layer is usually under 10 parts ozone per million.
- Ozone layer concentration is measured by Ozonometer.
- The ozone layer is made up by the action of sunlight to oxygen, and the amount is stabled by the existence of nitrogen.
- If there was no ozone layer ever, cancer would dominate and even no life would be in this world.

ARTIFICIAL RAIN

• The clouds are injected with a seeding agent like dry ice, sodium chloride and silver iodide from an aircraft or using a ground generator for producing artificial rain.

ACID RAIN

- Acid rain $(CO_2 + Rain drops)$ basically have Carbonic acid with pH of less than 5.6.
- This is caused by the presence of air pollutants, like sulphur dioxide and nitrogen oxides. They produce acids if combined with water.

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