

Ministry of Higher Education
 Salahaddin University
 College of Agricultural Engineering Sciences
 Field Crops and Medicinal Plants Department



Principles of Field Crops
Second Grade
Fall Semester (2022-2023)
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Lecture 8

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Cultural practices after sowing or post-sowing practices



1. Replanting

It is defined as a re-planting of failing of seed to germinate under environmental conditions with the same cultivar seeds, and is performed when the proportion of failures is 30%, and if this proportion is higher than that, the field is replanted again.

The emergence of seedlings above the soil surface depends upon the weather conditions; it may take 2-3 weeks in cold weather, 7-9 days in hot weather.

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- The replanting of seedbeds should not be delayed so that the growth of plants over whole field be homogeneous.
- The replanting is conducted 2-3 weeks after planting.
- This failure could be due to one of these reasons, climatically factors, such as frost, excess or inadequate of water during sowing, old seeds, infection by insects and fungi, or deep sowing

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2. Thinning

This operation means to remove excess seedlings appeared in the field in order to maintain the proper crop density and to minimize the competition between plants on the essential requirements of water, mineral and sunlight, also to keep plants at uniform distance. This can be done by hand.

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Some important notes should keep in consideration during thinning operation

1. It should be done as early as possible at least one time.
2. It must leave the stronger seedlings in the hill or core
3. The weak and infected seedlings must be removed
4. The seedlings must be pulled with their roots without injuring the remaining
5. Thinning should be done before cultivation for better seedling

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3. Fertilization:

Fertilizers are applied to the soil to promote greater plant growth or better crop quality. About 25 or 30 chemicals elements are found in the plants. Carbon, oxygen and hydrogen are most abundant.

The essential elements most frequently deficient in soils are nitrogen, phosphorus, and potassium, calcium, magnesium and sulfur, also essential, are absorbed by crops in considerable quantities.

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- The minor elements or micronutrients, manganese, iron, boron, chlorine, copper, zinc and molybdenum are essential to plants but only in small quantities.
- Silicon is an important constituent of rice hulls and other plant parts, but is abundant in the soil.
- Sodium is required by sugar beets, while chlorine is needed to produce a suitable burning quality in flue-cured tobacco.

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Diagnosis of mineral deficiencies:

- Plant stunted, leaves pale green: nitrogen
- Plant stunted, leaves dark green, or tinted with purple: phosphorus
- Plant stunted, leaves bluish or dark green, margin and areas between veins scorched or brown: potassium

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- Nitrogen is very important for a good healthy growth, but excessive quantities of nitrogen however, can under some conditions, prolonged the growing period and delay maturity.
- When plants are deficient in nitrogen they become stunted and **yellow** in appearance.
- This yellowing usually appears first on the lower leaves, the upper leaves remain green, in cases of severe nitrogen shortage the leaves will turn brown and die.

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- Phosphorus, a good supply of phosphorus helps in good root growing, greater straw strength, fruiting and seed development and may also hasten plant maturity and increase disease resistance. Phosphorus deficiency retards overall growth.
- The uptake of phosphorus is more in the early stages of crop growth and hence, it should be applied in the soil before sowing.

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- Potassium also plays an important role in **flowering** and seed development.
- An adequate supply of potassium improves the photosynthesis efficiency of plants, the synthesis of proteins and rate of fat metabolism in oil crops.

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Methods of fertilizers application

1. Broadcasting
2. Band placement
3. Top or side dressing
4. Foliar application

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4. Irrigation:

Irrigation is a method by which water provided for plant growth when the natural rain fall is inadequate, it also aids in the control of soil and air temperature and to leach the soil of excess soluble salts.

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There are many different factors to determine whether or not irrigation is feasible under a given condition

- The characteristics of the soil
- The topography
- Field size and shapes
- Pump and power requirement
- Acres possible to be irrigated
- Crops to be grown
- Annual cost

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Water may be applied to crops either by:

- Surface irrigation
- Sprinkler irrigation



The surface irrigation means water is applied on land that has sufficient slope to permit flow over the surface by gravity.

Row crops usually are irrigated by the furrow method.

The sprinkler irrigation has two types; **rotary sprinklers and perforated pipes.**

The rotary system is the type **most used** and adapted to most crops.

