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**Department of Field Crops**

**College of Agriculture**

**University of Salahaddin**

**Subject: Oil and Sugar Craps**

**Course Book – (Year 4)**

**Lecturer's name Rabar Fatah Salih, PhD**

**Kazhal Kamal Muhammad, MSc.**

**Academic Year: 2019/2020**

**Course Book**

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| **1. Course name** | **Second Course** | |
| **2. Lecturer in charge** | **Rabar Fatah Salih, PhD & Kazhal Kamal Muhammad. MSc.** | |
| **3. Department/ College** |  | |
| **4. Contact** | **e-mail: rabar.salih@su.edu.krd**  **Tel: (optional) +964 782 4670202**  [**kazhal.muhammad@su.edu.krd**](mailto:kazhal.muhammad@su.edu.krd)  **+964 0750 4934459** | |
| **5. Time (in hours) per week** | **Theory: 2 in Study hall 13**  **Practical: 6 in Lab 3** | |
| **6. Office hours** | **10 Theory, 8 Practical** | |
| **7. Course code** |  | |
| **8. Teacher's academic profile** | [C.V - Rabar Fatah Salih - Google Sites](https://www.google.iq/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&cad=rja&uact=8&ved=0ahUKEwiNp6i5rJXSAhXhFZoKHZmVB2YQFggYMAA&url=https%3A%2F%2Fsites.google.com%2Fa%2Fsu.edu.krd%2Frabar-fatah-salih%2Freflections&usg=AFQjCNE3HOKThraPamS8vQBroIvuivbqEw) I am a lecturer at Salahaddin University - Erbil, College of Agriculture, Department of Field Crops. I hold a PhD of Post Harvest Engineering, Field Crops/ Fiber Crops.  I graduated as the fourth best student in department of plant production, and the tenth best student in the whole of the College. After graduation, I directly employed as a demonstrator at the same Department and College. In 2010, I obtained a MSc at the Department of Field Crops, College of Agriculture, Salahaddin University - Erbil.  I also completed a PhD study in 2016 in Post Harvest Engineering at the Department of Biological and Agricultural Engineering, Faculty of Engineering, Universiti Putra Malaysia.  I attended to three international conferences as presenter in 2014 and 2015, Malaysia, one of them in Erbil 2017. However, I attended to other three international conferences just as guest all of them in Erbil, 2016-2017. Also, I published many academic papers in international journals. However, I published a scientific book on kenaf plant, 2015.  Two article researches were submitted, it was done in 2017 and 2018. Moreover, I have a new project about “Row Spacing and Seeding Rate Affect on Growth and Yield Parameters of Flax (*Linum usitatissimum* L.)”.  Kazhal Kamal Muhammad   * Date of Birth: 22March 1986 * Place of Birth: Erbil * Nationality: Iraqi * Marital status: Marriage * Sex: Female   Education:   * B.Sc: Plant Production / College of Agriculture ( 2007-2008)/ University of Salahaddin / Kurdistan Region/ Iraq. * M.Sc: Field Crops/ Fiber Crops/ College of Agriculture (2014)/University of Salahaddin/ Kurdistan Region/ Iraq.   Work History:   1. College of Agriculture, Field Crops department/ University of Salahaddin /Iraq   July 2014 until date (Assistant Lecturer). | |
| **9. Keywords** | **Oil and sugar crops, sources of oil crops, extraction, oil and sugar uses** | |
| **10. Course overview:**  In this course oil and sugar crops are selected as the once of the main lecture. Also, it will be explained many subjects relationship to vegetable oils and sugars, such as; oilseed and fruit or other sources, and also sugarcane and sugar beet. | | |
| **11. Course objective:**  The aim of the course is teaching and learning students with new subjects. So during this course students will be collected new information about oil and sugar crops. However, several crops for both of the sources (oil and sugar) will be explained especially the types are suitable for cultivation in our country. | | |
| **12. Student's obligation**   * Participation is more important, every student should be pay attention during a class. It will be encouraging them to collect information about the subjects. Next, it causes to earn all scores very well. * Students should be found the topics which relationship to oil and sugar crops, then making a presentation. It will be not only to collect the score but also to teach them how to be a lecturer and researcher in the future. * There will be a short, timed, quiz once a week, on class day. These quizzes will be open book and open note. Quizzes will emphasize interpreting information, formulating hypotheses, and synthesizing concepts from lecture. I will drop the two lowest quiz scores. Quizzes will cover all course material covered to-date. * During this course to exams will be done. The first exam will be after 4 lectures, the second exam after 8 lectures or in the end of the course. | | |
| **13. Forms of teaching**  In the first, we preparing whole lectures as a hard copy and we give to our students. Also, during the class we preparing a lecture in power point form, and then our students will be received it through the data show. Some time, white board is necessary especially if subjects need to more explanation. Also, we have plan to visit some factors are relation to oil and sugar crops. | | |
| **14. Assessment scheme**  ‌ **Assessments and Categorizing:**   * Class participation 5% * Presentation 5% * Weekly quizzes 10% * First Exam 40% * Second Exam 40% | | |
| **15. Student learning outcome:**  During this course many new subjects under oil and sugar crops will be given to students. I believe that, all lectures full of interesting since students want to learn new information through the course. | | |
| **16. Course Reading List and References‌:**  **Anon. (2009). Sugar and sweeteners: recommended data. ERS Briefing Room (**<http://www.ers.usda.gov/> **briefing/sugar/data.htm, accessed 24 July 2009).**  **Cooke**, D.A., **Scott**, J.E. (1993). The Sugar Beet Crop. Springer Netherlands, Sep 30, 1993 - [Science](https://www.google.iq/search?tbo=p&tbm=bks&q=subject:%22Science%22&source=gbs_ge_summary_r&cad=0) - 675 pages.  Debor, H. (2009). Building energy independent ethanol plants in sub-tropical climates using sorghum ethanol. Proceedings of the Sweet Sorghum Ethanol Association Meeting, Orlando, Florida (http://www.sseassociation.org, accessed 2 March 2009).  Deerr, N. (1949/50). The History of Sugar, vols 1 and 2. Chapman and Hall, London.  Draycott, A.P. (2006). Introduction. In: Draycott, A.P. (ed.) Sugar Beet. Blackwell Publishing Ltd, Oxford, UK pp. 1–8.  Elliott, M.C. and Weston, G.D. (1993). Biology and physiology of the sugar-beet plant. In: Cooke, D.A. and Scott, R.K. (eds) The Sugar Beet Crop: Science Into Practice. Chapman and Hall, London, UK, pp. 37–65.  Esteban, J.A. (1999). Caractérisation de la betterave de semis d’automne. Proceedings of the 62nd International Institute of Beet Research Congress. IIRB, Brussels, pp. 6–7.  Ford-Lloyd, B.V., Williams, A.L. and Williams, J.T. (1975). A revision of Beta section Vulgares (*Chenopodiaceae*), with new light on the origin of cultivated beets. Botanical Journal of the Linnean Society 71, 89–102.  Ford-Lloyd, B.V. (2005). Sources of genetic variation, genus Beta. In: Biancardi, E., Campbell, L.G., Skaracis, G.N. and De Biaggi, M. (eds) Genetics and Breeding of Sugar Beet. Science Publishers, Inc, Enfield, New Hampshire, pp. 25–33.  Francis, S.A. (2006). Development of sugar beet. In: Draycott, A.P. (ed.) Sugar Beet. Blackwell Publishing Ltd, Oxford, UK, pp. 9–29.  Galletti, S., Burzi, P.L., Sala, E., Marinello, S. and Cerato, C. (2006). 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John Wiley and Sons, New York, pp. 16–110.  Lippmann, E.O. von (1925). Geschichte der Rube (Beta) als KulturpJlanze. Verlag Springer, Berlin. 184 pp.  Milford, G.F. (2006). Plant structure and crop physiology. In: Draycott, A.P. (ed.) Sugar Beet. Blackwell Publishing Ltd, Oxford, UK, pp. 30–49.  Sadeghian, S.Y. and Sharifi, H. (1999). Improvement of sugar beet for combined resistance to bolting and Cercospora leaf spot. Proceedings of the 62nd International Institute of Beet Research Congress. IIRB, Brussels, pp. 61–67.  Smith, J.A. (2001). Tillage and seedbed preparation. In: Wilson, R.G., Smith, J.A. and Miller, S.D. (eds) Sugarbeet Production Guide. University of Nebraska, Lincoln, Nebraska, pp. 23–36.  Singh, B.P. (2010). Industrial Crops and Uses. Fort Valley State University, Fort Valley, Georgia, USA.  Ulbrich, E. (1934). Chenopodiaceae. In Naturliche Pflanzenfamilien, vol. 16c, 2nd  edn, Engler and Prand, pp. 379-584.  Yonts, C.D., Smith, J.A. and Wilson, R.G. (2001). 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(Eds.), Soybeans: Improvement, Production, and Uses, Third Edition. ASA, CSSA, SSSA, Madison, WI, USA. pp. 97–136.  Jha, T.B., Mukherjee, P., Datta, M.M., (2007). Somatic embryogenesis in JatrophacurcasLinn., an important biofuel plant. Plant Biotechnol. Rep. 1, 135–140.  King, A.J., He, W., Cuevas, J.A., Freudenberger, M., Ramiaramanana, D., Graham, I.A., (2009). Potential of Jatropha curcas as a source of renewable oil and animal feed. J. Exp. Bot. 60, 2897–2905.  Krapovickas, A. (1969). The origin, variability and spread of the groundnut (*Arachis hypogaea*). In: P.J. Ucko and G.W. Dimbleby (Eds.), The Domestication and Exploration of  Plants and Animals. Duckworth, London, pp. 427–441.  Li, D. and Mu¨ ndel, H.-H. (1996). Safflower. Carthamus tinctorius L. Promoting the conservation and use of underutilized and neglected crops. 7. Institute of Plant Genetics and Crop Plant Research, Gatersleben/International Plant Genetic Resources Institute, Rome, Italy.  Liu, H., Xie, X., Sun, S., Zhu, W., Ji, J., Wang, G., (2011). Optimization of Agrobacterium-mediated transformation of sunflower (*Helianthus annuus* L.) immature embryos. AJCS 5 (12), 1616–1621.  Malathi, B., Ramesh, S., Venkateswara, K., Reddy, D.V., (2006). Agrobacterium-mediated genetic transformation and production of semilooper resistant transgenic castor (*Ricinus communis* L.). Euphytica 147 (3), 441–449.  McKeon, T., Hayes, D., Hildebrand, D., and [Weselake](https://scholar.google.com/citations?user=sfMP42gAAAAJ&hl=en&oi=sra), R. (2016). Industrial Oil Crops. Copyright © 2016 AOCS Press. Published by Elsevier Inc. All rights reserved.  Misra, M., Misra, A.N., (2010). Jatropha: the biodiesel plant biology, tissue culture and genetic Transformation—A review. Int. J. Pure Appl. Sci. Technol. 1 (1), 11–24.  Murphy, D.J. (2007b) People, Plants, and Genes: The Story of Crops and Humanity. Oxford University Press, Oxford, UK.  Murphy, D.J. (2007c) Plant Breeding and Biotechnology: Societal Context and the Future of Agriculture. Cambridge University Press, Cambridge, UK.  Murphy, D.J. (2008) Future prospects for biofuels. Chemistry Today 26, 44–48.  Padgette, S.R., Kolacz, K.H., Delannay, X., Re, D.B., LaValee, B.J., Tinius, C.N., Rhodes, W.K., Otero, Y.I., Barry, G.F., Eichholtz, D.A., Peschke, V.M., Nida, D.L., Taylor, N.B., Kishore, G.M., (1995). Development, identification, and characterization of a glyphosate-tolerant soybean line. Crop Sci. 35, 1451–1461.  Peat, J.E. (1928). Genetic studies in Ricinus communis L. J. Genetics 19, 373–389. Pinkerton, S.D., Rolfe, R., Auld, D.L., Ghetie, V. and Lauterbach, B. (1999) Selection of  castor for divergent concentrations of ricin and Ricinus communis agglutinin. Crop Sci. 39, 353–357.  Rao, K.S., Rohini, V.K., (1999). Agrobacterium-mediated transformation of Sunflower (*Helianthus annuus* L.): a simple protocol. Ann. Bot. 83, 347–354.  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Oil Crops. Handbook of Plant Breeding, Springer Dordrecht Heidelberg London New York.  Weiss, E.A. (1971). Castor, Sesame and Safflower. Barnes and Noble, New York, pp. 529–744. | | |
| **17. The Topics:** | | **Lecturer's name** |
| Oil Crops Industrial Oil CropsManagement and processing of industrial oil cropsModifying Vegetable Oils for Food and Non-food PurposesModifying Vegetable Oils for Non-food PurposesList and Classification of Vegetable Oils First Examination SoybeanOil PalmOliveOilseed Rape or RapeseedCastorSunflowerSafflowerCottonFlaxMaizeJatrophaCamelinaPeanutSecond ExaminationSugar CropsSources of sugarSugarcane**Sugar Beet**Origins of Beet GrowingEvolution of Cultivated Beta Species**Date palm****Sorghum****Sugar maple****Sugar chemistry** | | Oil and Sugar Crops (Theoretical part)  (2 hrs)  11/2/2020  (2 hrs)  18/2/2020  (2 hrs)  25/2/2020  4/3/2020  (2 hrs)  25/3/2020  (2 hrs)  1/4/2020  (2 hrs)  8/4/2020  (2 hrs)  15/4/2020  22/4/2020  (2 hrs)  29/4/2020  (2 hrs)  6/5/2020  (2 hrs)  13/5/2020  (2 hrs)  20/5/2020 |
| **18. Practical Topics (If there is any)** | |  |
| **1st week:**Oil extraction in laboratory, Soxhlet extractor.  **2nd week:**Oil Production & Process.  **3rdweek:**physical and chemical properties for oil**.**  **4th week:**Sesame (Sesamumindicum L.), growth and development**.**  **5thweek:**Safflower (*Carthamustinctorius*L.), growth stage of safflowerHarvest Stage.  **6th week:**Sunflower (*Helianthus annuus*), Growth and Development**.**  **7thweek:**Seed, Bird Control, Uses, Harvestof sesame plant.  **8th week:**Description of Sunflower Growth Stages.  **9thweek:**Soybean [*(Glycine max L.) Merrill.*]**,** growth stages. climatic requirements, planting time of soybean.  **10th week**: Sugar cane, sugar beet, peanut. | | : (3 hrs.)   * 13/2/2019 * 20/2/2019 * 27/2/2019 * 27/3/2019 * 3/4/ 2019 * 10/4/2019 * 17/4/2019 * 24/4/2019 * 8/5/2019 * 15/5/2019 * 22/5/2019 |
| **19. Examinations:**  **Sample of Examination**  **Q1:**   1. **Define the following terms:** 2. **Major oils 2- Castor 3- Coconut oil (12) Marks** 3. **By the structure make the differences between fatty acids present in seed oils used for food and industrial applications. (Two structures for each of them). (13) Marks**   \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*  **Q2:**   1. **Count the types of the edible oils. (Five only). (10) Marks** 2. **Write briefly some information about Oil Palm.**  **(15) Marks**   \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*  **Q3:**  **a)** **Ricinoleic acid has some special characteristics, what are these characteristics?** **(10) Marks**  **b) Answer the causes of the following causes. (15) Marks**  **1- Olive oil should be storage in dark bottle.**   1. **Nut oils are generally used in cooking.** 2. **Many oils are used for non-food applications**   \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*  **Q4: Complete the following paragraph by write the suitable words: (25) Marks**  Since the dawn of humanity, oil-bearing plants have been useful resources for both \_\_\_\_\_\_\_ and non-edible \_\_\_\_\_\_\_\_.\_\_\_\_\_\_\_ and fats are an important source of energy for the human diet. More than 80% of the world’s palm \_\_\_\_\_\_ comes from Southeast \_\_\_\_\_\_\_, mainly \_\_\_\_\_\_\_\_\_ (50%) and Indonesia. There are hundreds of \_\_\_\_\_\_ oils containing a different complement of fatty \_\_\_\_\_\_ that impart physical and chemical \_\_\_\_\_\_\_\_\_\_ making the oil and associated fatty acids especially useful for industrial and other non\_\_\_\_\_\_ uses.  **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**  **Dr. Rabar Fatah Salih** | | |
| **20. Extra notes:**  Here the lecturer shall write any note or comment that is not covered in this template and he/she wishes to enrich the course book with his/her valuable remarks. | | |
| **21. Peer review پێداچوونه‌وه‌ی هاوه‌ڵ**  This course book has to be reviewed and signed by a peer. The peer approves the contents of your course book by writing few sentences in this section.  *(A peer is person who has enough knowledge about the subject you are teaching, he/she has to be a professor, assistant professor, a lecturer or an expert in the field of your subject).*  ئه‌م کۆرسبووکه‌ ده‌بێت له‌لایه‌ن هاوه‌ڵێکی ئه‌کادیمیه‌وه‌ سه‌یر بکرێت و ناوه‌ڕۆکی بابه‌ته‌کانی کۆرسه‌که‌ په‌سه‌ند بکات و جه‌ند ووشه‌یه‌ک بنووسێت له‌سه‌ر شیاوی ناوه‌ڕۆکی کۆرسه‌که و واژووی له‌سه‌ر بکات.  هاوه‌ڵ ئه‌و که‌سه‌یه‌ که‌ زانیاری هه‌بێت له‌سه‌ر کۆرسه‌که‌ و ده‌بیت پله‌ی زانستی له‌ مامۆستا که‌متر نه‌بێت.‌‌ | | |