

UNIVERSITY OF FLORIDA
Horticultural Sciences Department
VEC 3221C Fall 2020 Section 1172 Class 20838

Commercial Vegetable Production

Instructor: Bala Rathinasabapathi, Ph.D.
Room 2247, Fifield Hall
Phone 352-273-4847

Lecture: Mon, Wed and Fri 7th Period (1:55 pm – 2:45 pm)
Via Zoom.

Lab Fri 8th – 9th period (3:00 pm – 4:55 pm).

Pre-lab briefings will be via Zoom.

Student vegetable gardens, Hull Road, Across from Fifield Hall

**NOTE: SEE SPECIAL INSTRUCTIONS ABOUT COVID-19 SAFETY ON
PAGE 4.**

Office hours: By Appointment; e-mail brath@ufl.edu

Course Homepage: Connect via Canvas

Teaching assistant: Caitlin Clarke caitlin.clarke@ufl.edu

Optional Textbook:

Producing Vegetable Crops by Swiader JM and Ware GW., Interstate Publishers Inc., Danville, Illinois, 5th Edition, 2002. ISBN 0-8134-3203-0.

Other Optional References:

Vegetable Production Handbook For Florida 2006-2007, by Olson SM and Simone E (Eds.), University of Florida, IFAS Extension. 438 pp.

Articles from Florida Cooperative Extension Service, Journal of the American Society of Horticultural Science, Hortscience and American Vegetable Grower. Available via Canvas.

Objective:

The principles and practices of successful commercial vegetable production will be presented. Crop requirements, growth patterns and production techniques are emphasized along with discussion of consumption/marketing patterns in the U.S. and Florida production areas. The laboratory involves field trips to farming operations and guest lectures from individuals in the vegetable production industry. Each member of the class will also develop a vegetable garden with different crops suitable for Fall production and participate in vegetable crop production activities.

General Syllabus:

Lecture information and laboratory experiences will instruct the student in the specific production practices and technology, as well as other important information required to successfully grow various vegetable crops.

For each crop grouping, the student will learn:

1. The botanical classification, horticultural types, origin, and history of each crop.
2. The scope and importance of production in the US, including where the crop is grown, commercial acreage, value and average yields.
3. Important aspects of vegetable growth and development, especially in relation to plant response to environmental factors and how they may affect production practices.
4. Specific climatic and cultural requirements of each crop.
5. Methods of planting, plant spacing and populations, and specialized procedures such as seed treatments.
6. Standard and evolving production practices and requirements necessary for successful production.
7. Leading cultivars and their important characteristics and new developments in breeding of specific crops.
8. Pests and significant physiological disorders.
9. Harvesting procedures, post-harvest handling of crops and food safety issues.

Format:

4-credit course for majors and non-majors. No pre-requisites.

Evaluation:

Students will be evaluated based on the following:

Class attendance & participation	50 points
Lab reports & field trip reports	100 points
Class presentation (via Zoom)	100 points
Written assignment	50 points
Tests	100 points
Final Exam	100 points
TOTAL	500 points

* Letter grades for the course will be assigned according to the chart below:

90-100 = A; 87-89 = A-; 84-86 = B+; 80-83 = B; 77-79 = B-; 74-76 = C+; 70-73 = C; 67-69 = C-; 64-66 = D+; 60-63 = D; 57-59 = D-; 56-below = E.

* Class attendance will be marked each day either at the beginning or end or middle of the class period.

Grades for the course will be assigned according to established university policy.

Learning Outcomes:

By the completion of this course, the conscientious student should be able to

- Explain production details for major vegetables.
- Diagnose problems related to soil fertility, irrigation and pests of major vegetables.
- Find sustainable solutions to problems related to soil fertility, irrigation and pests of major vegetables.
- Choose vegetable cultivars suitable for a given region or production system.
- Enumerate advantages and disadvantages of various production systems.
- Propagate and cultivate a vegetable garden
- Critically analyze production and marketing data and
- Estimate cost of production for major vegetables.

Lab and field trip reports, Written assignment and Class presentations:

(1) Transplant Production (10 points). Each student will generate vegetable transplants of at least two vegetable crops. Instructions, seeds and greenhouse space will be provided. Quality of the transplants and a report of this activity will be evaluated.

(2) Field Production of Vegetables (40 points). The students will cultivate five different vegetable crops as part of their laboratory. Each student will grow the vegetable crops in a separate field plot (10 ft x 30 ft). The student will keep a field notebook for weekly observations and write a final report for evaluation. The final report should contain information about the crops and their varieties, crop stand, weather, irrigation, soil fertility management, insect pests, diseases and weeds encountered and notes on how the problems were managed and the quality and quantity of vegetables harvested. Irrigation will be managed by the staff.

(3) Container gardens (20 points). Facilities to set up container gardens of warm season vegetables, greenhouse space, materials and instruction will be provided. Each student will grow different vegetable crops for this exercise. The quality of the crop and the final write up will be evaluated.

(4) Hydroponics (10 points). Facilities to set up hydroponics will be provided. Students will grow a crop of lettuce. This will be a demonstration by the instructor. The students will be provided with photographs of the crop. Students will submit a final write up at the end of the period.

(5) Field trip report (10 points). This will be a virtual field trip to a farm. Suggestions will be provided by the instructor and the student will write a report based on their virtual tours.

(6) Sprayer Calibration (10 points): Data for the calibration of a knapsack sprayer will be given along with a set of problems related to pesticide application.

(7) Written assignment (50 points). Related to your class presentation, a short essay is expected. It should be not longer than 6 printed pages of text, contain at least two figures and at least three references cited or sources consulted.

(8) Class presentation (100 points): Each student will prepare a cost of production analysis for one vegetable crop and make a Power Point presentation about the production, cost analysis and expected profits in a 5-acre farm.

Course policies and procedures

SPECIAL SAFETY MEASURES related to COVID-19 pandemic:

All the lectures, discussions and reviews will be delivered via Zoom. There are 9 face-to-face sessions for the laboratory section of this course. During these meetings, students should follow the guidelines listed below. Those that do not comply with these regulations will be sent out of the class with no exceptions. Students should bring their own bottled water, sun protection and wear closed toe-shoes.

(a) The student should wear a **mask** when assembling for the class and wear it throughout the class period. Please contact the instructor if you are in need of a mask.

Details about masks can be found here:

<https://www.cdc.gov/coronavirus/2019-ncov/prevent-getting-sick/diy-cloth-face-coverings.html>

(b) The students should maintain **social distancing** (at least 6 ft) while working in the field or at the teaching greenhouse. Details about social distancing can be found here:

<https://www.cdc.gov/coronavirus/2019-ncov/prevent-getting-sick/social-distancing.html>

(c) The students should thoroughly **wash their hands** for 20 seconds with soap and water prior to and after the completion of the activities.

(d) Students experiencing **symptoms of COVID-19** or those who come into contact with a person showing symptoms should stay out of the face-to-face meetings and seek immediate medical attention. Such student can rejoin the class if the student is free of symptoms for 2 weeks and tests negative in a COVID-19 test.

<https://www.cdc.gov/coronavirus/2019-ncov/symptoms-testing/symptoms.html>

(e) The student should **report** to the instructor if **safety violations** occur during the class period.

(f) If there is a light rain, students will stay at the breeze-way of building 1400, maintaining social distancing and resume activities when safe. On days when there is heavy rainfall or lightening, the class will not continue that day and the students will be updated via Zoom about what they missed.

(g) **Place, Days, and times for face-to-face meetings**: All the meetings will be in front of building 1400, in the Student Vegetable Garden on Hull Road, across from Fifield Hall. The times will be 3 pm to 4:55 pm on the following days: Sep 11, Sep 18, Sep 25, Oct 9, Oct 16, Oct 30, Nov 13 and Nov 20. On Sep 30 the meeting will be 1:55 pm to 3 pm.

(g) **Important Note:** At any time during the semester, the face-to-face meetings will be converted to 100% online, IF COVID-19 outbreak is not under control and it is not safe for holding the classes in the field, as judged by the Institutional administrators. If and when that occurs, the same exercises listed for face-to-face activities will be communicated to the students as *demonstration videos* via Canvas.

Grades and Grade Points: For information on current UF policies for assigning grade points, see <https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>.

Attendance and Make-Up Work:

Requirements for class attendance and make-up exams, assignments and other work are consistent with university policies that can be found at <https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>. Reports are due on the dates indicated in the instructions for each activity. Late homework will be accepted with a 20% penalty for each day after the due date. If you are having trouble with homework or class, please see me immediately. Test makeups will be arranged only in the case of an emergency and not for absences for any other reasons.

Safety: Follow all safety regulations in and out of the classroom. Personal safety is individual responsibility although we will facilitate it in and outside the classroom.

Privacy statements regarding online part of the course: Our class sessions may be audio visually recorded for students in the class to refer back and for enrolled students who are unable to attend live. Students who participate with their camera engaged or utilize a profile image are agreeing to have their video or image recorded. If you are unwilling to consent to have your profile or video image recorded, be sure to keep your camera off and do not use a profile image. Likewise, students who un-mute during class and participate orally are agreeing to have their voices recorded. If you are not willing to consent to have your voice recorded during class, you will need to keep your mute button activated and communicate exclusively using the "chat" feature, which allows students to type questions and comments live. The chat will not be recorded or shared. As in all courses, unauthorized recording and unauthorized sharing of recorded materials is prohibited.

Online Course Evaluation Process: Student assessment of instruction is an important part of efforts to improve teaching and learning. At the end of the semester, students are expected to provide feedback on the quality of instruction in this course using a standard set of university and college criteria. These evaluations are conducted online at <https://evaluations.ufl.edu>. Evaluations are typically open for students to complete during the last two weeks of the semester, students will be notified of the specific times when they are open. Summary results of these assessments are available to students at <https://evaluations.ufl.edu/results>.

Academic Honesty: As a student at the University of Florida, you have committed yourself to uphold the Honor Code, which includes the following pledge: *“We, the members of the University of Florida community, pledge to hold ourselves and our peers*

to the highest standards of honesty and integrity". You are expected to exhibit behavior consistent with this commitment to the UF academic community, and on all work submitted for credit at the University of Florida, the following pledge is either required or implied: *"On my honor, I have neither given nor received unauthorized aid in doing this assignment"*.

It is assumed that you will complete all work independently in each course unless the instructor provides explicit permission for you to collaborate on course tasks (e.g. assignments, papers, quizzes, exams). Furthermore, as part of your obligation to uphold the Honor Code, you should report any condition that facilitates academic misconduct to appropriate personnel. It is your individual responsibility to know and comply with all university policies and procedures regarding academic integrity and the Student Honor Code. Violations of the Honor Code at the University of Florida will not be tolerated. Violations will be reported to the Dean of Students Office for consideration of disciplinary action. For more information regarding the Student Honor Code, please see: <http://www.dso.ufl.edu/sccr/process/student-conduct-honor-code>.

Software Use: All faculty, staff and students of the University are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against University policies and rules, disciplinary action will be taken as appropriate.

Services for Students with Disabilities: The Disability Resource Center coordinates the needed accommodations of students with disabilities. This includes registering disabilities, recommending academic accommodations within the classroom, accessing special adaptive computer equipment, providing interpretation services and mediating faculty-student disability related issues. Students requesting classroom accommodation must first register with the Dean of Students Office. The Dean of Students Office will provide documentation to the student who must then provide this documentation to the Instructor when requesting accommodation:
0001 Reid Hall, 352-392-8565, www.dso.ufl.edu/drc/

Campus Helping Resources: Students experiencing crises or personal problems that interfere with their general well-being are encouraged to utilize the university's counseling resources. The Counseling & Wellness Center provides confidential counseling services at no cost for currently enrolled students. Resources are available on campus for students having personal problems or lacking clear career or academic goals, which interfere with their academic performance.

University Counseling & Wellness Center, 3190 Radio Road, 352-392-1575,
www.counseling.ufl.edu/cwc/
Counseling services, groups and workshops, outreach and consultation, self-help library and wellbeing coaching.

U Matter We Care, www.umatter.ufl.edu/

Career Resource Center, First Floor JWRU, 392-1601, www.crc.ufl.edu/

Student Complaints:

Residential Course: https://www.dso.ufl.edu/documents/UF_Complaints_policy.pdf

Online Course: <http://www.distance.ufl.edu/student-complaint-process>

Schedule: The days when face-to-face meetings are arranged are marked by an Asterix*. All other days the meetings will be via Zoom.

Week 1

31 Aug 2020 Mon Introduction, Syllabus, Guidelines for the lab. section and Canvas resources.
2 Sep 2020 Wed Importance of Vegetables
4 Sep 2020 Fri Vegetable Seed Sources & Transplant Production
4 Sep 2020 Fri Lab 1 Vegetable Seed Sources (via Zoom)

Week 2

7 Sep 2020 Mon Labor day (no class)
9 Sep 2020 Wed Major vegetables and their production statistics & resources
11 Sep 2020 Fri “Building Better Peppers – A project in plant breeding”
11 Sep 2020 Fri Lab 2 Transplant production*

Week 3

14 Sep 2020 Mon Vegetable production in Alachua County – production cycles
16 Sep 2020 Wed Row crops – bed formation, tillage and spacing
18 Sep 2020 Fri Vegetable varieties – Plant Breeding 1
18 Sep 2020 Fri Lab 3 Planting a Fall vegetable garden 1*

Week 4

21 Sep 2020 Mon Vegetable varieties – Plant Breeding 2
23 Sep 2020 Wed GM Vegetable Crops
25 Sep 2020 Fri Plant Nutrition
25 Sep 2020 Fri Lab 4. Setting up a Container Garden of vegetables*
Field garden: weeding, fertilizer application and pest control*

Week 5

28 Sep 2020 Mon Plant Nutrition
30 Sep 2020 Wed Hydroponics
Lab 5. Setting up a Hydroponic system to grow lettuces*
Field garden: Weeding, fertilizer application and pest control*.
2 Oct 2020 Fri Homecoming (No class)

Week 6

5 Oct 2020 Mon Nature and properties of soils
7 Oct 2020 Wed Soil fertility management
9 Oct 2020 Fri Mulching
Lab 5 continued. Add new nutrient stocks to hydroponics.

Field garden: Weeding, stake tomatoes, fertilizer application*

Week 7

12 Oct 2020 Mon Irrigation 1. Water quality and irrigation & fertilizer appln.
14 Oct 2020 Wed Irrigation 2. Drip irrigation
16 Oct 2020 Fri Field garden: weeding, fertilizer application and pest mgt*.

Week 8

19 Oct 2020 Mon Insect pests on vegetable crops
21 Oct 2020 Wed Insect pests on vegetable crops
23 Oct 2020 Fri Insecticides
23 Oct 2020 Fri Lab 6 Calculations on fertilizer requirements (Zoom)

Week 9

26 Oct 2020 Mon Crop diseases
28 Oct 2020 Wed Crop diseases
30 Oct 2020 Fri Fungicides
30 Oct 2020 Fri Lab 7 Identification of insect pests*

Week 10

2 Nov 2020 Mon Weeds and Herbicides
4 Nov 2020 Wed Weeds and Herbicides
6 Nov 2020 Fri Harvesting and yield potential of vegetables
6 Nov 2020 Fri How to calculate the cost of production and estimated profits for vegetable crops? (Zoom)

Week 11

9 Nov 2020 Mon Pesticide applicator training and certification
11 Nov 2020 Wed Veteran's day (No class)
13 Nov 2020 Fri Lab 8 Identification of weeds and diseases*

Week 12

16 Nov 2020 Mon Postharvest handling of vegetables
18 Nov 2020 Wed Food safety issues
20 Nov 2020 Fri Q&A session and revision for final exam.
20 Nov 2020 Fri Take photographs in the field*

Week 13

23 Nov 2020 Mon Student presentation
25 Nov 2020 Wed Thanksgiving (No class)
27 Nov 2020 Fri Thanksgiving (No class)

Week 14

30 Nov 2020 Mon Student presentation
2 Dec 2020 Wed Student presentation
4 Dec 2020 Fri Student presentations

Week 15

7 Dec 2020 Mon Student presentations

9 Dec 2020 Wed student presentations/Last day of class/