

Agricultural Research Syllabus

Instructor: Mike Severino-Patterson, Scattergood Friends School, West Branch, Iowa

Email: mseverino@scattergood.org

Office Hours: Thursdays 730-9pm or by appointment

Course Details: Science East Lab, Period "B"

Course Description

This course will be designed around answering student driven questions in the field of sustainable agriculture, and how these questions relate to current research being conducted, both in Iowa and beyond. We will utilize the knowledge and experience of Farm Manager Mark Quee, as well as Dana Foster (former livestock manager) and the new livestock manager. Part of the course will be assisting in the experiments already underway on the Scattergood Friends School (SFS) farm.

After coming up with possible interests/questions for study, students will investigate background research (through Practical Farmers of Iowa [PFI], the Rodale Institute, Sustainable Agriculture Research and Education [SARE] and others engaged in sustainable agriculture research), before designing their own experiment which they will conduct through the fall (and into the winter as possible). Students will present their research in early March at the Eastern Iowa Science Fair and in late March at the Iowa State Science Fair. This will be a hands-on student-driven course and as such requires students with a lot of maturity and self direction, who are interested in researching sustainable agriculture and are not afraid to get dirty!

Throughout the year 1/3 of class time will be dedicated to individual experiments, with flexible days as needed for students' respective studies.

Another 1/3 will be spent assisting Mark with current experiments being conducted on SFS Farm and learning from Mark and Dana's years of experience farming.

The final 1/3 will be spent in the classroom assisting with research protocols, data analysis, editing/reviewing papers and presentations, etc.

Research will be conducted on farm, in lab (East Science lab and science basement classroom), and in other facilities as needed. Research will be conducted individually, unless a clear plan is made beforehand delineating responsibilities of group members. Any research involving raising animals needs to have a clear plan of who will take care of the animals and when BEFORE receiving the animals to prevent animal neglect.

Course plan

Day 1: Start thinking of ideas for independent research. (Students will conduct individual experiments throughout the fall and into the winter, and present in March).

Experiments must adhere to the following criteria:

- 1) They must be warranted by previous studies/research (either through PFI, the Rodale Institute, SARE or others). They should be something that maybe hasn't already been well studied or studied in this way. Experiments should try to address a big question within sustainable agriculture.**
- 2) They must help Mark, Dana and the SFS Farm to achieve our goals – produce more crops (or meat) for SFS in a sustainable* fashion. (Experiments should have Mark/Dana's approval). *We will study the meaning of this word in more detail.**
- 3) They should be something enjoyable!**

Term 1: ½ time working out ideas, discussing with Mark and Dana, ½ time reviewing literature (PFI, Rodale, SARE and others). Ideally all experiments will be up and running by September 21st.

Term 2: Continue conducting experiments. Assist Mark in data collection/analysis of other on farm experiments. Assist with PFI Pepper trial and Garlic experiment. Assist with prep for Scattergood's PFI Field Day.

Term 3: Continue conducting experiments. Start analyzing data, discuss how data will be statistically analyzed, getting help from statistics class as needed. (More specifics on this later). Continue assisting Mark with data collection/analysis. Assist with writing SARE grant.

Term 4: Continue analyzing data. Research Plan and Project Summary (required by State Science Fair) due before winter break. Assist on farm.

Term 5: Finalize research and start prepping presentation. Assist on farm.

Term 6: Present research to community! Continue to prepare for Iowa State Science Fair presentations – deadline for submissions is March 2nd. Fair will be 3rd week in March. Eastern Iowa Science Fair is at the beginning of March (more details later).

Term 7: Analyze research in terms of sources of error, suggest improvements. Rewrite experiments and/or propose/plan new experiments on farm (see “Experiments must adhere” Term 1). Continue assisting on farm.

Term 8: Continue farming/ setting up future investigations on the farm.

Past Projects

- **Raising Chickens on the Fly (Comparing meat chickens raised with soldier fly larvae versus meat chickens raised on normal feed).**
- **Feeding Fodder Sprouts (Measuring the effect of giving sprouted grain to gestating sows in terms of size and number of piglets).**
- **Populations in Worm Compost and the Effects of Leachate on Plant Growth**

Course Information and Expectations

This is a course that requires a lot of independence and drive on the part of the students. As such students will get out of it what they put into it. I promise to always try my hardest to make the class relevant and meaningful for you, to be honest when I don't know the answer to something and help you to find those answers. In exchange, I expect certain things from you.

□ **Come to class *on time*, prepared, and ready to get dirty!**

Being prepared means having completed all readings and ready with specific questions written out regarding parts of the reading that might have been confusing. It also means bringing proper materials. **Materials needed** include a 3-ring binder or folder, pencils with erasers, pens, and a lab notebook.

Always bring your lab notebook to class! Your laptop will also be frequently used, but it is not necessary to bring it every day. Inappropriate laptop use (email, chat, music, etc) will earn you a slip and may lead to loss of laptop privileges. I will let you know in advance when you need to bring your laptop.

I may email you with reminders, forgotten details, etc in between classes – **you are responsible for checking your email at least once a day** and responding accordingly. I may also make announcements at collection.

(The most common) slippable offenses include: arriving more than 1 minute late, coming unprepared to class, not completing assigned homework, and disrespectful behavior in the classroom.

What to do when you miss a class. Most students miss at least one class during the year, some more than one. We do a lot during every class period, so when you miss a class it is very important that you **come and talk to me to find out what you missed, before our next class period** if at all possible. In this way I do not have to run around trying to find you and you will not fall behind.

□ **Academic Dishonesty is not tolerated in the science classroom or anywhere else at Scattergood.** I expect you to produce your own work and use quotes, footnotes and bibliographies appropriately. If you are unsure of how to cite or whether or not something should be cited, **please ask!** Academic dishonesty includes sharing or copying assignments with or from others, cheating on tests or quizzes, manipulating the results of an experiment by changing your data, and plagiarism. **Even when working with a partner or in a group, you are expected to do your own work and use your own words.** Academic Dishonesty is a major rules violation and could result in suspension or expulsion.

Course Grading

Ag Research does not follow as traditional of a grading system, and will often have few graded assignments. Students will be graded based on the amount of effort put into their individual projects and the progress shown. On days assisting at the farm, students will be given participation grades.

Each term grade will generally be based on the following (subjected to change):

Term 1: Students will present a detailed review of research and show how the question they are investigating relates to/fits in with this research. Students will not be able to continue their research until this step is proficient.

Term 2: Students will give a clear experimental design of the experiment, as well as a daily plan for the following terms and a progress report of the experiment so far.

Term 3: Progress Report.

Term 4: Progress Report and rough draft of Research Plan and Project Summary (required by State fair).

Term 5: Grade will be based on response to feedback on Research Plan/Project Summary, and presentation of research (in class and for the community).

Term 6: Participation at the fair. Evidence of professionalism shown. :)

Term 7: Self-evaluation of participation at the fair and of project in general.

Term 8: Assistance in planning future investigations on the farm. Participation in on-farm work.

Grading for all terms will adhere to the following general rubric.

Passing 4 Honors

Skills and Concepts: Demonstrates an ability to synthesize the skills and concepts of the course in order to create original products.

Effort and Growth: Effort beyond expectations involving additional honors-level work, leading to outstanding gains in understanding/skills.

Passing 4

Skills and Concepts: Demonstrates an ability to analyze a variety of views/ methods/ ideas/ algorithms using the skills and concepts of the course.

Effort and Growth: Exemplary effort leading to substantial gains in understanding /skills.

Passing 3

Skills and Concepts: Demonstrates an ability to apply the skills and concepts of the course in various contexts.

Growth and Effort: Satisfactory effort leading to clear gains in understanding/skills.

Passing 2

Skills and Concepts: Demonstrates a basic comprehension of the skills and concepts of the course.

Growth and Effort: Achieves some gains in understanding/skills but growth is hampered by limited/inconsistent effort.

Not Passing 0

Skills and Concepts: Unable to demonstrate or communicate core skills/concepts of class through personal production of work, and/or maintains misconceptions, fails to recognize patterns, repeats mistakes.

Growth and Effort: The student's lack of effort is observable: s/he is often late or absent from classes, does not participate when cued and fails to turn in homework (or it is consistently of low quality), leading to failure to demonstrate growth in the discipline.