



2014 Oral Presentation Scenario

Sustainable Local Agriculture/Locally Grown in Minnesota

Homestead 2020 Farm Mission:

Manage a sustainable farm-based system of healthy food production that is economically sound, environmentally responsible and a community asset for current and future generations.

Homestead 2020 Farm project background:

Homestead 2020 Farm is a 480 acre farm in West Central Minnesota, and the home of John and Jane Smith, who purchased the farm from John's parents in 1985. The Smiths operate a successful beef and cash grain operation and would like to transition their farm to a more organic, grass-based agriculture. In addition to the 150 head of beef cattle, John and Jane operate 160 acres of a mostly no-till corn/bean rotation. In 2002, new infrastructure to support rotational grazing was installed, including fencing, water lines, tanks, and cattle handling equipment for rotationally grazing cattle. The Smiths began selling grass fed beef directly to customers and wholesale beef to two area markets. They wish to sustain their current cattle operation while developing and expanding other farming practices to reduce their dependencies on synthetic inputs.

Current situation:

John Smith is a lifelong farmer on the land where he grew up. He has observed and managed the farm with great care, has deep and extensive knowledge of the land, and continues to evolve the farm toward sustainability. Jane Smith is a nutritionist with decades of experience in healthcare, community nutrition and local food systems. They are both descendants of five generations of Minnesota farmers, with a shared goal of connecting more people to the land and their food through experiential learning.

The Smiths have recently learned of the rising initiative to improve soil health and unlock the secrets and evolving science of the soil. Jane's background in nutrition has resulted in concern that foods lack the nutrient density essential for good health as a result of farming a degraded and depleted natural resource. This concern has resulted in the Smiths wish to incorporate innovative resource conservation by converting to a 100% no-till system and incorporating cover crops to help regenerate their natural resources. The Smiths are having difficulty finding consultants and technical assistance to consider the many facets of their sustainable farm business development. They have asked ENVIROTHON students to help them answer important questions and give them sound, well-researched advice to achieve their goals and vision.

Homestead 2020 Farm vision:

Homestead 2020 Farm would like to support experiential learning through their demonstration of sound land management that focuses on building healthy and productive soils. They desire to share the knowledge and experiences they gain with aspiring farmers, and strive to be a model of sustainable farm-to-table food system without depending on synthetic inputs.

Short term goals:

1. Research and determine the most appropriate and desirable cropping system for incorporating the use of cover crops.
2. Diversify their cropping system. Incorporate a diversity of species in both their grassland pastures and cover crop system to mimic nature's image and help regenerate the soil.
3. Improve the overall soil health on their land. Increase the organic matter, infiltration rate, and overall biodiversity of their soil.
4. Reduce their dependencies of synthetic inputs, ultimately becoming 100% organic by 2020.

ENVIRONTHON consultants: Your job is to advise John and Jane Smith in meeting their short term goals that will lead to their 2020 vision.

1. Research and determine the most appropriate and desirable cropping system that will be most beneficial for the addition of cover crops.

- *Is the current cropping system compatible for the use of cover crops in West Central Minnesota? Why or why not?*
- *Does the addition of a 3rd cash grain crop yield more cover crop possibilities? Why or why not?*
- *What financial resources are available, if any, to offset costs as they make this transition?*
- *What programs/pilot programs could they participate in? Is State or Federal Cost-share assistance available?*

2. Conduct research to determine how diversity amongst the cropping and grazing system can result in improved soil health.

- *What are some of the benefits of a diverse system as compared to a monoculture?*
- *What cover crop species are beneficial for specific crops?*
- *Consider the physical, chemical, and biological processes of soil science and the role that cover crops can play.*

3. Explain how improved soil health can reduce or eliminate the need for synthetic inputs in a cash grain management system.

- *What cover crop mix or mixes do you recommend? Why?*

- *Explain how improving soil health can result in more sustainable farming methods when current farming practices of conventional tillage, corn-soybean rotations and synthetic inputs are providing acceptable yields and economic returns.*

4. As conservationists, the Smiths care about water quality and reducing soil erosion. What water quality benefits do cover crops and no-till farming provide?

5. Analysis and summary

Draft a brief management plan for the Homestead 2020 farm with your recommended cropping system and use of cover crops mixes. Explain how your management plan can improve soil health, reduce or eliminate the need for synthetic inputs and improve the natural resources as a whole. Summarize the economic, social and environmental impacts that the Homestead 2020 management plan will have on the surrounding community.

Resources

- <http://www.nrcs.usda.gov/wps/portal/nrcs/detail/oh/home/?cid=STELPRDB1166409>
- <http://www.youtube.com/watch?v=hiffwu52udU>
- <http://www.goodfoodworld.com/2013/10/the-real-dirt-regenerating-soil-quality-to-sustain-life/>
- <http://www.northcentralsare.org/>
- <http://www.sare.org/>
- <http://vimeopro.com/swcs/swcs-cover-crops-2011/video/34304019>
- <http://vimeo.com/34348855>
- <http://vimeopro.com/swcs/swcs-cover-crops-2011/video/34365545>
- <http://plantcovercrops.com/>
- <http://www.sfa-mn.org/>
- <http://www.mccc.msu.edu/>
- <http://www.mccc.msu.edu/selectorINTRO.html>
- <http://www.mccc.msu.edu/ccinfo/grasses.html>
- <http://rodaleinstitute.org/>
- <http://www.mccc.msu.edu/links.html>
- <http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/soils/health/>
- <http://www.mda.state.mn.us/>
- http://www.organicriskmanagement.umn.edu/soil_health3.html
- <http://www1.extension.umn.edu/garden/yard-garden/soils/>
- [Organic Nutrient Management: Building a Healthy Soil](http://www1.extension.umn.edu/garden/yard-garden/soils/Organic_Nutrient_Management_Building_a_Healthy_Soil)
- <http://blog.lib.umn.edu/efans/mgdirector/Rosen%20-%20Presentation%20Building%20Healthy%20Soil.pdf>
- <http://www.ams.usda.gov/nop/indexNet.htm>
- <https://www.omri.org/>
- <http://swroc.cfans.umn.edu/ResearchandOutreach/OrganicEcology/>
- [Understanding Organic & Sustainable Agriculture](http://www.ams.usda.gov/nop/indexNet.htm)

