

Case Study Instructions & Cheat Sheet

Read the case study and break into seven small groups. Each group will address one of the problematic areas and develop a plan to solve the problem. Each group presents their solution to the larger group at the end of the exercise. Below are potential solutions to the problems. Other answers may be acceptable.

Soil Fertility: There is something wrong with the lettuce fertility program. Initially, the plants looked stunted and nitrogen deficient. They came out of that, but now the plants have a purple cast to them. The plants are just two weeks from harvest. What can they do?

- **Heavy dependence on poultry manure has gotten soil fertility out of balance and probably raised the pH, resulting in nutrient toxicities and deficiencies.**
- **Young transplants were exposed to high levels of ammonium, causing some toxicity. This passed as the soil temperatures improved and nitrifying bacteria in the soil converted more of the ammonium to nitrate.**
- **The soil microbes breaking down the compost out-competed the plants for phosphorus in the soil, resulting in a phosphorus deficiency.**
- **Salt build-up is also common with heavy use of poultry composts.**
- **There's not much that can be done to help this crop, but changes should be made for future crops.**
- **A more balanced fertilization program should be established. To do this, the soil and compost should be tested. Soil pH should be carefully monitored. Green manures, rock phosphate, and supplemental packaged organic fertilizers might need to be added to prevent the same problems from occurring.**

Weed Management: Profitability on garlic is marginal because of how much money is spent on labor to keep it weeded. If they let the weeds grow, bulb size is reduced and loss due to bulb rot increases. How can they reduce the amount of hoeing that must be done to keep bulb size up and rot rate down?

- **Garlic is fall planted. Use a cover crop in the summer to smother weeds. Buckwheat, for example.**
- **If a clean field is used, as in clean of weeds, once the garlic is planted, use a weed-seed free mulch, thickly applied.**
- **If mulch is not used, plant cloves far enough apart to use mechanical cultivation.**
- **Flame weeding is effective with garlic.**
- **Broadleaf weeds can be controlled when very, very young with various organic herbicides such as Matratec and acetic acid based herbicides (vinegar).**
- **Use drip irrigation.**

Insect Management: Flea beetles devastate the eggplant foliage almost every year. Sometimes it is so bad they have to replant. Other times the foliage is so damaged, yields are greatly reduced. What can they do to prevent this next year?

- Since many flea beetles overwinter in plant debris, remove and plow in plant debris, and plant a good cover crop.
- Stressed plants are vulnerable; plant strong, healthy, large transplants. Provide adequate nutrition
- Apply row covers over hoops 18-14 inches tall the day the plants are set in the field.
- After the row covers are removed (when plants push up against them), if flea beetles are still present, Surround (kaolin clay product), neem, and pyrethrum products may be helpful.

Disease Management : Downy and Powdery Mildew are having devastating effects on their winter squash. Is there anything they can do to stop or slow the progression of those diseases now? And what can they do to prevent the problems in future years?

- This year, spray neem, Serenade, Oxidate, and/or Kaligreen. Spray in the morning to prevent any phytotoxicity.
- Next year, use resistant varieties.
- spray copper as a preventative as soon as conditions are right (warm, wet, humid) and during very early infection stage
- Increase plant spacing
- Get better air movement by getting away from the woods
- Use drip irrigation
- Put a mulch down; landscape fabric or straw

Certification Issues: The farm has just obtained an additional five acres of land, but it was in conventional tobacco production last year. Since the rest of the farm is certified organic, can they follow organic practices on the new land and call it organic? If not, do they have to keep the produce grown on that land separate from their other produce while the land goes through the transition phase?

- Determine the date of the last application of a prohibited substance on the field last year. The first certified organic crop can be harvested 36 months from that date.
- During the 36 month transition phase, grow crops organically but they cannot be marketed as organic. They must be segregated and can be sold to conventional markets or in emerging market niches like GMO free, local, transitional, etc.
- Work on building soil organic matter and reducing seed loads with cover crops.
- Work on getting the pH correct and build phosphorus and potassium reserves with mineral inputs.

Marketing: In the past year, many more farmers, especially “hobby farmers” have shown up at the farmers’ markets. Although competition is good, these new people are bringing large volumes of produce on the market and selling them for prices that have to be below production costs. This is causing a big drop in income for Sunflower Organic

Farm. They need to come up with some new plans for next year. Should they bring this issue up in front of the farmers' market association? Should they reduce their dependence on the farmers' markets and find other ways to sell?

- **Talk with the association and with the hobby farmers. Explain to the hobby farmers that charging less for their produce drives the value of everyone's produce down. They could also be earning more money if their prices were reflective of the true costs of production.**
- **Look into other/backup markets – CSAs, organic food stores, restaurants, organic distribution networks.**
- **Improve your stand appearance/marketing, draw people in, display large certified organic sign, develop loyal customer following by establishing relationships, get to know their names, have customer appreciation at farm.**
- **Diversify products and offer those that most hobbyists won't grow.**

Cover Crops: Merri and Marc have relied on the same cover crop mix, rye, crimson clover and vetch, for a very long time and think it is time to make some changes. Are there some other cover crop systems they can use to help with weed control and that would be more suitable for direct seeded small seeded crops?

- **Oat, field pea, and clover – early spring cover crops, smother weeds, fix N, relatively easy to kill.**
- **Sorghum, sudangrass, and forage soybean – summer cover crops add biomass, reduce compaction, fix N; outcompete weeds – must mow to prevent heading out, kills in winter but provides good protection.**
- **Brassicas or radish (forage/daikon) as late summer/fall cover crops, rapid early growth, winter killed, leaves nice seedbed for early crops. Additional biofumigation effects.**
- **Summer buckwheat crop for smothering weeds – rapid germination and growth, easy to kill with mowing at flowering.**
- **Summer cowpea cover crop – fixes N, smothers weeds, allelopathic residue, tolerant of southern summers – holds up under heat and periods of drought.**