Organic Production Systems

Organic Production Systems are defined as “an ecological production management system that promotes and enhances biodiversity, biological cycles and soil biological activity. It is based on minimal use of off-farm inputs and on management practices that restore, maintain, and enhance ecological harmony” (National Organic Standards Board).

An Organic Production System is based on an understanding of the ecological processes that promote nutrient cycling, optimize plant and animal health, and increase resource efficiency in agricultural ecosystems. Some of the most important practices for organic crop production systems are:

Cover crops are defined as any crop grown for the protection and enrichment of the soil, not solely for production and harvest. Cover crops serve many purposes in an ecological management system. They can improve soil fertility by contributing nitrogen (through the use of legumes), scavenging soil nutrients (with plantings of cereal grains), and improving soil organic matter through incorporation of residues. Over time, cover cropping will improve soil texture, nutrient cycling capacity and soil moisture retention. Cover cropping can suppress weeds as a smother crop (by out competing weeds) or through allelopathic properties (root exudates that act as a natural herbicide). Cover crops along with other practices such as crop rotation also help to break disease and pests cycles by encouraging microbial action that discourages disease and encourages beneficial insect predators. Read more >> Cover crop recommendations for Georgia may be found here.

Crop rotation is the practice of planting a series of different crops on the same tract of land over a period of years. Crop rotations should have crops from different plant families following each other (e.g. beans, corn, cabbage). Cover crops are used in the crop rotation for the benefits described above. The three central benefits of crop rotation are to reduce the build-up of disease and pest populations, to improve soil structure by alternating deep and shallow rooted plants, and to balance fertility demands by avoiding the depletion of crop specific nutrients. More info

Integrated pest management (IPM) is a pest management approach that considers the life cycle of a targeted species and intervenes in reproduction, growth, or development to reduce pest populations to a level not harmful to crops. IPM also works to maintain populations of beneficial insects. There are many practices associated with IPM including use of biological pest control (natural insect predators), pest resistant varieties of plants, cultural practices (such as time sensitive plantings and irrigation), beneficial zones, trap crops, and various physical techniques (such as row covers). In conventional systems, pesticides are used as a last resort. The same is true for organic systems with OMRI listed organic pesticides.

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Crop diversity is growing a variety of crops within one farming system. The benefits of growing multiple crops are related to those described above for crop rotation, and include reducing pest and disease build-up, and reducing nutrient depletion. There are also non-production benefits such as reduced risks from crop failure or market fluctuations.

Green manures, animal manures, and compost are primary sources of fertility for organic production systems. Green manures are cover crops grown specifically to be plowed under and incorporated into the soil. Animal manures are an excellent source of nutrients and enhance soil biological activity; however, raw manures must also be applied within 90-120 days prior to harvest of a food crop. Compost or humus is decomposed organic matter that improves soil structure, aeration, moisture retention, biological activity, and nutrient cycling. These fertility sources are different from commercial inorganic fertilizers in that the nutrients are not all immediately available for your crops. The organic material has to be broken down or decomposed for the nutrients to be used by crops. How fast these materials decompose and release nutrients depends on the ratio of carbon (C) and nitrogen (N) in the material (C:N ratio), as well as soil temperature and moisture. More information on uses of these materials for fertility can be found at the Oregon Organic Fertilizer Calculator. This is an excellent tool to give you an idea about what nutrients will be provided, to help you calculate what types of organic fertilizers you may want to apply, and an excellent way to compare prices. Because the tool was developed for a different climate and different soils that we have in the Southeast, the nitrogen availability may not reflect what you will see on your farm.