A survey of Pennsylvania organic grain farms was conducted by Penn State extension scientists in collaboration with Pasa Sustainable Agriculture. The survey aimed to understand common tillage and cover cropping practices used in organic grain production. Current Penn State research is investigating cover crop-based tactics for reducing the intensity and frequency of tillage in organic grain rotations. Pasa’s Soil Health Benchmark study aims to quantify relationships between soil health metrics and tillage, cover cropping, and other crop management practices on Pennsylvania’s organic grain farms.

Survey demographics: Seventy-five percent of respondents reported growing organic grains on fifty acres or less. Most large organic acreages are in forages. Most survey respondents have been farming more than ten years. Fifty percent of farmers had less than twenty years of experience. The length of time farmers had been managing their farms organically ranged from 0 to more than twenty-five years (Fig. 1).

Crop rotation is a required practice for organic certification and is the foundation for both pest and soil fertility management in organic crop production.

Survey results indicated that long-term organic growers use a longer and more diversified crop rotation sequence than more recently transitioned growers (Fig. 2). Approximately seventy-five percent reported having a perennial phase of three years or more as part of their rotation.
Tillage and cover crops are key components of organic cropping systems. Survey results show that planting fall cover crops is a common practice (Fig. 3), no-till practices mainly occur before establishment of cover crops (Fig. 4), and inversion tillage is common for soil preparation before establishing corn and soybean (Fig 5).

Three case studies of organic farms provide insight and advice on:
- How to reduce tillage in organic production
- Benefits and challenges to using a high-speed disc in diverse crop rotations while minimizing soil disturbance
- The role of perennial forages in organic grain cropping systems

The growth in the organic foods market is driven by demand for organic dairy, poultry, and livestock products. The demand for organic feed grains to support animal production currently exceeds domestic supply, and organic feed grains command a price premium in the marketplace. Even though organic production can be more profitable than non-organic, some growers are hesitant to transition to organic production because of the need to replace chemical approaches to weed, insect, and plant disease with non-chemical practices. The conversion to organic crop production often involves an increased reliance on tillage to control weeds and other pests, raising concerns about soil conservation and health. This article is based on a survey that is part of a larger project to examine the benefits and trade-offs associated with the adoption of reduced tillage in organic agronomic cropping systems. The Reduced Tillage Organic Systems Experiment (ROSE) is located at Penn State’s Russell E. Larson Agricultural Research Center. Established in 2009, the field experiment compares the effects of different approaches to soil, cash crop, and cover crop management on soil health, plant pest and disease pressure, and crop productivity and profitability. The long-term goal of this multi-disciplinary project is to develop organic cropping systems that facilitate an increase in the domestic production of organic grains by intensifying organic grain production without compromising environmental quality and economic viability. The project is supported by the USDA NIFA Organic Research and Education program.

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