Profitable Strategies for Transitioning to Organic Grain Production in the Arid West: Experimental Plot Results in Dryland Eastern Washington

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Introduction

Although Washington State is the fifth largest wheat producer in the U.S., with over 2 million acres of wheat per year, less than 6% of that acreage is planted to organic wheat. Meanwhile, demand for organic grains is growing, approximately 15% to 30% per year. Shortages of organic grain have caused record high prices, forcing growers to abandon the organic market.

Farmers interested in growing organic grains cannot respond quickly to this market, as they must first obtain organic certification for their land. For this certification, growers must show they have used organic methods during a three-year transition period. No prohibited synthetic inputs can be used, including most common herbicides and fertilizers.

This three-year period presents a strong economic deterrent, as organic alternatives are frequently quite expensive, yet growers cannot receive organic premiums for their crops.

Objectives of the Study:

- Identify economically and environmentally sustainable organic cropping systems
- Determine effective weed and fertility management tools for organic systems in this region.

The WSU Organic Transition Study

Our project evaluated the use of nine transition systems to determine the most cost-effective strategy to transition to organic grain production in the Palouse using conservation tillage methods. The nine systems ranged from a conventional control utilizing only small grains to rotations that maximized nitrogen inputs by including legume green manures or alfalfa harvested for forage.

Forty-five plots (five replications of the nine systems), each measuring 30 ft wide by 50 ft long, were established in spring 2005 on the farm of Lester and Pat Boyd in Pullman, WA. Native soil fertility was supplemented with certified organic granular and fluid fertilizers as necessary. No synthetic herbicides or pesticides were used.

Problems & Solutions:

- WEEDS were a significant challenge during the transition phase, particularly in spring grains. Integrating mechanical weed control & selection of competitive rotations reduced weeds.
- FERTILITY to support grain crops relied on expensive organic fertilizer and green manure or forage crops. Significant sources of animal manure are not available in this region. Use of forages and green manure cover crops built nutrient levels to promote crop yield and quality, and helped with weed & pest control.

Mechanical Weed Control

Intensive primary and secondary tillage are not sustainable practices for soil conservation in the highly erodible Palouse. Instead, low disturbance tillage operations are used for integrated weed control. Plots were seeded at 1 ½ to 2-inch depth with the use of a no-till, double-disc drill. Deep pre-planting is a necessary step to control weeds before planting. The Phoenix rotary harrow was used pre-plant to till the soil and remove volunteer grain, alfalfa, and weeds. The rotary hoe was used post-plant every ten days until harvest, weather permitting, to disrupt and kill small weed seedlings.

Challenges for Organic Growers in Dryland Grain Growing Regions

- Organic price premiums for growers tend to be quite volatile, due to supply and demand fluctuations in this relatively small market. Growers should have contracts in place.
- Transportation to organic grain markets is typically more expensive; grain is usually trucked rather than shipped by rail or barge due to volume and separation issues, and few buyers exist.
- Organic grains must be kept free of contamination from GM crops, such as volunteer GM canola seed.
- Insufficient nutrients can reduce yields and protein levels.
- Organic weed and disease control methods can be costly or simply lacking.
- Growers need more information on organic methods targeted to their region and crops.

Conclusions

Organic growers face the challenges of maintaining fertility while managing weeds, using only certified organic inputs, all while trying to remain profitable. Results of this cropping systems trial showed that a forage/green manure crop can meet these demands in this area: weeds are controlled when the forage is harvested, fertility is enhanced through green manures planted with the alfalfa, the three-year stand reduces costs during the transition period, and income is generated from the alfalfa crops.