

Tough Year for Camelina at Lind in 2008

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East-central Washington experienced severe drought during the 2008 crop year (Sept. 1, 2007 – Aug. 31, 2008). The WSU Dryland Research Station at Lind received only 6.77 inches of precipitation in 2008 compared to the long-term average of 9.52 inches. In addition, due to evaporation and sublimation of water from prolonged snow cover, over-winter precipitation storage efficiency in the soil was only 41% compared to the long-term average of 68%. Only 0.30 inches of rainfall occurred during the combined months of April and May. This was one of the toughest crop years in the 93-year history of the Dryland Research Station.

The 2008 crop year was hard for all recrop (i.e., no fallow) crops at Lind. For example, recrop spring wheat yielded only 5 bu/acre. Average grain yield of camelina from a number of experiments at Lind in 2008 was 75 lbs/acre. Although camelina stands averaged 65 plants per square meter when measured in early April, approximately 75% of the established plants died from drought in May and June. Plants that survived were single stem (i.e., no branching) and only 5-8 inches tall.

Wide Row Spacing Canola Project

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In 2007 Palouse Conservation District contracted with Washington Department of Ecology to develop a project looking at wider row spacing of spring canola. The objectives are to (1) provide possible ways for growers to seed into heavy residue without burning and, (2) help growers learn to grow canola in wide rows economically.

Canola can provide benefits on the farm.

- Breaking a disease cycle in rotation with wheat
- Potential for improving the following wheat crop through weed and disease control
- Provide a tap root to find water and retrieve nitrogen from the previous crop

Three growers in the PCD each graciously provided a 2-acres for the spring canola research plots. They are Lee Druffel, Keith Kopf, and John Leendertsen. Seeding was done by the USDA Agricultural Research Service staff at Pullman with a WSU SeedHawk Drill. The SeedHawk drill was donated by the St. John Grange Supply Agronomy Department manager, Ed Bageant.

In the first year of research, we found no difference in the spring canola yield between seeding at 11 inch seed row spacing and 22 inch seed row spacing.

In April 2009, the plots were again established on the Keith and Heidi Kopf farm east of Pullman. The plots were direct seeded into 100+ bushels per acre winter wheat residue with the Crops and Soils Department Seed Hawk drill. Future implications are that wide rows could reduce seed cost, machine cost, and fuel cost.

Rotation Benefits of Winter Canola on the Subsequent Wheat Crop

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Multiple-year experiments are being conducted in the low (Ritzville) and intermediate (Davenport) precipitation regions of eastern Washington to document the rotation benefits of winter canola (WC) in wheat-based cropping systems. Our objective is to determine the benefits of winter canola grown in (i) a 4-year WC-SF-WW-SF rotation compared to the traditional 2-year WW-SF rotation in the low-precipitation zone and, (ii) a 3-year WC-SW-SF rotation compared to a WW-SW-SF rotation in the intermediate precipitation zone. Several years of field data from the two locations will be required to “tell the story” on the benefits of WC as a rotation crop. Winter canola

is difficult to establish in tilled summer fallow because emerging seedlings are killed by the hot surface soil when air temperatures are 85° F or greater. Thus, it is necessary to time the planting of WC with the expected air temperature 6-8 days after planting when the WC will be emerging. We have had no problem establishing WC in the intermediate precipitation zone in chemical summer fallow where planting depth is shallow and soil water plentiful. Winter canola tends to use more water in the lower (i.e., 3 to 6 feet) profile than does winter wheat. There was a grain yield reduction of WW at Ritzville in 2008 that was correlated with the high water use by WC grown in 2006 (Fig. 1). These experiments will continue for several years.

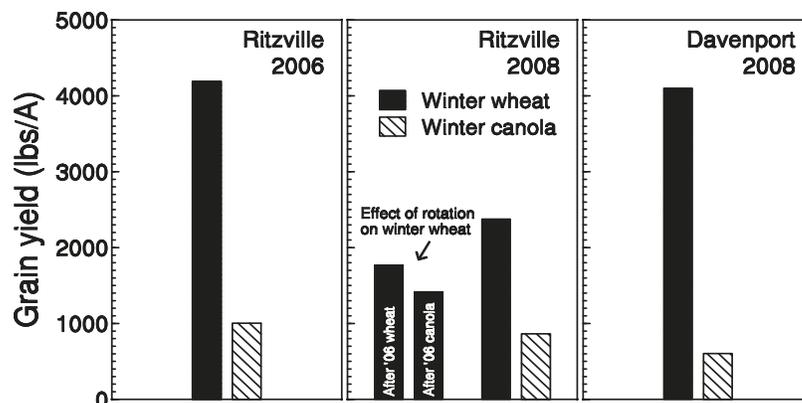


Fig. 1. Winter wheat produced more than four times the grain biomass compared to winter canola during three site years. Monoculture winter wheat after fallow produced 30 bu/a at Ritzville in 2008 compared to 24 bu/a when the previous crop was winter canola (with a year of fallow in between). The wheat grain yield reduction following winter canola is positively correlated with winter canola's greater soil water use in 2006. Abbreviations: SF, summer fallow; SW, spring wheat; WC, winter canola, WW, winter wheat

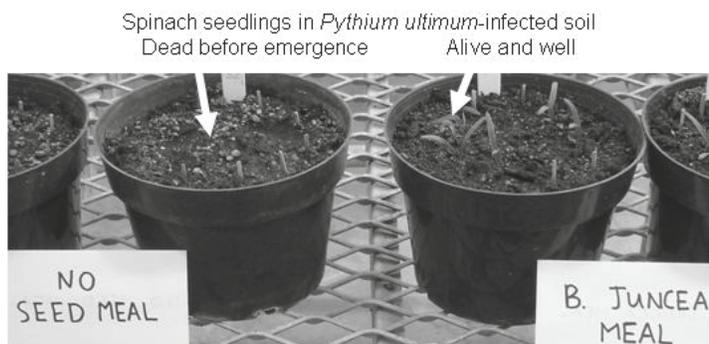
Brassicaceous Seedmeals as Soil Amendment for Seedling Protection from Soilborne Diseases

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This project has completed a series of greenhouse and laboratory studies on the agricultural value-added uses for Brassicaceous seedmeals (BSM). In some settings BSM may be effective in reducing fungal plant root disease, reducing both pre- and post-emergence seedling damping off, improving emergence and plant growth. In greenhouse trials in soil infested with *Pythium ultimum*, spinach seeds with no BSM treatment had only 35% emergence, and 55% of the emergent seedlings died. *Brassica juncea* (Indian mustard) seedmeal added to the potting mix improved seedling emergence to near 100% and seedling mortality was less than 5%. *Sinapis alba* seedmeal provided marginal reduction in seedling death. Timing of BSM application to soil vs. planting into treated soil was a critical factor in the effectiveness of treatment. Optimal effects generally were seen when seeds were planted 2-4 weeks after BSM treatment.



Economic analysis indicated that among the possible value-added uses of BSM for organic nitrogen fertilizer, weed control, or fungal pathogen control, the latter has the greatest market potential. While other products are available for organic nitrogen and some products and techniques for weed control, the products for fungal disease control are very limited. Given that the price of nitrogen fertilizers continue to rise, BSM-based fertilizers may also become profitable.