

contract prices. Chickpea and wheat had the greatest gross economic return at \$214 and \$199/ac, respectively, compared to canola at \$166/ac. Production costs considered included only seed, fertilizer, and herbicide costs. Over the six years wheat had the lowest production costs at \$100/ac, and canola and chickpea both averaged \$116/ac. Overall wheat and chickpea produce the greatest economic return to growers over costs at \$99 and \$97/ac, respectively, and canola produced \$48/ac over costs. In conclusion market price is a major component of potential profitability of wheat, chickpea and canola.

Treatment	Yield (lbs./ac)	Market Price (\$/lb)	Gross Economic Return (\$/ac)	Cost (\$/ac)	Economic Return over Costs (\$/ac)
Wheat	2134 a	0.093	199 a	100	99 a
Canola	1014 b	0.162	165 b	116	48 b
Chickpea	963 b	0.222	214 a	116	97 a
LSD (P<0.05)	134		21		21

Means within columns with different lowercase letters are significant (P<0.05).

## Soil Water Dynamics with Camelina in a Three-Year Rotation in Washington's Winter Wheat-Fallow Region



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Camelina of the *Brassicaceae* family is a short-season oilseed with tolerance to water stress and frost. Camelina has been promoted as a potential alternative crop for the low-precipitation (<12 inch annual) Mediterranean-like climate region of inland Pacific Northwest where a monoculture 2-yr winter wheat-summer fallow (WW—SF) rotation is practiced by the vast majority of farmers. An 8-yr field experiment was conducted at Lind, WA to compare a 3-yr WW—camelina—SF rotation to the typical 2-yr WW—SF rotation. We conducted a detailed analysis of soil water dynamics of these two crop rotations throughout the experiment. Growing camelina reduced soil water content at the beginning of the fallow period, and this reduction resulted in an average of 0.83 inches less water at the time of WW planting and a 2.5 bushel/acre reduction in grain yield compared to WW—SF. Compared to WW—SF, we found that: (i) the deep-rooted broadleaf weed Russian thistle present in camelina most years was a likely reason for significantly greater in-crop soil water use, and (ii) the limited residue produced by camelina was likely responsible for greater evaporative loss during the spring-through-late-summer segment of fallow. These are the first findings from the Pacific Northwest drylands of greater water use by a cool-season spring crop versus WW as well as greater evaporative loss during the dry summer months due to lack of residue during fallow. In this experiment, extending the crop rotation to include camelina was costly in terms of water use, surface soil residue cover, soil water storage during fallow, and WW grain yield. Read the full article here: <https://access.onlinelibrary.wiley.com/doi/full/10.2136/sssaj2019.05.0157>.



## Developing Diagnosis and Recommendation Integrated System for Micronutrients in Spring Canola

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Macronutrient and micronutrient concentrations in tissue tests vary between crop species. Additionally, tissue concentrations may also vary between varieties in a single crop species. In crops such as canola (*Brassica napus*) critical values might be used from a closely related crop species such as rapeseed (*Brassica rapa*), without validating the critical values for the crop of interest. In addition to the variations between and within species there may also be wide spatial variation within fields. In order to assess some of these variations and work towards establishing critical values in the inland Pacific Northwest we collected tissue samples from winter and spring canola trials in Washington. We sampled farm scale variety trials in order to assess the variation between crop cultivars and the variation across a field within individual cultivars. The strip were 40 feet wide by 600 feet long and contained five varieties replicated four times coming to total of 11 acres. The strip trial was established near Almira, WA following winter