considered, rotations with canola provided the highest returns. For example, Table 1 compares the net returns from a traditional winter wheat – fallow rotation to net returns from a rotation with winter canola grown every other cycle, where the second scenario includes a boost in wheat yield.

Table 1. <17" Rainfall Region: Winter Canola every other WW-Fallow cycle Reduced Tillage, Yield Impact Scenarios

	Returns over Total Costs ($/ac/yr)	Returns over Variable Costs ($/ac/yr)
ROTATION/Scenario		
Baseline – SWWW (50 bu/ac), WC (1500 lb/ac)		
CF, WW, CF, WW	**$28**	**$117**
CF, WW, CF, WC	$25	$114
Rotational impact on wheat yield (+20% WW)		
CF, WW, CF, WW	$28	$117
CF, WW, CF, WC	**$45**	**$134**

Double-Cropping Dual Purpose Irrigated Biennial Canola with Green Pea

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Growers are reluctant to convert cropland to sole biofuel feedstock such as canola due to the low oil yield and economic return compared to other higher value crops such as wheat. However, when planted as a biodiesel crop, canola can play a significant role in curbing the foreign import of petroleum-based fuel and can contribute to a reduction in greenhouse gas emissions. Double cropping dual purpose canola with green pea may justify the expansion of canola in Pacific Northwest. The green pea-biennial canola- double-crop system can provide new opportunities for growers in the region through i) providing additional annual farm income with the production of green pea and canola forage, ii) protecting the soil from wind erosion through vulnerable periods (late summer through spring) with crop coverage, iii) producing canola seed in the subsequent year for oil (biofuel or food) and high-protein meal (animal feed), and (iv) preventing the decline of soil health while enhancing soil and water quality. The objectives of the current study were to assess the feasibility and estimate the overall profitability of the double-crop dual purpose canola, quantify the N contribution from green pea to succeeding canola, and assess potential soil and water quality impacts of the double-crop system. The study was initiated in USDA-ARS research site located near Paterson, WA in spring 2012. The experiment was conducted in a split-plot design with 4 replications. Main plots were stand management (simulated canola grazing or no grazing) treatments. Subplots were 3 x 3 factorial combinations of N (0, 50, 100, and 200 lbs/ac) and S (0, 30, and 60 lbs/ac) fertilizer rates. The subplots were 20 ft x 50 ft. The project is in its first year of implementation, and data collection is in progress. However, preliminary results showed that average green pea (shelled) yield was 6.5 ton/A; uniform across replicates. Sixteen-percent moisture adjusted canola dry matter yield cut at rosette growth stage 29 was 1900 lbs/A. The inorganic N in the soil prior to pea planting was 2 lbs/A, much lower than what was documented before canola planting (22 lbs/A). Average crude protein of canola forage harvested at growth stage 19 (BBCH scale) was 30% with average digestible neutral detergent fiber of 29%. Total digestible nutrients constituted about 75% of dry matter. Producers will be able to use the information generated from this project and incorporate the green pea–biennial canola double-crop system into the traditional one crop-per-year system. In the intermediate-term, growers will adopt the double-crop system and customize it to their situation. The N contribution from the green pea to the biennial canola crop would result in fertilizer savings for the grower.