

crop camelina replaces fallow, and to WW-SC-SW-NTF, where fallow is included in the rotation, but a spring wheat crop is replaced by spring canola to calculate its rotational benefit.

Preliminary results from the 2013 harvest indicate that WW in the WW-SW-NTF rotation yielded higher (107 bu/ac) than in rotations where it had followed spring wheat (89 bu/ac), camelina (88 bu/ac), or spring canola (94 bu/ac). While there is a yield loss in the continuous cropping rotations, the economics of these rotations have yet to be analyzed, and will be in the coming year.

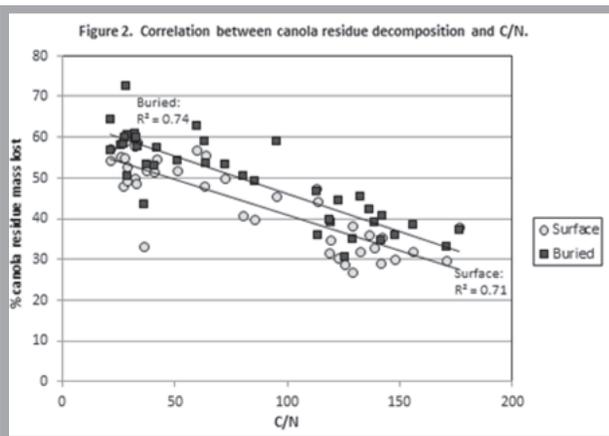
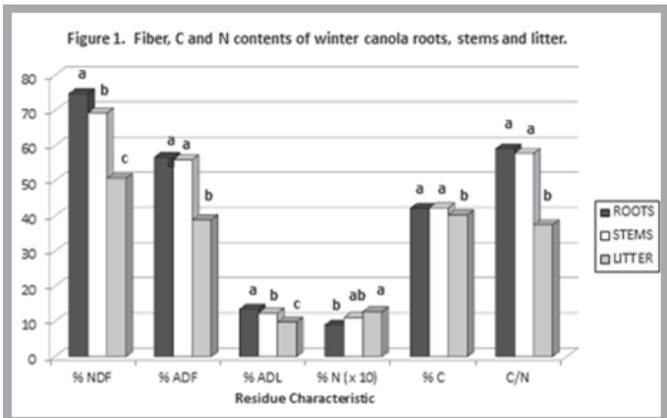
Characterization and Decomposition of Residue from Winter and Spring Canola Cultivars

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The residue characteristics and decomposition of spring and winter canola (*Brassica napus* L.) cultivars currently grown in the Pacific Northwest (PNW) was investigated. Above- and below-ground residue was collected post-harvest in 2011 and 2012 from Univ. of Idaho Canola Winter Variety Trials at Odessa, WA (irrigated site), Moscow and Genesee, ID, and Spring Variety Trials at Davenport and Colfax, WA and Moscow, ID. Residue was analyzed for fiber, carbon (C), and nitrogen (N) content, and decomposition in soil. Canola plant components varied in fiber and nutrient content with canola litter (leaves, small stems, pods) having lower neutral detergent fiber (NDF), acid detergent fiber (ADF), acid detergent lignin (ADL), C, and C/N, and higher N than the roots and stems (Figure 1; $P < 0.05$). Lower NDF, ADF, ADL and C/N along with higher N are indicators of rapid decomposition.

Winter and spring canola stem, root and litter residue differed from one another in fiber and nutrient content, with winter canola having lower NDF, ADF, ADL, C, C/N, and higher N than spring canola. Because winter canola decomposes more rapidly than spring canola and may be used in crop rotations that include summer fallow, winter canola residue must be managed in order to avoid soil erosion, loss of soil organic matter, and degradation of soil quality.



Canola stem residue decomposition in laboratory studies was highly correlated with C/N (Figure 2; $P < 0.05$), and was also correlated with NDF and ADF. Buried residue, as in a conventionally tilled system, decomposed more rapidly than surface-placed residue. Residue characteristics varied with growing location, with residue from locations receiving higher precipitation having higher C/N. Residue from lower rainfall locations and winter canola cultivars shows potential to decompose more rapidly. We did not find clear differences in residue characteristics or decomposition among the seven winter and seven spring canola cultivars tested in the study. However, we have shown that decomposition occurs most rapidly when residue contains the least amounts of fiber components, highest N and lowest C/N. As marketing opportunities for oilseed crops produced in the PNW and worldwide increase, information on residue decomposition will be useful to growers who wish to incorporate canola into reduced tillage crop rotations to increase cropping diversity and prevent soil erosion. Additionally, canola residue may be managed for greatest economic success and soil quality benefits in conventional and conservation farming systems.