2011 OTRI Research Executive Summary

Impact of Cover Crops on Processing Tomato: Yield, Quality, Pest Pressure, Soil Health, and Economics.

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Cover crops over the long-term may increase soil organic matter, soil and plant health and crop productivity. However the short-term impact of cover crops on processing tomato production is unknown. The objective of this project was to compare the impact of cover crops planted before processing tomato. The cover crops planted after spring wheat were 1) oat, 2) fall rye, 3) oilseed radish, 4) mix of oilseed radish and rye, and 5) no cover crop control. Results from two years indicate that the cover crops did not influence processing tomato quality (Agtron colour, pH or soluble solids – S.A. Loewen). None of the cover crops tested had any negative effects on soil pests (nematodes, wireworm, millipedes, cutworm, maggots) or the incidence or severity of common pests (bacterial spot, bacterial speck, bacterial canker, Colorado potato beetle, tomato hornworm, and stink bug – C. Trueman) when tested under a typical commercial spray program. Soil and plant nitrogen analysis suggests that growers do not need to modify N fertilizer rates when using cover crops before processing tomatoes. In both years, oilseed radish was the highest yielding and profitable cover crop (R.J. Vyn). In both years, all cover crops had as good as or better yields and profit margins compared to the no cover crop control. Considering that economic analysis included the cost to hire a custom applicator to plant and to control fall rye in the spring, economics should not be a limiting factor to planting a cover crop. These results were observed on a site with healthy, good tilth soil (sandy loam, OM 3.5%), perhaps greater differences would be observed on degraded soils.

Table 1. Impact of cover crop, N fertilizer and variety on processing tomato yields in 2010 and 2011*.

	2011			2010		
	Reds only	Marketable	Total	Reds only	Marketable	Total
Cover crop	ton/ac					
Oilseed radish	45.7 a	52.7 a	55.6 a	43.9	46.4 ab	51.4 a
Oat	44.5ab	51.0 ab	53.1 ab	43.1	43.1 ab	45.7 ab
Fall rye	46.0 a	50.3 ab	51.1 ab	41.0	41.0 b	43.2 b
Oilseed radish + fall rye	41.7 ab	47.5 ab	49.5 ab	46.9	46.9 a	50.1 a
No cover crop	39.8 b	46.4 b	48.1 b	45.0	45.0 ab	47.9 ab
N fertilizer to tomatoes						
Starter N only	39.7 k	45.6 k	46.9 k	43.0	43.6	46.4
Full N	47.4 j	53.6 j	56.1 j	45.0	45.4	49
Variety						
Early TSH 18	36.0 z	45.8 z	48.1 z	35.6	36.2 z	39.0 z
Late CC337	51.0 y	53.4 y	54.9 y	52.4	53.0 y	55.7 y

*Different letters in each column indicates a statistical difference.