

Evaluation of Daikon Radishes

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Daikon radishes are becoming more popular as a winter cover crop for their ability to scavenge and recycle nutrients, alleviate compaction, and act as a biofumigant (to combat certain crop pests). Radishes are a specific type of brassica that typically winter-kill in Virginia; other cover crop brassicas include rape and turnip.

This project compared five different brands or varieties of Daikon radishes, and evaluated their performance. The varieties compared were: 'Eco-Till', 'Groundhog', 'Nitro', and 'Tillage'. 'Soil Buster' (a blend of WS 10-11 and Kaiwari) was included at the final site, but data is not reported here. All seed was purchased in 2012 and ranged in price from \$15.60 to \$21.90 per acre (at 6 lbs/acre). Each radish variety was planted in strips with 10 pounds of triticale and 15 pounds of hairy vetch in mid-September, 2012 on three farms west of Harrisonburg, Virginia. Established Radish plots were sampled in late-December prior to winter-kill. The length and girth of each radish bulb was measured. Above- and below- ground biomass was separated and analyzed at Virginia Tech for accumulation of carbon, nitrogen, and other nutrients.



Harvesting radishes from triticale, radish, hairy vetch plots.

The data showed little statistically significant difference among radish varieties. Field variability may have had the most impact in this test as sample size was relatively small. Relative data and summary data are presented here. It is important to note that all varieties produced both large and small radishes, regardless of proximity to neighboring

radishes.

The nitrogen uptake and carbon to nitrogen (C:N) ratio of the radishes are important figures to recognize. A ratio of 24:1 is ideal to expedite residue decomposition and nitrogen release. A high C:N lacks the nitrogen required to decompose a high-carbon residue, possibly resulting in temporary nitrogen tie-up, as microorganisms pull nitrogen from other sources. A lower ratio allows for rapid plant breakdown and release of excess nitrogen. The C:N ratios found in our



Typical sample of all radishes from one square yard harvested plot.

radish study are very favorable, and radishes overall scavenged about 26 pounds of nitrogen/acre.

Sample measurements, relative numbers*						
	Stand Counts	Foliage Dry Weight	Tuber Dry Weight	Total Dry Weight	Length	Girth/ circumference
Eco-Till	0.94	1.17	1.19	1.18	1.07	1.00
Groundhog	1.04	0.83	0.75	0.79	0.87	0.90
Nitro	0.96	1.01	1.08	1.05	1.04	1.03
Tillage	1.06	1.11	1.11	1.11	0.98	1.02
Soil Buster	N/A					
AVERAGES	106,000 plants/acre				5.2 inches	3.3 inches
Maximum (inches)					10.1	6.1



Twenty-nine inch radish taproot pulled from cover crop plot. It appeared to break off, indicating the root went deeper still.

Average Biomass Produced across all Varieties (lbs/ac)		
	Dry (lbs/ac)	Wet (tons/ac)
Aboveground	421	2.6
Belowground	472	3.7
Total	893	6.3

Average Accumulation in Radishes				
	Percent Nitrogen	Percent Carbon	C:N Ratio	Pounds N/ac
Aboveground	3.5	39	13	15
Belowground	2.3	36.6	16.2	11
			TOTAL	26

*Rather than actual numbers produced, relative numbers are shown to present yield relative to one another. A response of 1 would be average, and so anything above 1 is above average and anything below 1 is below average.

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