

Impact of High Glucosinolate Mustard Biomass and Meal on Black Bean Yield



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achieve a fine texture. Meal was applied in the 'fall-applied meal' treatment on 5-Nov 2012 at a rate of 3 lbs per plot, or 523 lbs per acre. On 5-Nov 2012, biomass samples of the HGM cover crop plots were taken by harvesting all plants in a known area. Subsamples were dried and collected, then shipped to

Black turtle beans (the variety 'Midnight') were planted on 4-Jun 2013 with a John Deere MaxEmerge 1750 corn planter. Beans were seeded in 30" rows at a rate of 8-10 seeds per row foot, or approximately 130,000 seeds per acre. On 20-Jun 2013, bean plants had emerged, and plots were tineweeded. On 13-Jun 2013, plots were sampled for soil nitrate analysis, provided by UVM's Agricultural and Environmental Testing Laboratory. Bean plants were counted to calculate plant population on 27-Jun 2013. Bean and weed populations were assessed on 9-Jul 2013. Additional weed control was provided as hand-weeding on

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On 13-Jun 2013, soil nitrate levels did not differ significantly by HGM treatment (Table 6). There was no statistical difference in bean populations, assessed in late June, by HGM treatment. Likewise, bean populations were not statistically different in July, but averaged 45.0 plants per square meter.

Table 6. Nitrate levels, population, and harvest data for black beans, 2013, Alburgh, VT.

HGM treatment	June		July			Harvest		
	Nitrates	Bean population	Beans	Grasses	Broadleaves	Moisture	Test weight	Yield
	mg kg ⁻¹	plants m ⁻²	plants m ⁻²	plants m ⁻²	plants m ⁻²	%	lbs bu ⁻¹	lbs ac ⁻¹
Whole plant	3.56	24.5	36.3	22.7	24.2	13.8	61.7	1594
Fall-applied meal	4.18	23.0	53.0	53.0	21.2	13.6	60.7	1379
Spring-applied meal	3.24	26.4	43.9	95.3	48.4	13.9	61.3	1064
Control	2.73	24.9	46.9	46.9	49.9	13.6	61.8	1323
LSD (0.10)	NS	NS	NS	NS	NS	NS	NS	NS
Trial mean	3.43	24.7	45.0	54.5	35.9	13.7	61.4	1340

NS –

Figure 4. Yields by HGM treatment. There were no significant differences by treatment (p=0.10).

DISCUSSION

In this 2012-2013 trial, soil amended HGM cover crops or meal did not significantly impact soil characteristics, weed populations, plant populations, or yield and quality of black beans. In whole plant plots, HGM was plowed under and incorporated with an average biomass accumulation of 2345 lbs per acre. These yields are lower than those reported in research trials conducted in the Pacific Northwest. Yields of HGM in these trials ranged from 3 to 5 tons of dry matter per acre. Yields of HGM will likely

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