

## 2011 FORAGE BRASSICA VARIETY TRIAL

Forage brassicas are cool season crops and grow best during the late summer and fall months. This creates the opportunity to fill a gap in feed quality during months not optimal for perennial pasture production. Many producers are interested in extending the grazing season into late fall to improve farm viability. Brassica crops are known for their ability to provide a near-concentrate type diet late in the season, decreasing reliance on expensive imported grain for nutrient requirements. In 2011, the University of Vermont Extension Northwest Crops and Soils Team conducted a forage brassica trial in Alburgh, VT. The objective was to evaluate the yield and quality abilities of commercially available forage brassica varieties including radish, turnip, mustard, kale, and rape.

### MATERIALS AND METHODS

The 2011 trial was located at the Borderview Farm in Alburgh, VT.

Table 2. Forage brassica varieties and their sources 2011.

Variety	Species	Seed source
Appin	Turnip	King's Agriseed
Barkant	Turnip	Barenbrug
Bonar	Rape	King's Agriseed
Braco	White mustard	Preferred Seed Co.
Caledonia	Kale	Preferred Seed Co.
Dwarf Essex	Rape	Preferred Seed Co.
Ground Hog	Radish	Preferred Seed Co.
Pasja	Brassica hybrid	King's Agriseed

from one another. All data was analyzed using a mixed model analysis where replicates were considered random effects. The LSD procedure was used to separate cultivar means. The F test was significant ( $P < 0.10$ ).

## RESULTS

Seasonal precipitation and temperatures recorded at a weather station in close proximity to the 2011 research site are shown in Table 3. September and October 2011 had more precipitation and higher temperatures than the 30-year average. Between the two months, average temperatures were 5.2°F warmer than the historical average. There were a total of 1,127 GDD accumulated for the two-month growing season of forage brassicas—306 more GDDs than the 30-year average.

Table 3. Temperature, precipitation, and Growing Degree Days (GDD) data by month for Alburgh, VT.

Burlington, VT (Alburgh, VT)	September	October
Average temperature (°F)	63.8	51.5
Departure from normal	5.8	4.5
Precipitation (inches)	5.56	2.68
Departure from normal	2.10	0.10
Growing Degree Days (base °F)	662	465

Table 4. Crop stand characteristics and dry matter yield of ten trialed forage brassicas.

Variety	Species	Vigor	Plant population	Height	Dry matter yield
		1-5 scale	in 33 cm	inches	lb acre <sup>1</sup>
Appin	Turnip	4.3*	7.70	7.9*	1291
Barkant	Turnip	4.2*	10.2	6.2*	1275
Bonar	Rape	3.7*	6.60	6.9*	703
Braco	White mustard	3.7*	4.00	6.8*	902
Caledonia	Kale	1.3	2.00	6.2*	1082
Dwarf Essex	Rape	2.8	7.10	4.7	801
Ground Hog	Radish	3.0	3.20	6.3*	774
Pasja	Brassica hybrid	4.7*	7.00	7.2*	1161
Purple Top	Turnip	3.7*	14.3	5.2	1155
T-Raptor	Brassica hybrid				

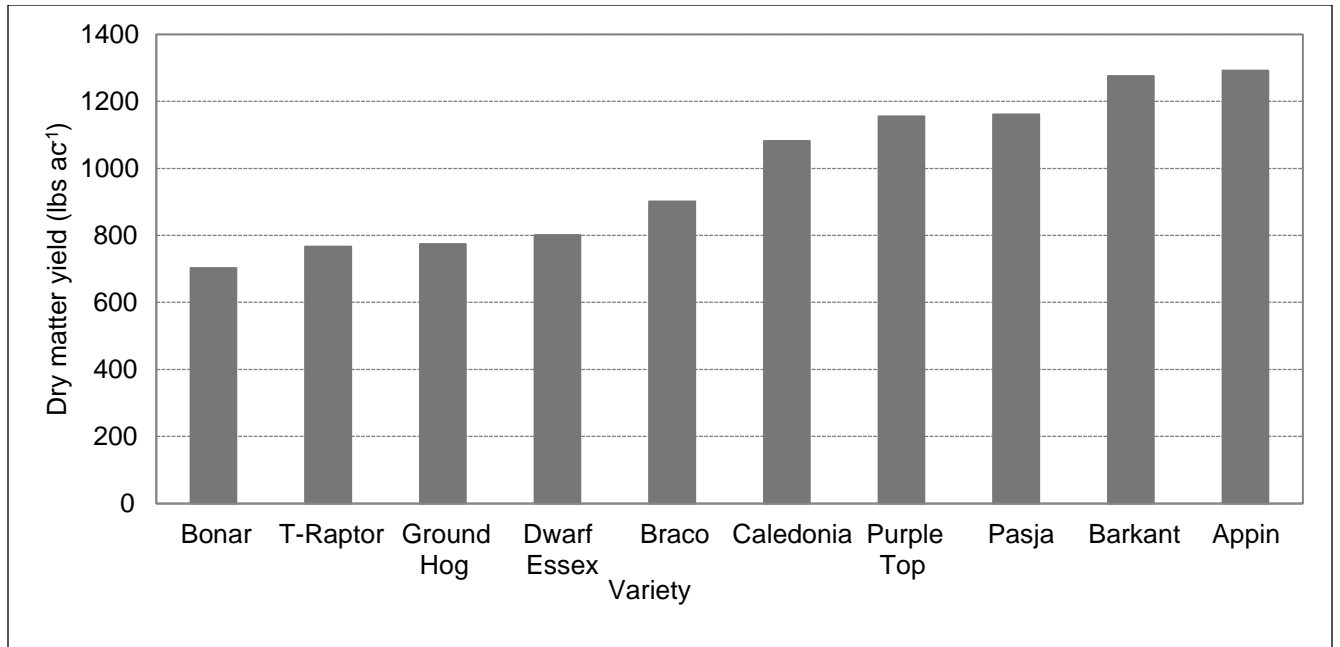


Figure 3. Dry matter yields for forage brassicas. *There was no significant difference among varieties.*

Table 5. Feed quality indicators of trialed forage brassicas.

Variety	Crude protein %	ADF %	NDF %	Ash %	TDN %	NFC %	NSC %	NeL Mcal lb <sup>-1</sup>
Appin	16.8	15.1	17.2	16.5	66.9	48.1	22.9	0.69
Barkant	15.5	14.8	17.0	15.9*	67.1	50.3*	24.4	0.69
Bonar	17.4	13.9	16.3	15.3*	69.1	47.4	23.2	0.72
Braco	18.5	16.5	18.0	18.3	65.1	43.7	15.6	0.67
Caledonia	21.5*	12.1	13.6	16.3	68.6	47.4	23.3	0.71
Dwarf Essex	17.2	13.6	15.5	13.7*	71.1	51.7*	26.7*	0.74
Ground Hog	20.1*	15.6	16.7	17.7	66.2	44.0	16.0	0.69
Pasja	16.0	14.3	17.0	16.7	66.9	48.9	23.9	0.69
Purple Top	15.7	14.8	16.0	16.3	67.5	50.7*	25.9*	0.70
T-Raptor	15.4	12.7	15.4	14.1*	70.3	53.5*	28.0*	0.73
LSD (0.10)	2.9	NS	NS	2.4	NS	3.4	3.5	NS
Trial mean	17.4	14.4	16.3	16.1	67.9	48.6	23.0	0.70

Treatments indicated in bold had the top observed performance.

\* Treatments indicated with an asterisk did not perform significantly lower than the performing treatment in a particular column.

NS—No significant difference was determined between treatments.

Forage brassica varieties differed in several quality parameters (Table 5). Crude protein differed significantly by variety, with the highest concentrations in the variety Caledonia and the tillage radish Ground Hog. Crude protein values were between 15 and 22% for all varieties.

Figure 4. Crude protein values for forage brassicas.

Table 6. Micronutrient levels of forage brassicas in the variety trial.

