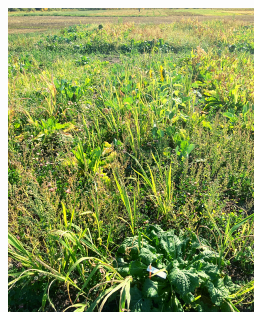


COVER CROP MIXES



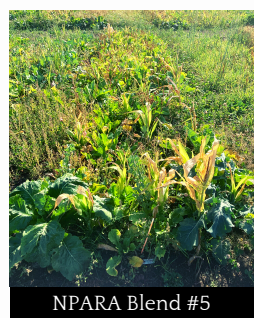
Ultimate Annual Blend



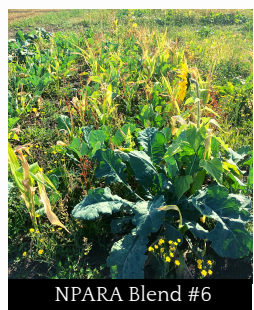
NPARA Blend #1



NPARA Blend #2



NPARA Blend #5



NPARA Blend #6

Annual polyculture cover crop trial - blend content and seeding rate.

Mix/Blend	Components	Crop/Variety	% of Mixture	Seeding Rate (lb ac ⁻¹)
Ultimate Annual Blend (UA)	Cool Season Grasses	Crusader Italian Ryegrass	30	3.6
		Hunter Leaf Turnip	5	0.6
	Cool Season Broadleaves	Graza Forage Radish	5	0.6
		Forage Rape (Winfred)	5	0.6
	Cool Season Legume	Hairy Vetch	25	3
		Crimson Clover	10	1.2
Pinpoint Blend (PB)	Warm Season Broadleaves	Sunflower	5	0.6
		Crown Prozo Millet	15	1.8
	Cool Season Grasses	Green Spirit Italian Ryegrass	45	5.4
		T Raptor Hybrid Brassica	7	0.84
	Cool Season Broadleaves	Barsica Forage Rape	8	0.96
		Super 10 Berseem Clover	10	1.2
NPARA Blend #1 (N1)	Cool Season Legume	Laser Persian Clover	5	0.6
		Sorghum Sudan Grass	20	2.4
	Warm Season Broadleaves	Teff Grass	5	0.6
		Crusader Italian Ryegrass	11	3.6
	Cool Season Broadleaves	Forage Rape (Winfred)	8	2.4
		Forage Peas (Goldeneye)	31	10
NPARA Blend #2 (N2)	Cool Season Legume	Faba Beans (Snowbird)	31	10
		Soybeans (Edward)	11	3.6
	Warm Season Broadleaves	Sorghum Sudan	8	2.4
		Oats (CDC SO-1)	77	40
	Cool Season Grasses	Hunter Leaf Turnip	2	1.2
		Hairy Vetch	8	4.2
NPARA Blend #3 (N3)	Cool Season Broadleaves	Crimson Clover	2	1.2
		Buckwheat	6	3
	Cool Season Legume	Golden German Millet	5	2.4
		Cereal Rye	77	40
	Warm Season Broadleaves	Daikon Radish	7	3.6
		Purple Top Turnip	2	1.2
NPARA Blend #4 (N4)	Cool Season Grasses	Bombus White Clover	9	4.8
		Safflower	2	1.2
	Cool Season Broadleaves	Teff Grass	2	1.2
		Cereal Rye	77	40
	Cool Season Legume	Graza Forage Radish	5	2.4
		Balansa Clover	6	3
NPARA Blend #5 (N5)	Warm Season Broadleaves	Soybeans	9	4.8
		Golden German Millet	3	1.8
	Cool Season Grasses	Crusader Italian Ryegrass	6	3.6
		Viva Hybrid Brassica	3	1.8
	Cool Season Broadleaves	Graza Forage Radish	2	1.2
		Lupin	4	2.4
NPARA Blend #6 (N6)	Cool Season Legume	Faba Beans	16	10
		Buckwheat	5	3
	Warm Season Broadleaves	Greenway GX80 Corn	65	40
		Crusader Italian Ryegrass	6	3.6
	Cool Season Grasses	Graza Forage Radish	1	0.6
		Forage Rape (Winfred)	1	0.6
NPARA Blend #6 (N6)	Cool Season Broadleaves	Forage Peas	16	10
		Hairy Vetch	4	2.4
	Cool Season Legume	Sunflower	2	1.2
		Buckwheat	4	2.4
	Warm Season Broadleaves	Sorghum Sudan	2	1.2
		Greenway GX80 Corn	65	40

COVER CROP MIXES

In the previous year (2020), cover crops were also seeded, but C and N contents obtained through decomposition were not sufficient to show significant differences across cover crop blends. The impact of cover crop seeding on nitrogen and carbon content can take several years for differences to be observed. Furthermore, the use of cover crops for soil quality improvement is a process that requires steady and uninterrupted contributions.

Content in parts per million (ppm) of soil total N and C, C:N ratio, total organic C as per standard chemical analysis and water soluble organic and inorganic N and organic C as per Haney soil test analysis

Treatment	Nitrogen				Carbon			C:N
	Standard	Haney			Standard		Haney	
	Total	Total	Organic	Inorganic	Total	Organic	Organic	
Ultimate Annual	0.27	28.90	21.73	7.18 ± 0.82	2.52	2.51	202.75	9.52
Pinpoint	0.24	27.80	20.85	4.30 ± 1.64	2.19	2.16	176.50	9.32
1	0.25	29.55	21.18	7.60 ± 1.64	2.31	2.29	190.25	9.24
2	0.25	28.38	20.60	6.63 ± 0.95	2.32	2.31	199.75	9.35
3	0.25	29.40	22.48	7.70 ± 0.95	2.42	2.40	186.50	9.56
4	0.26	28.85	22.08	7.75 ± 1.16	2.44	2.42	198.50	9.47
5	0.26	32.73	22.38	10.53 ± 0.95	2.43	2.39	208.00	9.52
6	0.27	28.78	20.18	9.65 ± 1.16	2.62	2.59	178.50	9.61
Standard error	0.01	1.31	1.02		0.14	0.13	13.17	0.20

NPARA blend #2 of the cover crop mixes produced the highest amount of dry matter ($P \leq 0.0001$), while blend #4 had the least. Acid detergent fibre (ADF) content was greater in NPARA blend 3 compared to Pinpoint ($P \leq 0.0001$). This means an animal will be less full and have more energy on a forage composed of Pinpoint and NPARA blend #1. Crude protein content was greater in Pinpoint blend and NPARA blends 1 and 4 compared to NPARA blends 2, 3 and 5 ($P \leq 0.0001$). This content is representative of protein contributors in an animal diet. There was higher percentage of ADF content in crude protein in NPARA blend 1 compared to NPARA blends 2 and 3 ($P \leq 0.0001$). Total digestible nutrients content was greater in Pinpoint blend compared to that of NPARA blend 3 ($P \leq 0.0001$). NPARA blend 4 had comparable yield to that of Pinpoint which could be another alternative for forage with high energy. The NPARA blend 3 had a greater percentage of Calcium content compared to that of NPARA blend 4 ($P \leq 0.001$). In contrast, NPARA blend 4 had a higher Phosphorus content ($P = 0.0013$) than NPARA blend 3. To ensure proper bone growth and fertility both of these forage blends could be pursued as a feed diet as one compensates for the other. Other blends with similar calcium content were NPARA blend 1, but, like NPARA blend 3 it should be combined with NPARA blend 4 as phosphorus content is also comparatively low.

