

# Introduction to Crop Production Parameters

- Residue to Grain Ratio
- Nitrogen Uptake, Grain & Residue

Research Results

# Residue to Grain Ratio (1999/2000 Average)

- Pounds of residue produced for each pound of grain.
  - Example: Dry Pea after wheat produces about 1.20 lbs of residue for each 1 lb of dry pea seed yield. Residue production can be calculated by multiplying the residue to grain ratio by seed yield (lb/a). Used to calculate residue production when seed yield (lb/a) known. E.g.: wheat after wheat, 2700 lb/a of grain \* 1.90 = 5130 lb/a of residue.

		Crop									
Crop Residue		Canola	Crambe	Dry Bean	Dry Pea	Flax	Safflower	Soybean	Sunflower	Wheat	Barley
	Canola	2.59	1.71	0.72	1.19	3.26	4.55	1.33	4.31	1.62	1.20
	Crambe	2.19	2.95	0.70	1.15	3.04	4.80	1.39	3.96	1.74	1.09
	Dry Bean	2.49	2.58	0.69	1.34	3.63	4.90	1.52	4.17	1.84	1.03
	Dry Pea	2.60	3.01	0.74	1.50	3.58	4.10	1.65	3.53	1.88	1.02
	Flax	2.24	2.19	0.76	1.16	6.05	4.02	1.46	3.83	1.87	1.04
	Safflower	2.52	2.79	0.75	1.15	3.12	5.53	1.46	5.33	1.74	1.15
	Soybean	2.67	2.28	0.72	1.14	3.44	4.55	1.13	4.37	1.79	0.98
	Sunflower	2.43	2.47	0.70	1.24	3.25	3.95	1.47	4.74	1.72	1.08
	Wheat	2.25	1.76	0.77	1.20	3.25	3.66	1.45	3.84	1.90	0.94
	Barley	2.40	1.86	0.69	1.14	3.29	3.61	1.39	3.67	1.81	1.05

Ratios do not include Rep 1 for 1999

# 1999 Nitrogen Uptake for Grain (lb/a)

- Nitrogen Uptake for grain is the quantity of N per acre removed when the seed is harvested.

Example: For dry pea after sunflower, 88 lbs of N per acre are removed when dry pea is harvested for grain. Calculated by multiplying seed yield times seed N concentration.

		Crop									
Crop Residue		Canola	Crambe	Dry Bean	Dry Pea	Flax	Safflower	Soybean	Sunflower	Wheat	Barley
	Canola	-	-	57.36	58.40	-	-	-	-	77.27	72.11
	Crambe	-	-	38.95	79.97	-	-	-	-	93.86	70.25
	Dry Bean	-	-	49.23	88.83	-	-	-	-	85.46	69.38
	Dry Pea	-	-	31.72	76.23	-	-	-	-	95.39	82.15
	Flax	-	-	47.66	65.76	-	-	-	-	82.21	86.17
	Safflower	-	-	45.52	62.63	-	-	-	-	89.83	65.38
	Soybean	-	-	50.28	69.35	-	-	-	-	87.64	69.46
	Sunflower	-	-	62.23	88.03	-	-	-	-	85.94	66.95
	Wheat	-	-	37.31	87.20	-	-	-	-	80.00	57.51
	Barley	-	-	71.10	80.68	-	-	-	-	92.30	76.56

Results do not include Rep 1 for 1999

# 1999 Nitrogen Uptake for Residue (lb/a)

- The quantity of Nitrogen left in the crop residue differs depending on the crop. The residue N cycles to succeeding crops.

Example: Dry pea after crambe had about 23.6 lb of N/a in the residue compared to safflower after crambe which had about 57 lb of N/a in the residue.

		Crop									
Crop Residue		Canola	Crambe	Dry Bean	Dry Pea	Flax	Safflower	Soybean	Sunflower	Wheat	Barley
	Canola	17.50	14.99	7.94	17.91	25.40	51.14	8.39	40.96	16.19	20.81
	Crambe	15.87	13.83	6.13	23.61	31.36	56.96	8.88	41.49	27.05	25.28
	Dry Bean	18.65	20.37	8.65	27.13	36.32	70.88	12.00	41.04	21.92	22.29
	Dry Pea	18.19	27.34	8.01	29.88	37.33	71.29	9.90	53.06	24.27	23.77
	Flax	21.14	25.99	7.95	23.13	19.48	64.69	10.06	36.92	20.59	27.48
	Safflower	20.98	20.08	7.89	19.79	32.30	39.39	7.89	30.05	21.41	17.48
	Soybean	19.03	20.05	6.76	20.06	46.67	62.85	11.23	31.11	20.74	20.19
	Sunflower	15.37	22.52	7.16	30.98	31.71	47.39	9.68	24.29	21.64	20.69
	Wheat	16.91	22.59	6.99	29.57	24.21	55.51	6.84	33.38	19.11	17.06
	Barley	23.27	28.07	11.94	32.94	41.43	72.99	9.64	36.98	22.49	25.33

Results do not include Rep 1 for 1999