

Niger Thistle Cultivar Evaluation

Bob Henson

Available niger thistle cultivars were evaluated at diverse locations across the Northern Plains. Field experiments were conducted in a randomized complete block design with four replicates at the NDSU Research Extension Centers in Carrington, Langdon, Minot, Hettinger, and Williston, an NDSU research site at Prosper (near Fargo), and on-farm sites near Thief River Falls and Roseau, Minnesota. The four entries consisted of: 1) EarlyBird, 2) EarlyBird 50 (an earlier-maturing selection from Earlybird), 3) N951 (an experimental line from Seeds2000), and 4) Finch Gold from Idaho. A uniform seeding rate of 6 lbs / acre was sown at each location in plots measuring 3.5-5' x 16-25'. At selected sites, data was recorded on stand establishment, days to flowering, plant height, lodging, harvest dates, seed yield, and seed quality.

Plots were sown during the last week of May at all sites except Roseau, where wet weather delayed planting until 15 June. The trial was successfully completed at all sites except Minot and Langdon, where a series of environmental stresses (hail, frost) precluded the collection of meaningful data. Yields at most of the remaining sites were drastically reduced by either drought or excess moisture. Aside from delaying harvest into a wet period in the fall at Carrington, comments on the effects of the unusually cool growing season on niger performance would be speculative.

As in previous years, Earlybird, Finch Gold, and N951 varied slightly in days to flowering at the individual sites, but were quite similar across locations (data not shown). The selection EarlyBird 50 (previously designated as NS031) was significantly (7-13 days) earlier to bloom and to mature at all sites. Line N951 was slightly taller than EarlyBird and Finch Gold at all sites, while NS031 was significantly shorter (Table 1). Since lodged plants are much more difficult to swath and taller plants are more susceptible to lodging and consequent yield loss due to shattering, particular attention will be paid to this trait in the future. Plants at Prosper lodged considerably, but cultivars did not differ significantly in standability (data not shown). At the remaining sites, the relatively short plant height resulted in minimal lodging. Sclerotinia infection at Prosper was significantly higher in EarlyBird 50 than in the other entries (data not shown).

Table 1. Niger thistle plant height (inches) in the cultivar evaluation, NDSU and U of MN, 2004.

Cultivar	Carrington	Prosper	Williston	Thief River		Mean
				Falls	Roseau	
EarlyBird	36.0	58.0	18.1	42.3	45.8	40.2
FinchGold	38.0	56.0	18.4	40.5	42.5	39.1
N951	44.5	61.0	23.0	45.5	50.3	44.9
EarlyBird 50	29.3	52.0	15.9	32.5	29.0	31.8
Mean	36.9	57.0	18.9	40.2	41.9	39.0
C.V. (%)	19.7	7.0	7.5	---	---	---
LSD (0.05)	NS	NS	2.3	2.3	4.4	---
LSD (0.01)	NS	NS	3.2	---	---	---

Yields were severely compromised by drought at Hettinger and Williston and by excessive moisture at the Minnesota sites (Table 2). Carrington yields were undoubtedly reduced by delayed harvest due to wet weather. Despite considerable lodging, good yields were attained at the Prosper site. As in previous years, the relative yields of the entries varied with location. Finch Gold produced the highest yield at Carrington and Thief River Falls, N951 yielded best at Prosper and Roseau, and EarlyBird was the top yielder at Hettinger and Williston. EarlyBird 50 was disappointing at all sites.



Niger in bloom, September 2004.

Table 2. Niger thistle yield (lbs/acre) in the cultivar evaluation, NDSU and U of MN, 2004.

Cultivar	Carrington	Prosper	Hettinger	Williston	Thief River		Mean
					Falls	Roseau	
EarlyBird	297	485	161	153	82	91	212
FinchGold	437	411	154	118	101	121	224
N951	338	516	118	112	66	142	215
EarlyBird 50	374	230	65	57	57	90	146
Mean	362	411	125	110	76	111	199
C.V. (%)	28.8	20	17.6	20.6	---	---	---
LSD (0.05)	NS	127	23	37	17	35	---
LSD (0.01)	NS	---	31	52	---	---	---

Seed test weight was very low at the stressed sites of Williston and Roseau (Table 3). Although test weight at Carrington was considerably better, improvements in this trait are needed to meet some industry specifications.

Table 3. Niger thistle test weight (lbs/bushel) in the cultivar evaluation, NDSU and U of MN, 2004.

Cultivar	Carrington	Williston	Roseau	Mean
EarlyBird	44.2	34.2	20.9	33.1
FinchGold	45.6	32.8	23.2	33.9
N951	44.3	33.9	20.8	33.0
EarlyBird 50	46.1	26.4	29.7	34.1
Mean	45.1	31.8	23.6	33.5
C.V. (%)	1.9	1.9	---	---
LSD (0.05)	1.5	2.0	3.7	---
LSD (0.01)	NS	3.6	---	---

Comments

The 2004 growing season in the Northern Plains was a difficult year for niger research, with environmental stresses affecting the quantity and the quality of the data collected. The cultivar trial will be repeated in 2004 at a minimum of seven of the same sites. Special attention will be paid to cultivar x environment interactions for yield. In addition to the cultivar evaluation, the planting date study (which suffered the same stresses as the cultivar trial in 2004) will be repeated at four sites in North Dakota, comparing EarlyBird 50 to one of the longer-season cultivars. This trial will provide information on the importance of timely planting and on possible fits for EarlyBird 50. At the request of the National Crop Insurance Service, preliminary data will be collected on growth stages of niger thistle.