

RESULTS OF THE 1990 NORTHWESTERN CANADA BARLEY TRIAL GROWN AT PALMER

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MATERIALS AND METHODS

Twenty-five barley genotypes including three named cultivars were evaluated at the Matanuska Research Farm, Palmer, Alaska. These genotypes represent a wide range of germplasm potentially adapted to Alaska and Northwestern Canada.

The soil at the experimental site was a Knik silt loam with a pH of 5.8. Fertilizer consisting of 60 lbs N/A, 75 lbs P₂O₅/A, and 80 lbs K₂O/A was broadcast and incorporated prior to seeding. Plots were seeded on May 5 at a rate of 73 lbs/A using a tractor-mounted four-row drill equipped with double-disk openers and press wheels. Each plot consisted of four 12.5 ft rows spaced 1 ft apart.

Spray applications of one-half oz Harmony/A, followed 10 days later with three-eighths lb Sencor/A were used to control weeds. After they were trimmed to a length of

9.2 ft, the two center rows of each plot were harvested at maturity. Plots were harvested using a self-propelled cutter/binder, and bundles were dried using forced air prior to threshing.

Characteristics measured included grain yield, heading date, maturity date, and plant height. Plots were considered headed when approximately 50% of the heads had completely emerged from the boot, and were considered mature when approximately 50% of the heads had lost all green color. Plant height was recorded as the average distance between the ground and tip of head, excluding awns.

The experimental design was a randomized complete block with four replications. Cultivar means and simple phenotypic correlation coefficients were determined for all characters measured.

Table 1. Performance of 25 cultivars grown in the 1990 Northwestern Canada Barley Trial at Palmer, Alaska.

Cultivar	Yield (bu/A)	Days to heading	Days to maturity	Height (in)
T663-58	55.9	51	80	30.0
TVJO-83	64.8	53	80	30.9
JO1588	63.0	55	80	29.6
OTAL	66.2	51	81	36.5
AK77II-69-63-3-1	62.2	54	81	35.2
BT670	68.8	54	81	35.1
TJ4-76	45.9	50	82	27.8
T64-30	64.1	54	82	33.8
STACEY	66.2	53	83	32.1
TOJ-81	70.4	53	83	32.3
TJ4-35	79.1	55	84	29.8
TG4-54	56.3	51	85	31.9
TJH-61	64.6	54	85	31.7
T34-66	63.2	54	85	31.8
T84-75	79.7	56	85	36.6
TJH-45	69.4	55	86	33.8
BT669	54.6	58	86	32.9
BT634	54.0	56	88	33.1
TD3-48	68.1	56	88	34.0
BRIER	62.4	57	91	34.6
BT639	59.3	57	91	35.1
BT633	55.2	60	91	34.0
BT636	54.0	62	94	36.3
BT638	70.4	62	94	41.7
BT637	60.0	64	97	38.7
Mean	63.1	52	85	33.6
LSD (0.05)	13.8	1	4	3.3

RESULTS AND DISCUSSION

Growing conditions during 1990 were generally warmer and drier than average. A total of 1042 growing degree days (41 degree F base) were received between May 1 and August 31. This was 134 more than during the same period in 1989. 'Otal', the standard Alaska check cultivar, required 81 days (694 days growing degree days) to reach maturity (Table 1). Only 0.21 inches of precipitation were recorded during the month of July, resulting in significant moisture stress and probable yield reduction.

Several cultivars in this trial matured as early or earlier than Otal. BT670 is a selection from Otal which is more uniform. The first three cultivars in Table 1, 'T663-58', 'TVJO-83', and 'JO1588', are short-statured, early-maturing cultivars which also show promise. 'AK77II-69-63-3-1' (Edda/Sv60718) is a promising experimental line developed at the Agricultural and Forestry Experiment Station. Its strongest asset appears to be excellent resistance to lodging. However, because of the dry conditions and lack of damaging winds, no lodging was present in this trial and, therefore, lodging was not evaluated. This experimental line appears to be slightly later-maturing than Otal. It was evaluated at several locations in Alberta, Canada and in Finland in 1990, and data from these trials will provide a better measure of its

maturity relative to Otal.

Although other cultivars in this trial performed well overall, their later maturity does not make them ideally suited for production in Alaska. The relatively warm growing conditions in 1990 resulted in a shortening of the time period required for cultivars to reach maturity. While most of the later-maturing cultivars could have been grown successfully in 1990, their maturity might be only marginally acceptable in years in which fewer growing degree days were available.

Phenotypic correlation coefficients are presented in Table 2. Cultivars which were earlier heading and earlier maturing tended to have shorter plant heights than later ones. Taller cultivars tended to have higher yields than shorter ones.

Table 2. Phenotypic correlation coefficients for five characters measured in 25 cultivars evaluated in the 1990 Northwestern Canada Barley Trial grown at Palmer, Alaska.

	Heading	Maturity	Height
Yield	0.04	0.16	0.48**
Heading		0.83**	0.52**
Maturity			0.52**
** Significant at the 0.01 probability level.			

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