'Red River' Red Raspberry

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'Red River' is a primocane-fruiting (fall-bearing) red raspberry (*Rubus idaeus* L.) cultivar (Fig. 1) developed by the Agriculture Canada Morden Research Station (MRS) breeding program. 'Red River' typically begins fruiting earlier than 'Redwing' or 'Heritage', which generally are considered late for commercial growing on the Canadian prairies. 'Red River' is intended to diversify commercial raspberry production, since no other cultivars with primocane-fruiting ability are suitable for the harsh Canadian prairie climate.

Origin

'Red River' originated from a cross made between [('Fall Red' x native primocane-fruiting type) (Cheyenne, Wyo.)] x ('Fall Red' x

'Boyne') in 1968 (Fig. 2). 'Red River' was selected in 1978 as MRS#8008. From 1978 to the time of the replicated trials, MRS#8008 was increased and planted in a series of nonreplicated plantings for further assessment.

Description

The medium red berries are hemispherical

(Fig. 1) and retain their size well during the main part of the harvest season. They are medium bright and attractive. 'Red River' fruit were intermediate in terms of mean weight and size (Table 1). Berries have good drupelet coherence and retain their shape well in a basket. The number of drupelets per berry averaged 76 (Table 1). Soluble solids concentration is high (13.3%) and pH low (2.98). Fruit are sweet and tart and have excellent flavor.

'Red River' has short stout canes with sparse short spines. Cane color varies from the base to the tip. The green background color is replaced by reddish tones near the base. The red color becomes more dominant as the cane matures. Cane height varied from 0.9 to 1.3 m at the test sites. Cane diameter at 5 and 50 cm above ground averaged 1.0 and 0.7 cm, re-

Fig. 1. 'Red River' red raspberries.

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spectively. A trellis support may be required to support heavy fruit loads. Root suckering was moderate; plantings established at 0.75-m within-row spacings took 2 years to fill completely. Lateral shoot length averaged 16.5 cm for vegetative shoots and 16.4 cm for those bearing fruit. The average distance between laterals was 6.9 cm, with an average of 16 laterals/cane.

'Red River' is susceptible to anthracnose [*Elsinoe veneta* (Burkholder) Jenk.], but the disease has not been a problem when plants are managed by an annual mowing system. Optimum cane density and nutritional requirements remain to be determined. Field observation and virus indexing indicated no infection by known raspberry viruses.

Performance

'Red River' was compared with two other primocane-fruited selections from the Morden breeding program and with several cultivars in a replicated yield trial that was established in 1987 at four locations in southern Manitoba (Morden, Souris, St. Adolphe, and Portage la Prairie) (Table 2). All sites, except Morden, were located on commercial grower farms. The Morden site was located at MRS. The trial also was established at a site east of Winnipeg (Richer), but was abandoned due to poor establishment and performance. At this site, late summer frosts (12 to 15 Aug.) damaged or killed blossoms and fruit. 'Fall Red' initially was planted at all sites for comparative purposes. This cultivar failed to survive the first winter. In the spring of the second year, 'Heritage' was used as a replacement. 'Heritage' failed to produce ripe fruit at any location during the remainder of the test. Fall frosts occurred too early for most fruit to ripen.

'Autumn Bliss', 'Redwing', 'Fall Red', and 'Heritage' were planted in 1988 at Morden in a new replicated trial. Establishment was good, but regrowth of canes in the spring was slow. No fruit from this second trial ripened before frosts in 1989, 1990, or 1991. The plants probably suffered injury to roots during the winter, thereby delaying regrowth the following spring, a situation that could affect fruit yield.

'Red River' was 7 to 10 days earlier than other MRS selections, with the average first harvest on 16 Aug. (ranging from 12 to 20 Aug.). Maximum fruit harvest usually occurred within 3 weeks. Berry yield per meter of row varied from 800 to 1700 g in 1989 and 1990, respectively (Table 2). Harvests were conducted weekly; thus, yield estimates may be low. Fruit may have dropped during the 7-day interval between site visits. Analyses of yield data suggest that high yields correspond to a high fruit set per lateral and per cane (Table 3).

Fig. 2. 'Red River' red raspberry pedigree.

Table 1. Mean² fruit characteristics for three primocane red raspberry clones.

Clone	Mean of 10 fruit (g)	Berry		Drupelets/ berry (no.)
		Length (cm)	Width (cm)	
Red River	17.4 b ^y	1.5 b	1.7 b	76 b
MRS#8114	25.6 a	1.8 a	1.9 a	86 a
MRS#8001	15.8 c	1.4 c	1.6 b	61 c

²Means were calculated based on 100 random berry samples taken three times during 1989 and 1990 harvests.

^yMean separation is by LSD at $P \leq 0.05$.

Table 2. Mean² total fruit yield (grams per meter of row) at four locations in southern Manitoba for three primocane red raspberry clones in 1990.

Clone	Morden	Portage	Souris	St. Adolphe	Avg
Red River	1687 a ^y	2487 a	508 a	384 a	1266 a
MRS#8114	1921 a	1553 b	993 a	414 a	1220 a
MRS#8001	1154 a	2274 a	446 a	252 a	1032 a

²Means are calculated from four replications at each site. Each row was 6.5 m long, and the harvested section (1 m) was selected randomly.

^yMean separation is by LSD at $P \leq 0.05$.

Table 3. Mean² number of reproductive laterals (RLs), vegetative laterals (VLs), and fruit per cane and mean number of fruit per RL and total number of laterals (TLs) for three primocane red raspberry clones.

Clone	No./cane			Fruit count per	
	RLs	VLs	Fruit	RL	TL
Red River	13.0 a ^y	2.5 c	51.3 a	4.0 a	3.3 a
MRS#8114	10.9 b	7.7 a	28.2 b	2.6 b	1.5 c
MRS#8001	12.2 ab	4.7 b	47.7 a	3.9 a	2.8 b

²Mean of four locations in southern Manitoba (Morden, Souris, Portage la Prairie, and St. Adolphe) with four replications per location. Two canes were sampled within each replication for detailed measurements.

^yMean separation is by LSD at $P \leq 0.05$.

In taste-panel tests of fresh and frozen fruit, 'Red River' was rated equal to other selections for flavor and second for appearance. 'Boyne' fruit was used as a reference in the frozen-berry taste tests. Taste panelists were research station staff from the fruit breeding program or the Crop Utilization Laboratory. The taste panel rated 'Red River' overall fruit quality as good.

Field-planting trials suggest that 'Red River' is hardy to at least U.S. Dept. of Agriculture zone 3. In areas with good snow cover,

plantings could be extended into colder regions.

Availability

'Red River' is propagated by Prairie Plant Systems, 108-106 Research Dr., Sask. S7N 3R3, Canada, and Jefferies Nurseries, P.O. Box 402, Portage la Prairie, Man. R1N 3B7, Canada, under a royalty agreement. Limited numbers of plants for research purposes are available from C.G.D.