

# Red Raspberries for Western and Southwestern Montana

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*The cultivars 'Killarney,' 'Boyne,' and 'Gatineau' appear to be adapted to both the Bitterroot and Gallatin valleys of Montana and appear to be better choices than the standard 'Latham.'*

## INTRODUCTION

Red raspberries are widely suited to small-scale commercial production in Montana. The plant is winter-hardy throughout most of the state, although winter protection may be necessary in some areas. Root damage occurs between -6°F and -9°F, but snow cover or mulching can afford protection from winter injury (4).

'Latham,' an old cultivar, has long been the standard red raspberry for the North. 'Canby' and 'Taylor' have also been popular cultivars (2, 3). Several Canadian introductions have been recommended for production in colder climates (1). The present study compares yields of seven red raspberry cultivars when grown in both the Bitterroot and the Gallatin valleys of Montana.

## MATERIALS AND METHODS

Plots were established in the spring of 1979 at the Western Agricultural Research Center, Corvallis, Montana, and at the Horticultural Research Farm, Bozeman, Montana. A randomized complete block of six cultivars and four replications was employed. Cultivars included 'Latham,' 'Canby,' 'Taylor,' 'Gatineau,' 'Boyne,' 'Killarney,' and 'Madawaska.'

Rows were seven feet apart with plants two feet apart in the row. Each single-row plot consisted of 12 plants of one cultivar. A three-wire trellis was installed at Corvallis in 1980, while a hedge system was used in Bozeman.

Cultural practices followed standard methods (4). Plantings at Corvallis were on a Burnt Fork loam, pH 7.5 and at Bozeman on a Bozeman silt loam, pH 7.8. Both sites were fallowed the year before planting. Nitrogen was applied at 25 pounds per acre at the beginning of the first production year, followed by applications of 50 lb/a in succeeding years. Potassium and phosphorus at 85 and 100 lb/a were applied before planting at Corvallis but were not necessary at Bozeman. Irrigation during the establishment year was by overhead

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sprinkler in both locations. A drip system was installed at Corvallis the second year while all irrigation at Bozeman continued to be overhead sprinkler.

At Corvallis, raspberries were harvested four, nine, and 10 times in 1980, 1981, and 1982, respectively, while at Bozeman, fruit was harvested five times per season. No production was achieved the first season in either location, and all fruit was from the second year canes.

## DESCRIPTION OF CULTIVARS

'Latham' is an old cultivar which originated in Minnesota. The plant is vigorous, cold-hardy, and suckers freely. The fruit is medium in size, round, light red, moderately firm, and of good quality. 'Latham' is somewhat tolerant of viruses.

'Taylor' was developed in New York. The plant suckers freely, and the canes are short and sturdy. The berries are large, conic in shape, light to medium red, firm, attractive, and of excellent quality.

'Canby' is an Oregon cultivar. The plant is very vigorous, and the canes are nearly thornless. The berries are long, conic, medium to light red, and of excellent quality. 'Canby' is sensitive to heavy, poorly drained soils.

'Boyne' was introduced by the Morden Research Station, Manitoba, Canada. The plant is moderately vigorous and is cold-hardy. The fruit is medium in size, medium red, and has good flavor.

'Killarney' was also from the Morden Research Station. The plant is moderately vigorous and cold-hardy. The berries are large, light red, firm, and mild in flavor.

'Gatineau' was developed in Ottawa, Canada. The canes are very vigorous, cold-hardy, and nearly thornless. The fruit is large, firm, and dark red.

'Madawaska' is moderately vigorous, hardy, and spiny. The fruit is medium in size, dark red, of fair quality, and may be soft and crumbly.

## RESULTS

Yields in both locations increased as the plantings became established. Cultivars encompassed a range of ripening dates. 'Gatineau' and 'Boyne' were the first to ripen in both locations, followed by 'Madawaska' and 'Latham.' 'Killarney' and 'Canby' were later in maturity, and 'Taylor' was the last to ripen.

### Corvallis

Production more than tripled for all cultivars except 'Boyne' between 1980 and 1981 and increased further in most cultivars in 1982. 'Killarney,' 'Gatineau,' 'Boyne,' and 'Canby' were

the most productive cultivars by the third year of the study (Table 1). ‘Canby’ was low-yielding the first bearing year, but exhibited the greatest yield increase over the following two years. Over the three-year period, ‘Killarney’ produced nearly twice as much fruit as did ‘Latham.’

## Bozeman

‘Boyne’ and ‘Killarney’ were the most productive cultivars throughout the three years of the study (Table 2). ‘Gatineau,’ ‘Taylor,’ ‘Madawaska,’ and ‘Canby’ were intermediate in yield, with ‘Latham’ the least productive cultivar.

**Table 1. Yields of seven red raspberry cultivars from 1980 to 1982 at Corvallis, Montana.**

Cultivar	Tons per acre		
	1980	1981	1982
‘Boyne’	1.6 a <sup>1</sup>	3.8 b	5.2 a
‘Canby’	0.4 d	4.1 b	5.3 a
‘Gatineau’	0.9 c	5.6 a	5.0 a
‘Killarney’	1.3 b	5.3 a	5.4 a
‘Latham’	0.7 cd	2.5 c	3.0 d
‘Madawaska’	0.7 cd	2.8 c	4.7 b
‘Taylor’	0.7 cd	3.4 b	3.9 c

**Table 2. Yields of seven red raspberry cultivars from 1980 to 1982 at Bozeman, Montana.**

Cultivar	Tons per acre		
	1980	1981	1982
‘Boyne’	0.7 a <sup>1</sup>	2.0 a	2.7 a
‘Canby’	0.1 d	1.3 c	1.6 d
‘Gatineau’	0.4 c	1.8 b	1.8 c
‘Killarney’	0.6 b	2.1 a	2.1 b
‘Latham’	0.2 d	1.0 d	1.1 e
‘Madawaska’	0.3 c	1.2 c	1.7 cd
‘Taylor’	0.4 c	1.2 c	1.6 cd

<sup>1</sup> Means within a column followed by the same letter are not significantly different at the 5% level using LSD.

## DISCUSSION

Yields of all cultivars increased between 1980 and 1981 as plants became established and began leveling off in 1982. Cultivar performance was generally consistent between the two sites. ‘Canby’ was much more productive in Corvallis than in Bozeman. In both locations, ‘Killarney,’ and ‘Boyne’ produced high yields over the three-year period. ‘Madawaska’ and ‘Taylor’ were relatively low-yielding, and ‘Latham’ was the least productive cultivar in both locations.

The cultivars ‘Killarney,’ ‘Boyne,’ and ‘Gatineau’ were developed for climates with severe winters and appear to be adapted to both the Bitterroot and Gallatin valleys of Montana. ‘Latham’ and ‘Taylor’ were also developed for colder climates but were less productive in western and southwestern Montana. Hardiness of ‘Latham’ has been found to vary with location (5).

Annual yields for each cultivar at Corvallis were at least double those at Bozeman. This can be attributed to the milder climate of the Bitterroot Valley. Cane dieback due to low winter temperatures was observed on all cultivars at Bozeman but was not significant at Corvallis.

Dissimilarities in training and irrigation practices could also contribute to yield differences between the two locations. Results of this study demonstrate the importance of both cultivar selection and climate on the success of red raspberry production in Montana.

This preliminary study indicates that cultivars other than 'Latham' may have greater potential for production in Montana. Additional research evaluating cultivars in the local nursery trade and newer releases from the U.S. and Canada should be performed. A full evaluation of fruit quality, winter injury, plant vigor, and pest resistance will aid in cultivar selection for red raspberry production in Montana.

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