

3) 1) COLORADO
4) Bulletin 60.

Chap

December, 1900.

2) The Agricultural Experiment Station

OF THE

Agricultural College of Colorado.

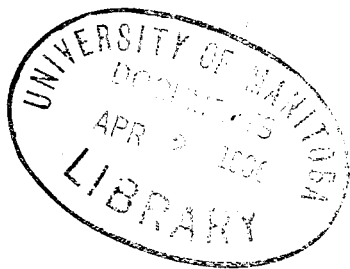
BUSH FRUITS,

INCLUDING

GOOSEBERRIES, RASPBERRIES, BLACKBERRIES,
DEWBERRIES.

—BY—

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PUBLISHED BY THE EXPERIMENT STATION
Fort Collins, Colorado.
1900.

THE AGRICULTURAL EXPERIMENT STATION,

FORT COLLINS, COLORADO.

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A VARIETY TEST AND GENERAL REMARKS

— ON —

BUSH FRUITS.

CARL H. POTTER.

GENERAL REMARKS.

It is not the intention in issuing the present bulletin to go deeply into a consideration of the culture and general management of bush-fruit plantations. This information comes to the practical growers from many sources.

Good and abundant cultivation and irrigation is of prime importance. A naturally cool and somewhat moist soil is desirable, and in the hotter portions of the State a partial shade is often necessary. This shade is sometimes obtained by planting the bushes near shade trees, or even in orchards, but this latter practice is not always looked upon with favor by our best orchardists. Again, simple mulching is used.

The rows should be placed at a liberal distance apart and the hills should not be crowded in the rows. A few good, vigorous shoots should be grown, thus better to resist the ravages of the increasing number of our insect and disease enemies.

Prof. Gillette, in Bulletin No. 47 of this station, names five or six insect enemies which are injurious to our bush fruits. Of these, perhaps the worst two are the currant-borer, *Sesia tipuliformis*, and the saw-fly, *Pristophora grossulariæ*. The former is easily removed and destroyed by the usual annual pruning, thinning and burning of the old canes. The larvæ of the saw-fly are easily destroyed by the common arsenical sprays.

The ravages of the fruit-worm will be spoken of in connection with the fruits injured.

Diseases of the plants have but recently become of economic importance on our grounds. They will furnish material for future study and publication.

Our present plantations of bush fruits contain about

seventy varieties. A few varieties disappeared from the test-plats during the last three years, other varieties planted failed to become established, and still others were planted only last spring.

The older plantation was set in 1896. Other plants and other varieties were added in 1897 and in 1898, and a new plantation set in 1900. In so far as the blackberries and raspberries are concerned, these latter years enter comparatively little into the description or tests of plants or fruit which follow. The season of 1898 was so extremely dry that the water for irrigation purposes was entirely inadequate to the development of either fruit or vine.

This season of drought was followed by the extremely early and severe winter of 1898-9 which prevented the proper covering of the vines, resulting in the complete killing to the ground of all the raspberry and blackberry canes, thus preventing a crop in 1899.

The canes of all the raspberry and blackberry vines were pinched back when about 18 inches in height, the result being a fine growth of well-matured stocky canes. They were laid down by removing the earth from underneath one side of the hill and forcing the tops in that direction with a fork, then covering to a depth of about 3 inches with earth. By a yearly practice of this method the roots extend laterally and are but little injured in the process of laying down, while the canes, though stiff and stout, are but little bent and are therefore uninjured.

Winter protection is the only safe course to follow in this section of the state.

GOOSEBERRIES--*Ribes*.

Even some of the currants and gooseberries suffered more or less severely by the extreme winter of 1898-9. A record of this injury follows in the notes on the individual varieties.

The gooseberry plantation consisted of six varieties, one of which, Industry, is now extinct. As there has been such a great difference in the age and vigor of the several varieties, it is thought best for the present not to append figures giving the comparative yields.

Three varieties new to the plantation were added last spring.

The gooseberry crop of 1900 was, from a commercial standpoint, almost totally destroyed by the ravages of the fruit worm, known to science as *Epochroa Canadensis*. The "worms" are the larvæ of a two-winged fly which deposits

its eggs underneath the skin of the fruit while the latter is still quite immature. Within the fruit, where they are quite safe from insecticides of all kinds, the larvæ grow to maturity. The fruit becomes worthless. The only known remedy is to destroy the fruit while it still contains the larvæ.

Following are the varieties tested:

Downing—*Ribes cynosbati*.

Some old bushes were reset in 1896 and some young ones in 1898. The bushes are upright in growth with stiff stocky branches, spines stout and prominent, berries medium to large with a conic, dark green apex, and covered with a heavy glaucous coat. Yield good. The variety was very severely killed back by the cold winter. All the hills, old and young, are looking remarkably vigorous now.

Houghton—*R. hirtellum*.

Of this variety some old bushes were reset in 1896, to which were added new bushes from the nursery the same year.

The variety is a vigorous grower with long, slender, spreading branches, spines slender, berries small to medium, surface glaucous, obconic form, deep green color, very sour, yield very good—fully a week later than the other varieties in the plat.

The old canes are fairly stocky and well loaded with fruit buds, but the variety is not nearly so strong and vigorous a grower as is Oregon Champion. Very little injured by the cold winter.

Industry—*R. grossularia*.

Young plants of this variety were set in 1896, to which were added some old bushes reset the same spring. The variety is of European origin. The leaves are dark green, leathery, with a lustrous surface. The thorns are short and stout and frequently there is but one at the base of each leaf-stalk instead of the usual cluster of two or three. The berries are large, oval, veins conspicuous, with a considerable number of bristles on the surface. The variety entirely succumbed to the mild winters of '96-7 and '97-8.

Oregon Champion—*R. grossularia*.

New plants of this variety were set in 1896. The variety is of spreading habit with rather large, stiff and stocky branches. The leaves are somewhat more glaucous and darker green than are the leaves of other varieties. The berry is large, oval, with a glaucous surface. The variety was apparently very little injured by the excessively cold winter of '99 and bore an excellent crop of fruit the next season. It is a most desirable variety on account of the vigor of the plants and the yield of fruit.

Pearl—*R. grossularia*.

Young plants of this variety were set in the plat in 1897. They made a good healthy growth during that and the following season. The winter of 1899 killed the canes to the ground and they were cut out. The growth the past two seasons consists of many vigorous and well branched canes.

Smith's Improved—*R. grossularia*.

Old bushes of this variety were reset in 1896. The variety is fairly vigorous and was not entirely killed back by the winter of 1899. It was severely pruned and made a fair growth during the past two seasons. Berries very large—largest on the grounds—quality good to excellent; long, oval form translucent, with conspicuous lighter-colored veins.

CURRENTS—*Ribes*.

The station plantation of currants consists of eighteen varieties, fifteen of which belong to the species *rubrum*, one Dubett Tree being *Ribes aurium* and two *Ribes nigrum*. The latter with four varieties of *rubrum* were set only last spring.

The red sorts are for the most part very similar, it being quite difficult to distinguish between them either by their fruit or the character of the plants. Where old bunchy varieties were set along with those trained to more of a tree form, the latter invariably produced larger fruit, but not so large a yield. The more abundant the fruit, the smaller the berries. The crop of fruit was, commercially speaking, a complete failure the past season owing to the ravages of the insect mentioned in connection with gooseberries. Much of the fruit fell before time for picking. Of that which remained on the bushes till the sound fruit was mature, from 25 to 60 per cent was stung and contained the larvæ of the fly. No such extensive damage appears on our previous records. Some plantations in this vicinity were comparatively uninjured.

The varieties of currants tested on the station grounds follow in alphabetical order:

Albert Prince.

This variety is but slightly represented in the Station plat. It is considerably lacking in vigor and has been kept closely pruned for propagation purposes. The berries are of good size, white, and sweet.

Cherry.

Both old and young plants were included in the 1896 plat, to which were added young plants in 1898. This red variety produced the largest berries of any variety on the grounds in 1896, and a good yield withal. Some of the berries measured 9-16 inches in diameter. The stems or branches are a little stronger than Fay, but not nearly so strong as Red Dutch or Victoria.

Dubett Tree—*Ribes aurium*.

One plant of this variety was set in the plat in 1897. It has made a vigorous growth, quite upright in character. Although the wood appears to ripen well, yet the leaves near the tips remain quite fresh and green till mid-winter or later. The variety is being propagated by cuttings and the number of plants will be increased in the near future.

So far the fruit produced has been quite insignificant.

Fay.

Both old and young plants of this variety were set in 1896. The variety is not nearly so strong and vigorous as either Victoria or Red Dutch. It produces a great many new canes of spreading and unkempt habit. The injury from the winter of '99 was considerable. Berries red, medium to large. Yield fair to good.

The variety requires extra care to justify the recommendations so frequently given it.

Holland—Long Bunch.

This old sort was not introduced to our plantation till 1897, and then by very few plants, which have since been very closely pruned for propagation purposes. The plants are fairly vigorous, berries of good size, white, and sweet.

North Star.

A few old plants were set in 1896, followed by young plants in 1897 and in 1898. This variety was somewhat injured by the winter of '99. It is strong and stocky, but not nearly so much so as is Raby Castle or Victoria. It is much like Red Dutch in size and bearing propensities but is later in ripening.

Pomona.

But a few plants of this variety were set in the Station plat in 1897 and these have been closely pruned for propagation purposes.

The variety seems to be below the standard for vigor and was very severely killed back by the cold winter. It is a red variety.

Raby Castle.

Old plants of this variety were set in the Station plat in 1896 and young plants in 1898. It is considered by Prof. Card in his handbook on "Bush Fruits" of "The Rural Science Series" to be identical with Victoria. On our ground the two have every appearance of being one and the same variety.

Red Dutch.

Both old and young plants of this variety were set in 1896. It is an old standard sort and one of the best as to bearing propensities, but the fruits are smaller than are the fruits of the more recently introduced varieties. While this variety endures neglect well, yet with good culture and pruning the berries are medium to large in size. It is much like Victoria, but taller and more slender, producing new shoots in abundance. It was apparently uninjured by the recent cold winter.

Versaillaise.

Both old and young plants of this variety were set in 1896. It is nearly as vigorous a grower as Red Dutch, but there are many more shoots which are quite unkempt in habit—much like Fay in this respect, but not so exaggerated. Injury by winter of '99 very slight. Berries are large, spherical, red, rather more acid than our other varieties.

Victoria.

This is the champion variety of the plantation. Set in 1896. Although producing no more fruit than some of the other sorts, it is very strong, vigorous, upright in character and its freedom from the production of many shoots render it a very desirable variety. The fruits are of medium size, red, mildly acid—remaining for a long time on the bushes.

White Grape.

This excellent white variety was reset and new plants added in 1896. The bushes are a little shorter and more stocky than Versaillaise with not quite so many shoots. Stems are somewhat inclined to be prostrate. Apparently uninjured by the cold winters. Berries are large, of a translucent yellowish white color, growing in long bunches, but sweeter than most red sorts—a good bearer.

Probably the best white currant on the market at the present time.

RASPBERRIES—*Rubus*.

Partial reports upon twenty-three varieties of raspberries follow. It is to be regretted that the record of fruiting

is not more complete; but, as stated under the general head "Bush Fruits," this lack of data is principally due to the unusual climatic conditions of 1898 and 1899. Following an extremely wet April, the season of 1900 was unusually hot and dry.

While authorities differ greatly concerning the proper position or location of our various cultivated varieties of raspberries and blackberries within the genus *Rubus*, yet probably the great majority accept the classification given by the American Pomological Society. According to this, raspberries are divided into four species, the European red varieties being *Rubus idæus*, the American reds *R. strigosus*, the black-caps *R. occidentalis*, and the purple canes which are considered to be hybrid between *R. strigosus* and *R. occidentalis* with all degrees of tendency toward either parent, are classified as *R. neglectus*. The purple canes, as a class, are propagated by the tips, and very little, if any, by suckers.

Brandywine—*R. strigosus*.

This old red variety was not introduced to the Station grounds till 1898, consequently there are no adequate notes upon the fruit. The plant is stocky with large reddish colored canes which sucker freely.

Carman—*R. occidentalis*.

This excellent black-cap variety was set in the present plat in 1896. It is an extra early variety. Plants not large, but sufficiently robust. Berries medium size, mild flavor, juicy—in full bearing the latter half of July.

First ripe, July 3; last picking, August 2; full pickings, July 12-19.

Columbian—*R. neglectus*.

This is considered to be one of the leading varieties of the purple canes, being very much like the Shaffer in appearance—a very strong and vigorous grower. It is said to be a very prolific bearer, the fruit being a little later and larger than Shaffer.

Cuthbert—*R. strigosus*.

This old standby of the American red type has not yet been excelled on our grounds, although growing alongside the Marlboro. The plants in a part of one row of Cuthbert were carefully removed and Marlboro set instead, but the latter have been nearly exterminated by Cuthbert plants coming from old underground canes. Cuthbert leaves are narrower than are those of Turner, the latter being especially broad and showing much more color upon the upper surface while young than do Cuthbert leaves. Cuthbert canes have a considerable number of small prickles. Berries are large, dark crimson, broad, conic, grains small and compact. The flesh is good quality, firm, standing up well when picked in quart boxes. First picking, July 10; last, August 23; full picking, July 19 to August 5.

Golden Queen—*R. strigosus*.

This is considered to be simply a sport of Cuthbert, differing from it principally in the yellow color of its fruit.

Gregg—*R. occidentalis*.

This has long been the standard black-cap. Although perhaps a little

slower in attaining to full development than some other varieties, the plants are very large and vigorous, giving an excellent yield. The leaflets are especially broad. Berries are large, roundish, oblate with a decided gray bloom; firm, juicy and of very good flavor. The variety is late in ripening, giving the first picking at the Station about July 21.

Hansell—*R. strigosus*.

This, at one time popular American red variety, was not introduced to the Station grounds till 1898, consequently there is scant data as to its fruiting qualities.

Hilborn—*R. occidentalis*.

This black-cap is quite popular in Ohio and Ontario, but with us it has not done well as yet, although the fruit is near medium size and quite sweet and juicy. First ripe, July 21; last, August 2.

Kansas—*R. occidentalis*.

This variety seems to be the closest rival to the Gregg upon our grounds, although in time of ripening it more nearly coincides with the Carman. The plants are of rapid, vigorous growth, berries similar to Gregg, fully as large, ripening a week earlier; juicy, excellent flavor, quite firm; yield good.

First picking, July 10; last, August 2; heaviest, July 19.

Loudon—*R. strigosus*.

This popular Wisconsin berry was originated at Janesville, being a cross between Turner and Cuthbert. It has not yet fruited on our grounds.

Marlboro—*R. strigosus*.

It is probable that this extremely popular red variety contains an admixture of European or Idæus "blood." By some authorities it is classified as a hybrid between the two species.

This variety has done rather better in neighboring grounds than on the station plat. It is a vigorous and productive early market variety and a thoroughly good all-purpose berry.

Mills—*R. occidentalis*.

This black-cap variety was set in the Station plat in 1898 and has not yet been fruited. The variety is thought to be a cross between Gregg and Tyler.

Miller—*R. strigosus*.

Set in Station plat in 1899; not yet fruited. The variety is of the Brandywine type, but said to be considerably earlier.

Mohler—*R. occidentalis*.

This promising black-cap variety was set in the Station plat in 1898 and has not yet fruited. It is claimed to be a seedling of the Eureka, although considered by Prof. Green, of the Ohio Experiment Station, to be practically, if not actually, identical with that variety. It is certainly deserving of trial.

Ohio—*R. occidentalis*.

Introduced to Station grounds in 1898; not yet fruited. An established early variety in many sections. Much used for drying and for shipping fresh.

Palmer—*R. occidentalis*.

Introduced to Station grounds in 1898; not yet fruited. This variety originated in Ohio and has been reported favorably from many sections in the West, and seems to be well worthy of trial here.

Pennock—*R. occidentalis*.

A black-cap of medium slender habit originated by Mr. Chas. E. Pennock, of Bellvue, Colo. The plant is a good, healthy grower, but has not yet fruited on our grounds.

Royal Church—*R. strigosus*.

While classified as an American red, it is quite possible that this variety is a hybrid and should be placed with the *Rubus neglectus* group.

It is a very large and vigorous variety with purple canes, although producing suckers quite freely. Berries are very large, dark crimson, excellent quality, medium firm, stand up well in quart boxes, but are inclined to crumble. It produced the heaviest yield of any variety on our ground in 1897.

First picking, July 21; heaviest, July 31; last, August 23.

Shaffer—*R. neglectus*.

This is an extremely vigorous variety of the purple cane group, of which it is the type. While propagating by root tips, the bushes and also the berries resemble the red raspberries more than they do the black, although the berries grow in clusters much like the black-caps. The berry is large, dark red or purple, moderately firm, nearly as good quality as the reds and richer. It is an excellent variety, but is used more for drying and for canning than for using in a fresh state.

This variety is difficult to lay down unless it is trained to the operation from the first year.

Strawberry-Raspberry, or Rose-Leafed Raspberry—*R. rosæfolius*.

This variety is merely a horticultural novelty in this country. The species is found growing wild in Japan and Eastern Asia. It is of no value except as an ornamental plant and has not endured on our grounds even with winter protection. The summer heat seemed too intense for it.

Thompson—*R. strigosus*.

One of the American reds. Introduced to Station grounds in 1898. Not yet fruited.

Turner—*R. strigosus*.

This is a very vigorous, almost thornless variety, which was very popular for many years. The principal objection is that the berries are rather soft. Berries large, dark red, medium to large, of good quality and yield. The yield is very steady for the first three weeks, the picking season with us being July 10 to August 11.

An excellent variety for home use.

Japanese Wineberry *R. phænicolasius*.

Set in the Station plat in 1898; failed to fruit; died 1899. It is doing fairly well on some grounds in this section, but is of no commercial value. It is a vigorous, semi-trailing bush of handsome appearance, but so far as fruit is concerned will be of interest only to those who are interested in horticultural novelties. The species is found growing wild in Central and Northern Japan and has long been grown in this country as an ornamental. It was not boomed as a fruit plant till 1889-90.

BLACKBERRIES AND DEWBERRIES—*Rubus*.

But four types of blackberries enter into consideration in this section, viz: 1, the Long Cluster; 2, the Short Cluster; 3, the Loose Cluster, which are thought to be hybrids between the first two and the common Dewberries of the Eastern states; 4, Northern Dewberries. The tendency

among the best growers of this section at the present time seems to be toward the 3rd class, which are more slender and flexible than the high bush varieties, but which, nevertheless, with proper pruning, hold their fruit well off the ground. All of this class that have been grown on our grounds seem to propagate quite freely by suckers and not by root-tips as is characteristic of Dewberries.

The common high bush berries are classified botanically as *Rubus villosus*, and Dewberries as *Rubus canadensis*. Most of the slender-caned loose-cluster varieties being evidently hybrids, are classified as *Rubus villosus* x *canadensis*?

Our old plantation was located on a hot and dry southwest slope, a very improper location, especially in connection with the fact that our supply of water usually fails about the time it is needed for the maturity of the fruit. As a result of these conditions the old plantation has been practically uprooted and a new one in a different location established. Many varieties new to the grounds, as well as all of the old ones, were set in this new plat, the rows of blackberries alternating with rows of black raspberries.

Agawam—*R. villosus*.

This variety is a representative of the short clustered group. It was introduced to the Station grounds in 1896, but has not yet borne fruit of consequence. We had an excellent stand of good thrifty plants. The variety is very popular in many sections; early in season and fruit of excellent quality.

Ancient Briton—*R. villosus*.

This variety is of the long cluster type. It was imported from England into Wisconsin somewhat over forty years ago, where it received its name and afterwards became very popular. It was introduced to our grounds in 1896, where it has obtained a good foothold, but has not yet fruited to any extent.

Dallas—*R. villosus* x *canadensis* (?).

This blackberry closely resembles the dewberries and is probably either the native Texan dewberry or a hybrid closely resembling the dewberries. The vines are much more upright than are those of the Lucretia or the Mayes dewberry. The variety has made a good growth on our grounds, but has not yet fruited to any extent.

Eldorado—*R. villosus*.

This variety of the long cluster type originated in Ohio some time prior to 1882. The plants have made a good growth on our grounds, but have not yet fruited.

Erie—*R. villosus*.

This is a variety of the short cluster type originating in Ohio in 1876. The plants are thrifty, lighter green in color than our other varieties, producing a fair yield of fruit. Ripens mid-season, fruit large, short-oval, good quality.

Mayes—*R. canadensis*.

Although originating in Texas, this dewberry is of the Northern type. It has also been sent out under the name of Austin's Improved and reached

our grounds under that name, but these plants failed to become established. The variety propagates by tips and by root cuttings. With us the plants are quite strong and vigorous and appear promising. They have not yet fruited, probably because of inclement seasons.

Ohmer—*R. villosus*.

A variety of the long cluster type originated by Mr. Nick Ohmer of Ohio. Our plants are vigorous and produced a good yield in 1897. It is mid-season to late; berries large and of good quality.

Rathburn—*R. villosus* x *canadensis*.

This belongs to the loose cluster group and is supposed to be a hybrid, though it is quite upright in habit and is propagated by suckers. The plants introduced to our grounds in 1898 have not done well and have not yet fruited. Mr. Pennock, a local nurseryman and fruitgrower considers this variety by far the best of any of the many he has tested on his grounds.

Snyder—*R. villosus*.

This old and best known variety is of the short cluster type. It makes a large vigorous growth with us but has not yet fruited.

Stone Hardy—*R. villosus*.

This is a variety of the short cluster type originating in Illinois. The most enchanting sight that the writer ever saw in the blackberry line was this variety growing at Madison, Wisconsin, so marvelously loaded with fruit that the large and luscious berries could be literally gathered by the handful. How it may succeed here with sufficient water for irrigation is yet uncertain, although the plants have done well.

Wilson Early—*R. villosus* x *canadensis*.

This variety of the loose cluster type and of hybrid origin was discovered in New Jersey in 1854. It is propagated both by root-tips and by suckers. It is a popular variety in New Jersey, demanding close pruning to prevent over-bearing. With us the plants have done well, giving us the best yield of any variety in 1897 and being about the only one to bear perfect fruit the past season.

Wilson Jr.—*R. villosus* x *canadensis*.

This variety, originated by Wm. Parry in 1875, is said for all practical purposes to be identical with its parent, Wilson Early. On our grounds they appear to be quite similar, but the "Jr." does not equal the "Early" in endurance of heat and drought.