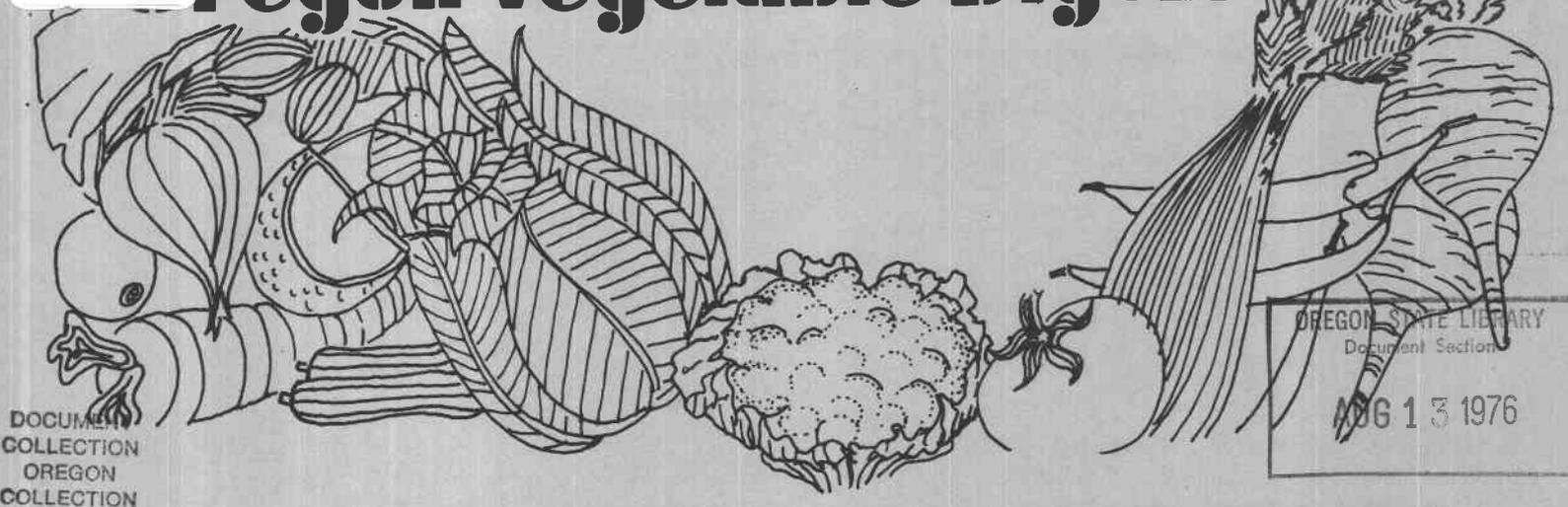


# Oregon Vegetable Digest



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## Clubroot resistant broccoli released

'Oregon Cr-1', the result of a broccoli breeding program begun in 1956, at Oregon State University, was increased and tested as B150 MC. This final population was derived from intercrossing, by bees in the greenhouse, 22 selections from the 9 best ( $F_6$ ) sublines of B150-7-1. Seed was saved by female parent, bulked by ( $F_6$ ) sublines and tested. Remnant seed from four lines was used to produce a crop of mass pollinated seed in Mexico, followed directly by another similar increase in California. It is thus an open pollinated cultivar with a relatively narrow genetic base. A degree of inbreeding depression is apparently expressed in low early vigor and late maturity.

In the breeding history outlined below, line F, the original clubroot resistant parent, was selected from a group of accessions received in 1953. It was

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a leafy annual form with small loose flower heads. The source of this line and its background have been lost.

'Northwest Waltham' the only commercial variety appearing in the parentage, was developed in the Northwest from 'Waltham 29'.

### Description

Seedling vigor of 'Oregon CR-1' is poor compared to most ( $F_1$ ) hybrids or open pollinated varieties, and maturity is about 10 days later than that of average varieties compared. Ultimate plant and head sizes are good, with yields often equaling or exceeding commercial controls. The plant typically reaches 18-24 inches with a heavy stem and heads often reaching 8-10 inches in diameter with a net, trimmed weight of up to .75 pounds. The head is usually smooth but can become moderately segmented. Florets are medium small, and usually uniform in size and color. Sidebranch production is somewhat limited and late.

While uniformity of plant and head type are excellent, maturity of the heads is variable, sometimes requiring harvests over a period of a week.

Limited tests have shown ascorbic acid and beta carotene content to be 110 percent and 159 percent, respectively, of the level in 'Northwest Waltham.'

'Oregon CR-1' is resistant to clubroot race 6, the common race found throughout the United States. It has shown good resistance in all areas in the Pacific Northwest where it has been tested, including many locations in Oregon, in the Puget Sound area of Washington, and at Abbotsville, British Columbia. It was also free from infection in the Half-Moon Bay area of California.

When infection potential is high, a few small clubs may be formed on branch roots, and there may be a very low percent of susceptible segregates in the stock.

'Oregon CR-1', shows fair to good resistance to downy mildew. It is susceptible to soft rotting of heads under wet conditions, especially when rains occur in early fall.

This cultivar should be useful as a source of clubroot resistance. It has the quality and yield potential necessary for commercial production and could well find use where clubroot is a problem. However, late maturity is usually noted as a serious limitation. Seed production has been adequate and should not be a problem if 'Oregon CR-1' is used in commercial production.

-- J. R. Baggett  
Horticulture Department

## Mulch, raised beds tested on melons

In 1975, yields of watermelons and cantaloupes were compared at the North Willamette Experiment Station, Aurora, from raised beds, the conventional flat system and from use of plastic mulches. The field was ridged on 40-inch centers with a single long sweep shovel. Beds were shaped with a 2-row bed shaper. Every other bed was then flattened as well as the "flat" plots, leaving plot row 80 inches apart. Broadcast fertilizer was prior to planting at a rate of about 48 pounds N - 60 pounds P205-OK<sub>2</sub><sup>0</sup> per acre

plus an additional band application of about 32 pounds N, 40 pounds P205, and 0 pounds K<sub>2</sub><sup>0</sup>/A. On May 24, seeds were planted by hand about one inch deep in the center of the bed, half way between the fertilizer band and the irrigation tube. Seeding rate was two seeds every 24 inches. Clear and black plastic, 1½ millimeters x 48 inches, was used on appropriate plots. Irrigation was provided by a trickle system.

The flat system produced a higher yield of watermelons and larger fruits than the raised beds (Table 1). Maturity was slightly earlier on the flat system. Plastic color did not affect yield of 'Crimson Sweet' on beds; however, the use of black plastic produced a higher yield than the clear plastic in the flat system. Yield of 'Super Sweet' was higher from black plastic than clear plastic on raised beds. A higher percentage of melons was harvested earlier from the flat system, using black plastic (Table 2.) Sugar content (percent soluble solids) was somewhat erratic and ranged from 11.1 to 12.0 percent for 'Crimson Sweet' and from 11.1 to 12.6 percent for 'Super Sweet'.

Cantaloupe yields were highest on the flat system and with use of black plastic (Table 3). Yield of marketable fruits was higher for 'Gold Star' than for 'Harper's Hybrid' although total yield was higher for 'Harper's Hybrid'. Many fruits of 'Harper's Hybrid' split at the blossom end just prior to picking, making them unmarketable. An average of 70 percent of the total crop was harvested by September 17 on black plastic treatments compared to 54 percent on clear plastic (Table 4). 'Gold Star' matured earlier than 'Harper's Hybrid'. Sugar content (percent soluble solids) ranged from 12.5 to 13.4 percent for 'Gold Star' and from 14.1 to 15.3 percent for Harper's Hybrid'.

Temperatures of soil surface were recorded at about 12:30 p.m. for 39 days beginning May 28 and ending August 27. Average temperatures were higher under clear plastic than under black plastic and both were higher than on unmulched soil (Table 5). Thermometers used had a maximum reading of 125°F and on four occasions the maximum temperature under clear plastic was above 125°F. Therefore, the range of temperatures recorded between clear plastic and other treatments was

somewhat less than what actually occurred.

Although temperatures under clear plastic were higher, yields were lower than under black plastic. When seedlings emerged under clear plastic there were problems of seedlings emerging through the hole in the plastic; this did not occur when black plastic was used. An effective herbicide is required with clear plastic and none with black plastic.

There were no advantages to raised beds in this test but this system probably should be investigated further. Use of plastic mulches, proper irrigation scheduling, use of adapted varieties and other management practices are important in getting high yields of "warm season" crops in the Willamette Valley of Oregon.

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Table 1. Yield and fruit size of watermelon grown under clear and black plastic mulch and on raised beds vs. flat system, Aurora, 1975

TR.	Cultivar	Plastic	System	Yield <sup>1</sup> / Tons/Acre	Fruit Size Lbs/Melon
1	Crimson Sweet	Clear	Bed	20.2	9.1
2	Crimson Sweet	Black	Bed	20.0	9.3
3	Crimson Sweet	Clear	Flat	23.3	9.9
4	Crimson Sweet	Black	Flat	24.4	10.7
5	Super Sweet	Clear	Bed	21.7	8.5
6	Super Sweet	Black	Bed	25.6	9.0

<sup>1</sup>/ Marketable fruits.

Table 2. Harvest patterns of watermelon as affected by various treatments

TR.	Cultivar	Plastic	System	Percent of Harvest by Picking Date						
				September				October		
				15	19	23	29	3	7	21
1	Crimson Sweet	Clear	Bed	9	22	37	21	8	3	1
2	Crimson Sweet	Black	Bed	-	37	39	20	2	-	3
3	Crimson Sweet	Clear	Flat	5	26	35	17	7	8	2
4	Crimson Sweet	Black	Flat	11	38	38	8	3	-	2
5	Super Sweet	Clear	Bed	-	4	23	21	7	2	44
6	Super Sweet	Black	Bed	-	21	30	26	3	2	17

Table 3. Yield and fruit size of cantaloupe grown under clear and black plastic mulch and on raised beds vs. flat system, Aurora, 1975

TR.	Cultivar	Plastic	System	Yield <sup>1/</sup> Tons/Acre	Fruit Size Lbs/melon
1	Gold Star	Clear	Bed	11.4	2.2
2	Gold Star	Black	Bed	11.9	2.4
3	Harper's Hybrid	Clear	Bed	7.7	2.4
4	Harper's Hybrid	Black	Bed	8.9	2.4
5	Harper's Hybrid	Clear	Flat	9.8	2.2
6	Harper's Hybrid	Black	Flat	11.5	2.3

<sup>1/</sup> Marketable fruits.

Table 4. Harvest patterns of cantaloupe as affected by various treatments

TR.	Cultivar	Plastic	System	Percent of Harvest by Picking Date										
				September								Oct		
				9	11	13	15	17	19	22	25	29	3	7
1	Gold Star	Clear	Bed	13	16	18	16	16	9	3	3	2	2	1
2	Gold Star	Black	Bed	6	12	30	23	16	5	4	3	-	-	-
3	Harper's Hybrid	Clear	Bed	-	1	10	10	21	17	19	5	9	7	1
4	Harper's Hybrid	Black	Bed	1	8	9	11	29	7	16	10	5	4	-
5	Harper's Hybrid	Clear	Flat	3	5	9	6	19	21	16	13	3	5	-
6	Harper's Hybrid	Black	Flat	2	7	15	14	26	9	16	7	3	3	1

Table 5. Soil surface temperatures under clear and black plastic mulch compared to unmulched soil

Mulch	Avg. Temperature of Soil Surface	
	°F	°C
Clear	89	32
Black	85	29
None	75	24

## New home garden pea variety released

'Corvallis' was developed and tested as OSU S194-3, an F<sub>7</sub> selection subsequently maintained as a massed lot. The first hybridization leading to the development of S194-3 was done in 1953 with the cross of 'Wando' x enation mosaic resistant G168. Later parentage included the commercial varieties WR Perfection and Eureka. Enation mosaic resistance was obtained from G168, an enation mosaic resistant selection from P.I. 140295, obtained from the New York Agricultural Experiment Station.

### Description

Seedling emergence and vigor are good. Plant form and height are typical of processing varieties ranging from 20-36 inches depending on conditions. Leaves are medium large, usually slightly lighter in color than those of freezing varieties. Growth may be quite determinate and the picking season short, but vigor is good and the picking season long if moisture and fertility are good.

Maturity is two days later than 'Little Marvel'. Node to first bloom has usually been 15 with a range of 13-15, one node later than 'Little Marvel'. With enation mosaic and pea streak present,

yields of 'Corvallis' have exceeded those of 'Little Marvel'. Potential yields of these varieties under disease-free conditions were not determined.

Pods are about 3½ inches long, blunt, tightly filled, smooth and attractive in appearance. They are usually borne in pairs unless growing conditions are poor. There are 8-9 medium to large seeds per pod. Mature seeds average about 1,475 per pound.

Cooked color is medium dark green, lighter than desired for commercial freezing, but adequate for home use, and may be slightly variable. In general, quality

characteristics could be considered intermediate between canning and freezing varieties. Flavor is mild and sweet, lacking the slight bitterness found in 'Little Marvel' and some other dark green varieties. Acceptance by home gardeners has been good.

'Corvallis' is highly resistant to enation mosaic virus in the field and has moderate resistance to pea streak virus. It is also resistant to common Fusarium wilt. The virus resistance of this variety permits it to be planted in Western Oregon at any time during the spring or early summer without danger of serious disease problems.

'Corvallis' was jointly released in the Northwest by the Oregon and Washington Agricultural Experiment Stations.

J. R. Baggett  
Horticulture Department

## Curly top resistant tomatoes released

The U. S. Department of Agriculture and Washington Agricultural Experiment Station have released four new fresh market tomatoes: 'Roza', 'Columbia', 'Rowpac', and 'Saladmaster'. These varieties are resistant to curly top, verticillium wilt, and fusarium wilt and were developed for market gardeners and home gardeners in the Western states where curly top is a hazard to production. In Oregon, curly top is likely to be a problem in tomatoes grown in the Columbia Basin and Snake River Valley areas.

'Roza' is a prolific, hand-pick variety with good eating quality and firm fruit that slices well for the table. It is very high in vitamin C and processes well, producing juice with very good viscosity. The fruit are not as large as those of 'Ace' and some F<sub>1</sub> hybrids but average about four fruit per pound. The plant is a rather small, open, determinate type which sets a large load of fruit even under adversely cold or hot conditions. When fertilized heavily, it will produce as much as 40 to 50 tons per acre. The fruit ripen early and over a relatively short period of time. They

hold well on the vine with little fruit cracking or rotting. Some plants will die when curly top disease is severe but 'Roza' produces a good crop of tomatoes where susceptible varieties are completely eliminated by the disease. It performs well when transplanted but tends to do better when direct seeded.

'Columbia' is similar to 'Roza' but has larger fruit, averaging about three per pound. 'Columbia' matures later than 'Roza' and has less curly top resistance, so risk of losses from this disease is somewhat higher, especially when the crop is transplanted. Like 'Roza', this variety sets well and can produce very high yields. It has the same pedigree as 'Roza'.

'Rowpac' is a third variety of the same pedigree as 'Roza' and similar in disease resistance and in most other respects. Its fruit is somewhat smaller than 'Roza' but it matures about a week earlier. 'Rowpac' has firm fruit that hold well on the vine, ripen over a short period, and machine harvest well. Processing evaluations indicate it makes

good puree, juice and whole packs.

'Saladmaster' is a large cherry or "salad-type" tomato with excellent eating quality. It has an oblong fruit shape which produces beautiful wedges for salads when quartered by slicing through the stem end. The fruit are deep red in color and are high in both acids and sugar which gives them an excellent flavor. Juice processed from this variety has high levels of vitamin C, soluble solids, total acids and color and is very low in pH. 'Saladmaster' is very resistant to curly top, with only a few plants succumbing even under severe exposure to this disease. 'Saladmaster' can be mechanically harvested if machines are adapted to handle the small fruit. The fruit ripen early and usually over a relatively short period. They are firm, come off the plant without stems and are adapted to bulk handling. It has been an excel-

lent parent for breeding machine harvested processing types. It is seldom troubled by fruit rots and normally has very few cracks, but occasionally superficial longitudinal splits occur following a late season rain. Unlike the three larger-fruited varieties, this variety performs better when transplanted than when direct seeded.

Researchers may obtain small trial samples of seed from Mark W. Martin, Irrigated Agriculture Research and Extension Center, Prosser, Washington 99350. Gardeners and commercial growers should purchase seed from vegetable seed dealers where possible. Seed dealers, seed producers, and others may purchase seed from the Washington State Crop Improvement Association, Inc., 513 N. Front St., Yakima, Washington 98901. From 40 to 60 pounds of seed of each variety are available.

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