# OREGON VEGETABLE Digest

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# 1961 Vegetable Variety Recommendations

## Needed: Your Suggestions

We are beginning our tenth year of publishing Oregon's Vegetable Digest. In our first issue, Director F. E. Price stated, "all departments that deal with vegetable problems will contribute to its pages. New and significant findings, here and elsewhere, will be summarized by specialists in the various fields. It is hoped that others interested in the welfare of the industry--growers, fieldmen, processors, county extension agents, and others--will take an active part and interest in the publication. Comments and suggestions may be sent to this office."

Your comments and suggestions for improving future issues have been appreciated, and we invite further comments. Please send them to Horticulture Department, Oregon State College, Corvallis.

## In This Issue . . .



At two-year intervals we have been placing a list of vegetable varieties recommended for Oregon in the January issue of Vegetable Digest. There are numerous varieties of most of the kinds of vegetables and the list here may be used as a guide to old and new ones. The varieties listed have been known to perform well here, in one or more areas, but the list should not be considered exhaustive.

Remember these precautions about varieties:

► Unless there is a compelling reason for major change, try new varieties on a small scale.

► Continuous testing of promising new varieties on a reasonably small scale will often pay big dividends.

► Grower needs to be aware of the exacting requirements of the market with respect to varieties. Processing firms mostly require exacting varietal types. In the market garden trade, care should be used in switching to distinctly new types.

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# Variety Recommendations . . . (Continued from page 1)

► Varied responses of varieties, even in adjacent localities, is due to differences in reaction of the plants to environmental factors, such as temperature, rainfall, daylength, soil, insects, and diseases. It is well to remember that the total behavior of a plant can be accounted for by the environment interacting with its inherited make-up.

Strain tests of a given variety are often worthwhile--especially with a crop like cabbage. If a very good strain is located, try to test stock a year in advance, and purchase such stock from the seedsman. This is especially valuable for some of the market garden crops. In general, seedsmen who handle large quantities of seed of a given variety sold for processing purposes, are able to keep stocks in reasonably good shape through close attention to roguing and continuous development of foundation stocks.

There are several sources of information on vegetable varieties, and it may be well at times to check with more than one source; it is difficult for any one individual to keep up with all new developments in every one of the vegetable crops. At OSC we generally are able to keep up-to-date only on important new developments in the major yegetable crops; with others we must suggest trials only on the basis of past experience or on information secured from elsewhere. These sources of information are available:

*Experienced growers
*Fieldmen
*County agents
*Seedsmen's representatives
*Seedsmen's catalogues and descriptive lists
*Extension specialist, Andy Duncan
*Vegetable breeders at OSC

Asparagus: Mary Washington, California 500. Tom Davidson, Umatilla Branch Experiment Station, Hermiston, Oregon, has tested many varieties at that location in recent years.

Beans, Green Bush: Tendercrop, new tender, upright bush bean with taste similar to other bush types; now being used in this area for some of the frozen bean pack; seeds mottled; a white seeded type with slightly less pod color, may be available in future years; Wade, Wadex, Tendergreen, Top Crop. Several new bush beans derived at OSC from continued crossing to Blue Lake will be used in pilot trials by processors this year. None have been released as named varieties. These are new types of beans, with pods more closely associated with Blue Lake than with the usual bush beans.

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# Variety Recommendations . . . (Continued from page 2)

Beans, Green Pole: For processing--FM-1, FM-1P, FM-1K, Asgrow 231; for curly top areas of eastern Oregon, Columbia, developed by the late B. F. Dana. It is a bean of Blue Lake pod quality; other pole types which may be grown by gardeners--Oregon Giant, Kentucky Wonder; a flat pod, distinct bean for freezing--Romano.

Beans, Wax Bush: Puregold, Earligold.

Beans, Lima Pole: Christmas, Oregon (a white "runner" bean of scarlet runner type).

Beans, Lima Bush: Large pod, Fordhook 242 and Concentrated Fordhook. Small pod, Clark's Bush, Early Thorogreen, Thaxter (new, mildew resistant),and Henderson.

Broccoli: Waltham 29, Northwest Waltham, Italian Green Sprouting, Purple Head (purple florets).

Beets: Detroit Dark Red, mildew resistant type, for processing; also for home gardens, Green Top Bunching, Seneca Detroit.

Brussels Sprouts: Catskill, Jade Cross (new, early $F_1$ hybrid).

Cabbage: Danish Ballhead, Golden Acre, Copenhagen Market. Strains of these types resistant to fusarium yellows should be used where the soil-borne pathogen is present. Club root resistance will likely be incorporated in cabbages in the next few years. For a savoy type, Chieftain Savoy; for small heads, Babyhead.

Carrot: For processing--Red Cored Chantenay, Royal Chantenay, Nantes. For the gardener the Red Cored Chantenay will hold up longer in the fall without as much cracking and rotting as Nantes. Market garden types--Imperator, Gold Spike, Gold Pak, Chanticleer, Morse Bunching.

Cauliflower: Snowball X, Snowball Y, Early Snowball, Snowdrift. For winter or spring types, a range of varieties--December to April.

Celery: Utah (there are many good strains of this green, long petiole type).

Cantaloupe: Spear, Pike, Oregon Delicious, Hales Best, Hearts of Gold are somewhat late in western Oregon. They perform best when transplanted to the field, or when black plastic or paper mulches are used. In some warm areas of eastern Oregon the later maturing Cranshaw can be grown. Fusarium resistant varieties--Iroquois, Harvest Queen, Delicious 51, Resistant Honey Rock--are rather late maturing in western Oregon.

Cucumber: For pickling--Snow's Perfection MR17 (mosaic resistant). For slicing $F_1$ hybrids are usually very productive--Burpee Hybrid, Sensation Hybrid, Surecrop Hybrid. These hybrids generally do well in greenhouse production, also.

Corn, sweet: Golden Cross Bantam remains the major processing corn of high quality for the area. For earlier maturity in home and market gardens--North Star, Golden Beauty, Seneca Golden, FM-Cross, Pot O'Gold, Tokay Sugar, Sugar King.

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# Variety Recommendations . . . (Continued from page 3)

Eggplant: Black Magic (early $F_1$ hybrid), New Hampshire, Black Beauty.

Lettuce, head: 456, Phoenix, Pennlake.

Leaf lettuce: Oak Leaf, Salad Bowl.

Onion: Danvers Yellow Globe (western Oregon); hybrid Surprise. Sweet Spanish (eastern Oregon). In a few years, pink root resistant hybrids should be available; mildew resistance may be several years away.

Peas: Perfection (wilt resistant, and dark freezer types); Thomas Laxton, Laxton 7, Alaska, Midfreezer. Virus resistant types should be available in a few years. For a tall growing type in home gardens, Alderman; shorter plant types, Little Marvel, Wando.

Pepper: Yolo Wonder, mosaic resistant, somewhat late; Early Calwonder, Pennwonder. For smaller fruit and very early--Vinedale.

Pumpkin: New England Pie, Small Sugar, Jack O'Lantern, Connecticut Field, Dickinson.

Summer Squash: Zucchini (dark green hybrids generally excellent), Caserta, Yellow Straightneck, Yellow Crookneck, White Scallop is not so well adapted in Oregon.

Winter Squash: Hubbard (many types well adapted), Golden Delicious, Banana, Uconn (bush, small fruited Table Queen); Table Queen, Sweet Meat, Bush Buttercup, Marblehead.

Rhubarb: Valentine, McDonald, Riverside Giant. A few OSC hybrids will be available for trial in next few years. They have been selected primarily for processing purposes.

Tomato: Early, determinate, nonstaking types--Victor, Bounty, Gem, Pennheart, some OSC lines available for trial. Medium early determinate--Wasatch, Pritchard, Early Pak 7; good hybrids of medium maturity--indeterminate, stake well: Moreton hybrid, Big Boy hybrid, Big early hybrid, Burpee hybrid; early indeterminate: Valiant, Faribo Hybrid E; indeterminate, non-hybrid, medium early, stake well: Queens, Stokesdale, Red Jacket (potato leaf), Glamour. Glamour has better crack resistance than most varieties, although it is by no means highly resistant. In the next few years many new varieties can be expected. Campbell 135 is rather crack resistant but somewhat late here. Ace is large fruited and of good quality, but somewhat late. Small fruited, with unusual ability to set fruit at low temperatures, Immur Prior Beta.

Watermelon: Klondike (many strains), New Hampshire Midget. (early Ice Box, only fair quality, very small); Charleston Gray (fusarium resistant, good shipper, too late for western Oregon).

--W. A. Frazier
Horticulture Department

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# Internal Browning of Carrots Affected by Fertilizers, Planting Dates

Incidence of internal discoloration (internal browning, brown heart, brown flecking, black heart) of the core or xylem tissues of carrots appears to be related to mineral nutrition and planting dates according to experimental findings at Corvallis and in the Eugene area. The disorder (Figure 1) usually affects less than five percent of the roots and varies with location and season. However, if present, it requires added personnel on the inspection belts to sort out discolored pieces.

Earlier experimental work by S. B. Apple, Jr., and E. K. Vaughan, in coöperation with the field department of Eugene Fruit Growers Association, indicated that there was a relationship between browning and boron nutrition. From this earlier work and a survey in 1957 of a number of carrot growers in the Eugene and Harrisburg areas, it appeared that incidence of browning was related to: (1) planting date--growers planting earliest tended to have more browning, (2) soil potassium levels--growers with lowest soil potassium levels had more browning, and (3) soil boron levels--growers with lowest soil boron levels tended to have more browning.

Experimental work was continued with these factors in mind, but scientists realize that other factors might also be involved in browning. Fertilizer trials were conducted in the Eugene-Harrisburg area and at Corvallis in 1958 and 1959. These involved nitrogen-phosphorus, potassium, boron, and in some cases, lime variables. Planting date studies were initiated at Corvallis in 1958 and continued in 1959. Amount of browning was recorded and yield data were obtained in some experiments.

Yield increases were obtained from application of potassium and the high rates of nitrogen-phosphorus in 1958 and 1959 in the Eugene-Harrisburg area as noted in Table 1. No yield measurements were made at Corvallis.

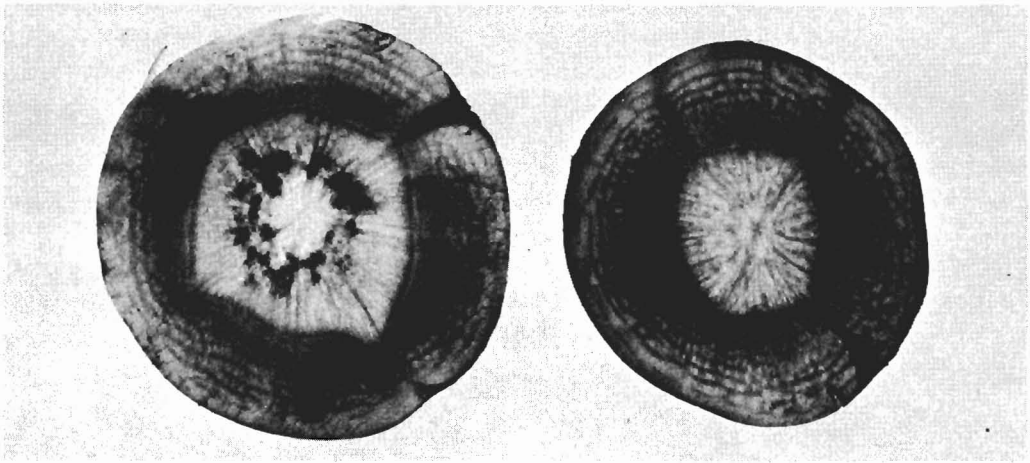

Figure 1: Carrot root slice with internal browning on left; normal carrot on right.

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# Internal Browning of Carrots . . . (Continued from page 5)

Table 1: Yield and Percent of Carrots with Internal Browning as Influenced by Fertilizer Treatments.

| Fertilizer treatments pounds per acre(1) | Eugene-Harrisburg 1958 Yield tons/A | Eugene-Harrisburg 1958 Percent brown | Eugene-Harrisburg 1959(2) Yield tons/A | Eugene-Harrisburg 1959(2) Percent brown | Corvallis 1958(3) Percent brown |
|---|---|---|---|---|---|
| 40 N - 40 $P_2O_5$ | 32.8 | 0.81 | 31.1 | 0.37 | 5.1 |
| 100 N - 100 $P_2O_5$ | 33.2 | 0.80 | 33.2 | 0.35 | 4.9 |
| 0 - $K_2O$ | 30.9 | 1.12 | 31.7 | 0.32 | 4.4 |
| 100 - $K_2O$ | 32.8 | 0.76 | 32.5 | 0.40 | 5.4 |
| 200 - $K_2O$ | 35.2 | 0.51 | 32.2 | 0.20 | - |
| 0 - Boron | 33.3 | 0.73 | 32.6 | 0.37 | 4.4 |
| 4 - Boron | -- | -- | 31.3 | 0.24 | 5.7 |
| 8 - Boron | 32.7 | 0.87 | 32.6 | 0.40 | - |
| 0 - Lime | 32.7 | 0.67 | -- | -- | 4.4 |
| $2\frac{1}{2}$ tons lime | 33.3 | 0.93 | -- | -- | 5.5 |

(1) Part of boron as spray, other materials broadcast and disked in before planting.
(2) Average of two locations; K soil test values--200 to 350 lbs. per acre.
(3) No yield data at Corvallis; O N - O P and 50 N - 150 $P_2O_5$ rates.

Percent of carrots with internal browning was quite low in the Eugene-Harrisburg experiments in 1958 and 1959. Percent browning was reduced slightly by increasing the nitrogen-phosphorus rate and reduced by increased potassium rates. In the Eugene-Harrisburg area, Royal Chantenay carrots were planted in 1958 on April 28 and harvested and observed on November 10. In 1959 carrots were planted on April 9 and harvested on December 5.

Browning was higher at Corvallis in 1958. Effects of fertilizer treatments were not great and were not the same as in the other locations (Table 1). Red Cored Chantenay carrots were planted on March 28 at Corvallis and observed for browning on October 30. At Corvallis carrots with internal browning were separated from normal carrots of the same treatments and analyzed for certain mineral elements. Carrots with internal browning were slightly higher than normal carrots in percent (dry weight basis) phosphorus, potassium, calcium, sodium, and boron, and were slightly lower in magnesium content. In some other crops it has been reported that upon cessation of growth or incidence of disorders affecting growth there is an accumulation of mineral elements in certain tissues.

Two plantings were made at Corvallis in 1958. Carrots planted March 28 and observed October 30 showed about five percent internal browning, while carrots planted June 18 and observed October 30 had no internal browning. Results of a planting date study at Corvallis in 1959 on the occurrence of internal browning of Red Cored Chantenay

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# Internal Browning of Carrots . . . (Continued from page 6)

carrots are presented in Table 2. Carrots were observed in the field on three different dates. Incidence of browning was greatest on the last observation date and greatest in carrots of the earliest planting. Responses of three varieties planted on four different dates are shown in Table 3. With the low percentage of browning occurring and with variations between replications of the same treatments, it is difficult to establish clear-cut patterns in these experiments. These results bring up this question--is this problem of internal browning primarily a matter of aging?

Table 2: Percent of Carrots with Internal Browning as Influenced by Planting Dates. Corvallis, 1959.

| | Percent of carrots with internal browning | | |
|---|---|---|---|
| Planting date | 1st observation (Sept. 24, 1959) | 2nd observation (Dec. 22, 1959) | 3rd observation (Mar. 21, 1960) |
| (1) April 3 | 0.3 | 2.0 | 2.2 |
| (2) April 25 | 0 | 0.8 | 1.3 |
| (3) May 13 | 0 | 0.3 | 0.4 |
| (4) June 20 | 0 | 0 | 0 |

Table 3: Percent of Carrots with Internal Browning as Affected by Varieties and Planting Dates. Corvallis, 1959.

| | Percent browning (observed Dec. 22) | | | |
|---|---|---|---|---|
| Planting date | Red Cored Chantenay (FM) | Royal Chantenay (NK) | Nantes (FM) | Planting date means |
| (1) April 3 | 2.0 | 2.0 | 1.1 | 1.7 |
| (2) April 25 | 0.8 | 1.1 | 0.7 | 0.9 |
| (3) May 13 | 0.3 | 0.5 | 0 | 0.3 |
| (4) June 20 | 0 | 0 | 0 | 0 |

Although these results show that later planted carrots had less browning than earlier planted carrots harvested at the same date, the problem of obtaining good stands of carrots in late May and early June is recognized.

As an interesting sidelight to the fertilizer trial, calculations can be made as to amounts of nutrient elements removed by a carrot crop (roots). The following assumptions are made: production of 30 tons carrots per acre containing 15 percent dry matter containing the following percentages of elements on a dry weight basis--1.50 to 2.50% N; 0.25 to 0.35% P; 1.50 to 3.00% K; 0.20 to 0.30% Ca; 0.15 to 0.25% Mg; 0.50 to 1.00% Na; and 0.0025 to 0.0050% B. Based on the above assumptions, nutrient removal in pounds per acre would be as follows: 135 to 225 N; 23 to 32 P (52 to 72 $P_2O_5$); 135 to 270 K (163 to 325 $K_2O$); 18 to 27 Ca; 14 to 23 Mg; 45 to 90 Na, and 0.23 to 0.45 B.

--H. J. Mack, Horticulture Department
--T. L. Jackson, Soils Department
--E. K. Vaughan, Botany & Plant Pathology Department

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# Control for Pea Leaf Miner on Onions

In the late summer of 1960 onion growers in several sections of western Oregon discovered onion tops heavily infested with tiny maggots. A wilting and drooping of the tops, thought at first to be unseasonal mildew, was the result of leaf miners feeding between the outer and inner epidermal layers of the onion "tubes". So great were the numbers of larvae that their mines overlapped and the leaves were girdled. Later, when the adults developed, tremendous numbers of the tiny flies were encountered in the onion fields and in brush or crops near the edges of the fields.

The Entomology Department of Oregon State College is indebted to Dr. Kenneth Frick of the Irrigation Experiment Station at Prosser, Washington, who identified specimens collected from infested onions near Gaston, Oregon, as the pea leaf miner, Liriomyza langei Frick. This species was first described in 1951 in California, where it is a major pest of peas. It is thought to be native, but was previously confused with other similar species. Larvae of the pea leaf miner have been found mining leaves of onion, beets, spinach, peas, celery, cauliflower, petunia, aster, and lettuce. Thus far, no uncultivated plants have been found as larval hosts. The species has been identified in California, Oregon, and Washington.

There are a number of species in the Liriomyza group and all seem to have generally the same life cycle. The female fly makes punctures with her ovipositor to insert eggs singly into leaf tissue. Sometimes no eggs are laid, but the fly feeds on the leaf juices exuding from the punctures. These punctures can be of economic importance in certain leafy crops such as spinach. Larvae feed on tissue until they are mature and form a blotch-type mine in the leaf. Then they cut an opening in the epidermis and crawl out of the leaf to pupate. Pupation is usually in the soil but may occur in or on the leaves. In onions, some larvae appear to emerge from the "wrong" side and find themselves inside the onion leaf "tube". Both living and dead larvae have been found in this situation. Exact details of their life in onions are not known.

Several generations of the insect develop during a season. The population may build up, generation by generation, until tremendous numbers occur toward the end of summer. Finally their worst enemy, tiny wasp parasites, catch up with them in numbers and leave relatively few leaf miners to pass the winter.

In Oregon during the past season the pea leaf miner is known to have been present in damaging numbers on Wapato Lake near Gaston; in some small plantings of specialty onions at Hillsboro; and in the higher parts (south-western half) of Lake Labish near Salem. Onion tops wilted down in most of these areas before crop maturity and resulted in reduced yield weights.

At the suggestion of Oregon State College entomologists, growers in the Lake Labish area treated 155 acres of later maturing onions with parathion. Excellent control of adult flies was obtained and crop damage was held to a minimum. The application rate was one-half pound actual parathion in 10 gallons of spray per acre. The spray was applied by aircraft. Diazinon dust gave promising results on a small scale test in the Wapato Lake district. Reports on control trials in California for this insect, as well as for other closely related species, indicate that parathion, malathion and possibly other phosphate insecticides may be effective. Two applications will probably be needed because of emergence of new generations of the pest.

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## Pea Leaf Miner . . . (Continued from page 8)

Information from Gaston growers indicates that the pea leaf miner was present at Wapato Lake in the 1959 season also. Thus, the infestation of 1960 may not be an oddity of season, but a threat to the onion growing industry of western Oregon in the season ahead. A survey of the Labish area in September was heartening, however, in that of 300 puparia sieved from the soil, over 75% were empty shells and the remaining pupae were either dead or parasitized. An early heavy infestation is not expected next spring, but growers should be on the look-out for the characteristic leaf blotches by at least mid-season. Experiments on control will be conducted in 1961 if an infestation develops.

--H. H. Crowell
--R. W. Every
--P. O. Ritcher
Entomology Department

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## *Vegetable Notes . . .*

Huelsen and Bemis (Illinois) report that cutting off sweet corn stalks just above the upper ears (topping) one week after the midsilking period tends to reduce yields, although differences varied seasonally. (Proc. Amer. Soc. Hort. Sci. 74: 477-483, 1959.)

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Transpiration rates of plants are usually highest during the day and lowest at night, closely corresponding to diurnal variations of solar radiation and evaporative demands. Transpiration is subject to diurnal fluctuations even under conditions of continuous illumination and controlled constant environmental conditions. Under such conditions peak rates are still observed approximately at noon and minimum rates are observed at midnight. (Yoash Vaadia, Dept. of Irrigation, Davis, in California Agriculture, Vol. 14, p. 16, Nov. 1960.)

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Harrington reported that gibberellic acid sprayed at the rate of 3 to 10 ppm on lettuce plants at the 4- and 8- leaf stages of growth significantly increased seed yield. (Proc. Amer. Soc. Hort. Sci. 75: 476-479, 1960.)

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# Hort Society Highlights

At the November 17-18 meeting of the Oregon State Horticultural Society, attendance at some sessions of the vegetable crops section was unusually good. Walt Evonuk of Eugene presided.

R. W. Every, H. E. Morrison, R. Arias, and H. H. Crowell were members of a panel in which newest methods of insect control were presented. Two new chemicals for symphylid control--VC13 and 18133--were discussed. The latter is not registered, while VC13 has been "cleared" for cucumbers, tomatoes, sweet corn, peppers, and squash. It was pointed out that the material may give only seasonal control, somewhat like parathion. 18133 has not been "cleared" for use on vegetables. Further studies on slugs have emphasized fall treatment, as well as dinitro, cyanamide and metaldehyde dusts, sprays, or baits.

A. D. Shepherd, head of processing investigation, Western Utilization Research and Development Division, USDA, Albany, California talked about new vegetable crops for processing and mentioned edible pod peas as one possibility.

Burton Wood discussed economic trends in vegetable production. He stressed the inevitable trend toward larger, more efficient farms, and a possible trend to relatively high production closer at home in the future.

A review of some new types of irrigation equipment was presented by John Wolfe.

Ed Vaughan discussed several root diseases of vegetable crops, including pea and bean root rots. Chemicals have thus far been relatively unsuccessful as a means for control of these diseases, and he stressed possibilities in breeding for disease resistance.

New president of the Society is Stephen G. Nye. C. O. Rawlings, long-time secretary, has retired and Andy Duncan was elected to serve in this capacity.

These are only a few highlights of some of the information presented. Complete details of the presentations will be published by the Oregon State Horticultural Society in the Proceedings.

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