OREGON VEGETABLE Digest

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Two Bush Snap Bean Varieties Released

Butternut Squash Varieties Compared

During recent years the Butternut variety of winter squash has become increasingly popular. Several reasons for the popularity of this squash are its fine texture, mild pleasant flavor, convenient size, ease of preparation, and early maturity. Variation in size and shape within a strain and between strains of the Butternut variety are conspicuous. A comparison of a number of strains was made at Corvallis in 1965.

Strains of Butternut squash were grown in three replications, 22-foot plots, 12 plants per plot. They were planted on May 15, but were partly replanted on June 2 because unfavorable weather conditions caused seedling losses.

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In This Issue . . .

Seed of two bush snap beans, adapted especially to the Willamette Valley, has been released by the OSU Agricultural Experiment Station. The two varieties have been under development since 1951.

The bush lines, designated OSU 949 and OSU 2065, have been selected from continued backcrosses to the FM-1 pole Blue Lake bean. The selections were made in the relatively cool climate of western Oregon. They have been thoroughly tested by several processors in pilot trials, totaling 200 to 350 acres per season during the past four years. Yields have generally ranged from 2 1/2 to 4 tons per acre of machine-harvested beans. The beans, like pole Blue Lake, respond well to excellent culture. They are relatively sensitive to heat and have given very poor performance in areas of the Midwest and the East. Under such conditions, they are very late in maturity and pod set is erratic.

The lines are being released for continued pilot trials in western Oregon, pending future release of varieties with more desirable growth habits and higher yielding ability.

These beans have not been tested extensively in the eastern Oregon area, where the destructive curly top virus is present. They are resistant to the bean

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Bean Varieties Released . . . (Continued from page 1)

common mosaic virus and tolerant to halo blight. The plants are vigorous, sprawly, and relatively large leaved. They can be harvested satisfactorily with bush bean harvesters, but the harvested product is relatively trashy. Good cleaning and declustering equipment is required at the plant if the beans are harvested mechanically.

Many taste panels and quality tests have shown processed pods of OSU 949 and 2065 to be closer to Blue Lake in overall pod quality than any other bush bean at this time.

Description of the releases follows:

OSU 949. Plant vigorous, rather sprawly; foliage cover generally good; leaves medium to large size, dark green; pods average about 5 inches long; color medium, fleshiness medium, smoothness medium, taste very near Blue Lake. Maturity very near Tendercrop in western Oregon; much later in the Midwest and the East. Germination relatively good in cool soils of early spring. Slightly less sensitive than OSU 2065 to blossom drop at high temperatures, but more sensitive than Tendercrop. Processed product closely approaches Blue Lake.

OSU 2065. Plant vigorous, sprawly; heavy foliage cover under good culture; leaves medium to large size, dark green; pods generally 4 to 5 inches long, shorter than OSU 949; color medium, fleshiness medium to good, smoothness good--resembling FM-1 more closely than OSU 949. Taste very near Blue Lake. Maturity generally two to four days later than 949; very late in the Midwest and the East. Germination relatively good in cool soils of early spring. More sensitive to blossom drop at high temperatures than OSU 949. Processed product very closely approaches Blue Lake.

Background of OSU 949 and OSU 2065: The Logan bush bean was crossed with Rogers 6-inch Blue Lake in the greenhouse in the spring of 1951; in subsequent years, rigorously selected bush plants were selected in the field and crosses were made to these plants using FM-1 as the recurrent parent for pod quality. The F_1 was grown in the greenhouse each winter to secure seed for F_2 segregation in the field.

In 1954 a single plant selection, 949, was made from F_2 segregating progeny of the third backcross. Single plant selections were made from 1955 through 1959; in the latter year the selection 949-1864-2 was selected as the final type, and in subsequent years (1960 through 1965) the line was massed. The line was thus selected as single plants five years following the third backcross and has been massed with roguing for flat pod or small pod mutants for five years. In 1966 it will be in the 12th generation following the last backcross.

In 1957 a single plant selection, 2065, was made from segregating progeny of the sixth backcross. The line has been massed since that date; in 1966 it will be in the ninth generation, massed since the sixth backcross. Flat-podded mutants or other off types have been rogued out of the line.

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Bean Varieties Released . . . (Continued from page 2)

The 949 and 2065 bush snap bean lines tend to mutate in a manner typical of Blue Lake pole. It is important to rogue for small, flat pod mutants, as well as larger oval types.

Seed availability. Small packets of seed of each of the two varieties are available from OSU. The major increase in 1965 was made by Ferry-Morse Seed Company. Seed availability will be extremely limited in 1966.

Acknowledgments. We gratefully acknowledge the cooperation, over a period of several years, of several western seedsmen and their personnel; of several processing firms, their personnel and growers; and of county agents in various counties of the state.

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Vegetable Notes . . .

Results with peas, carrots, and water cress by Austin and Longden in England, indicated that parent plant nutrition can affect the concentration of phosphorus in seeds, which in turn may affect plant yields. Differences in growth from seeds of varying P levels were most apparent when these seeds were grown at low levels of P nutrition. In most cases differences were not present when seeds were grown at higher levels of P nutrition. There was no evidence of heritable change, although it was observed that plants grown from seed produced by P-deficient plants were more variable in size than those from nondeficient plants. (Nature, 205: 819-820. 1965.)

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Tompkins in Washington found that gibberellin (GA) could substitute for all or part of the usual two months of rhubarb crown chilling needed in the field. Production of forced rhubarb was increased as much as 40% when crowns receiving ample chilling to break the rest period were treated with GA. (Proc. Amer. Soc. Hort. Sci., 87: 371-379. 1965.)

Blond Peas--1965 Progress Report

Blond, or light-colored, peas present the greatest quality problem for the pea industry in various parts of North America and Western Europe. Uncontrollable climatic variables that influence the amount and quality of light reaching the developing pods are the major cause. Variations in fertilizer, spacing, and irrigation have not proved effective in relieving the situation in standard varieties during seasons when the problem is severe. Variety testing and breeding offer the greatest hope (Ore. Veg. Digest XIII (4) 1964; XIV (1) and (2) 1965).

During 1965, ten varieties selected to provide a range of pea color were grown in replicated, irrigated plots near Imbler in Union County, Oregon. Plots were harvested at a tenderometer value of 95 to 105, blanched and frozen.

One set of samples was cooked and evaluated by a panel in the Department of Food Science and Technology, Oregon State University. A second set of samples was thawed and evaluated by a USDA grader at Lamb-Weston, Inc., Weston, Oregon.

Mean values of five replicates are presented in Table 1. Yield data are included only as a matter of secondary interest and to show that all varieties were vigorous and high yielding.

OSU 436-1 produced no blond peas and was strikingly superior in green color to all the others. It is from a cross of Miragreen x an enation resistant line selected by J. R. Baggett, Department of Horticulture, Oregon State University. Though the pea has excellent color and the vine is enation resistant, it is insipid in flavor. Growth of 436-1 was much slower than the other varieties early in the season, but all eventually reached about the same height. OSU 436-1 will be included in the trials again in 1966. Small amounts of seed for breeding purposes are available from Dr. Baggett.

Dark Skin Perfection served as the check and produced many blond or mottled peas under the conditions of this experiment, as did some of the other named varieties.

We gratefully acknowledge the help of George Varseveld and Darrell Beavers, Department of Food Science and Technology, Oregon State University, and Robert Stringham, USDA grader at Lamb-Weston, Inc., with the quality evaluations.

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Table 1. Mean Values for Certain Quality Attributes and Yields of Pea Varieties, Union County, Oregon, 1965

No.	Variety	Source	Color evaluations			Overall appearance	Texture (mouth)	Taste	Yield
			USDA score	Color standard plastic chip No.	OSU panel score				Lbs./A.
1	60-1261	Rogers	20	2	5.2	5.5	4.9	4.9	5,202
2	Early Frosty	Rogers	20	2	6.4	5.9	5.0	5.4	8,134
3	Perf. Freezer 60	Rogers	18+	1 to 2	6.1	6.0	5.7	6.2	8,924
4	Thomas Laxton 60	Rogers	18	3	3.1	3.5	6.0	6.3	5,755
5	Signet	Asgrow	20	2	5.9	5.7	6.2	6.4	8,581
6	95-F	Western Valley	18+	2	5.1	5.3	5.4	5.6	6,302
7	64-F	Western Valley	19	2	4.7	4.7	5.6	5.4	5,767
8	69-F	Western Valley	19+	2	6.2	6.3	5.7	5.5	5,925
9	436-1	OSU	19+	1	6.5	6.3	5.3	5.2	7,379
10	D.S. Perfection	---	18+	2	4.7	5.3	6.3	6.5	5,096

Breeders and Seedsmen Will Test OSU Onion 11

Seed of OSU onion line 11 was released in February 1966 for small-plot test work by breeders and seedsmen. If the line shows promise, either as an open-pollinated variety type or as a pollinator line in hybrid combinations, it will be named at a later date.

OSU 11 has been developed from a 1951 polycross of four onion varietal types: Oregon Danvers (Kurth), Australian Brown, Yellow Sweet Spanish (Bohnert), and Yellow Globe, a hybrid received from Dr. H. A. Jones of the USDA. Mass planting of the complex open-pollinated stock, with a rigorous selection for large, deep globe, yellow or brown type bulbs, was made on alternate years. Inbreeding of single bulbs was initiated in 1958 and has been continued, either as single bulbs or as highly selected massed bulbs, on alternate years. It may be considered as a new varietal type.

OSU 11 is a deep to very deep Yellow Globe onion of approximate Danvers maturity when grown in western Oregon. Storage ability has been good to excellent. There is variability for depth of globe. The seed lot being released is of a deeper globe shape and heavier neck than may generally be desired, but medium globes should occur in the material. Some sister line material of varying type is being maintained.

OSU 11 is suggested as a pollinator line in hybrid combinations of both Yellow Globe and Sweet Spanish male sterile inbreds. The line tends to produce fewer seedstalks and less seed than Danvers; it is a relatively uniform smooth "ring" type and is relatively free of premature seedstalk formation as well as doubles. It appears to have some tolerance to pink root.

A few hybrid combinations have been made and tested at OSU. Combining ability has been promising; it is thought that because of the complex origin of the line it may be of value to breeders elsewhere.

We will appreciate brief reports from those who test the line and who use it in hybrid work.

--W. A. Frazier
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Vegetable Note . . .

Benzyladenine (BA) was found by Jones in Indiana to be useful for increasing fruit set in muskmelons. It appears that competition from the rest of the plant, especially from the developing fruit, is the major factor in reducing set of flowers following hand or open pollination. BA appeared to increase the ability of the young fruit to compete with the rest of the plant. (Proc. Amer. Soc. Hort. Sci., 87: 335-340. 1965.)

Insect Control Discussed at Portland Conference

In January 1966 the 25th Annual Pacific Northwest Vegetable Insect Conference was held in Portland, Oregon. Entomologists from British Columbia, Washington, Idaho, Colorado, Utah, Oregon, Nevada, and California met and discussed mutual problems encountered in the control of insects attacking vegetable crops. Topics discussed in these meetings included spider mites, cutworms and loopers, flea beetles, aphids, wireworms, symphylans, root maggots, carrot rust flies, corn earworm, and the golden nematode. These topics are summarized briefly as follows:

Spider mites. The two-spotted spider mite was more abundant than normal in the Yakima Valley in 1965 and caused damage to potatoes, corn, hops, and mint. This mite is not usually troublesome on vegetables in western Oregon, but occasionally is found late in the season on beans and corn. Spider mites were more abundant on hops in western Oregon in 1965 and were also found in certain mint fields. If this abnormal tendency of mite build-up should persist early in the 1966 season in the Willamette Valley, vegetable growers probably should prepare to apply control measures.

Cutworms and loopers. Unusual outbreaks of the alfalfa looper and the variegated cutworm were reported from Washington and Oregon on peas, turnips, potatoes, beans, onions, and mint. The alfalfa looper was considered to be more difficult to control than the variegated cutworm.

DDT sprays were used effectively in 1965 for the control of these pests. When applied with a ground sprayer, naled (Dibrom) was also effective. Experimental field trials with trichlorfon (Dylox) also gave satisfactory control. Laboratory tests showed that good cutworm control could be obtained with endosulfan (Thiodan), and azinphosmethyl (Guthion). Carbaryl (Sevin) was used effectively on peas in Washington.

Tuber flea beetle. Reports from British Columbia show that the tuber flea beetle is definitely resistant to aldrin and dieldrin in two potato-growing areas. A third area may be showing this trend. Some tolerance to DDT has also been indicated. Screening tests are continuing in British Columbia and Oregon in an attempt to develop a soil insecticide to replace the cyclodiene insecticides. The 1965 field surveys in the potato-growing areas of eastern and central Oregon failed to show the presence of the tuber flea beetle. This pest was once (1935-1949) a limiting factor in potato production in the Redmond area of central Oregon. In western Oregon, the intensity of the tuber flea beetle populations seems to vary greatly from field to field. In fields where the flea beetle larvae showed resistance to aldrin, dieldrin, and chlordane, growers are producing a satisfactory grade of potatoes by routine (five or more) foliage applications of parathion (1/2 pound toxicant per acre).

Pea aphid. A report from the Entomology Research Division, ARS, at Yakima, Washington, showed that mass production and release of brachonid parasites of the pea aphid has been accomplished. Controlled environments in the insectary make it possible to propagate the pea aphid and its parasites during all seasons of the year. The aphid and its parasites are further propagated in large, portable polyethylene-covered greenhouses from which the parasites are released into the surrounding aphid-infested fields.

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Insect Control Discussed . . . (Continued from page 7)

Wireworms. A discussion on wireworm control was one of the highlights of the conference. The warnings of Morrison and Crowell (Oregon Vegetable Digest, Vol. VI, No. 2, 1957) are now brought sharply into focus. It is probable that some fields in eastern Washington and Oregon contain wireworms which are resistant to aldrin, dieldrin, and possibly DDT.

Substitute materials such as parathion and diazinon are registered and recommended. These do not always give satisfactory performance. In field tests in 1965, parathion seemed to be superior to diazinon for wireworm control.

Field trials with soil fumigants (Telone, ethylene dibromide, D-D Mixture and Vorlex) have resulted in satisfactory crop protection. Growers who contemplate the use of soil fumigants for wireworm control should modify their agronomic practices (crop rotations and planting times) in order to take full advantage of the fumigants.

Symphylans. Symphylans again were the principal target of research and discussion. Studies included: continued investigations of soil insecticides, several of which are worthy of expanded research; soil fumigation trials in eastern Oregon potato fields; biological studies; rearing methods; and culturing of the fungus Entomophora coronata. K. G. Swenson, of Oregon State University, announced that the nematode DD-136 would invade and kill symphylans in the laboratory. Additional time will be needed to determine if this discovery can be exploited.

Root maggots. Root maggots continue to be troublesome on cruciferous crops, particularly in areas which contain maggots resistant to aldrin, dieldrin, heptachlor, and chlordane.

Materials such as Zinophos, Guthion, and diazinon have federal registration and are recommended for cabbage maggot control on leafy cole crops. Different results are sometimes obtained in different soil types.

The longevity of granular applications of diazinon, Zinophos and Guthion is limited. Radishes with a 25- to 30-day growing period can be protected with a single furrow application. On root crops such as turnips and rutabagas, additional supplementary control measures are needed for adequate crop protection. Several experimental materials have been of interest in recent years. These are not registered and need additional investigations relative to their phytotoxic nature.

Carrot rust fly. Difficulties are still being encountered in controlling the carrot rust fly in areas in which it has developed resistance to cyclodiene soil insecticides. Diazinon has been found effective for 100 days after planting when used as a 5% granular formulation at the rate of 0.6 to 1.2 pounds per 1,000 linear feet in the furrow at time of seeding. After this time, supplemental control measures are required. If the resistant carrot rust fly should become established in Oregon, processors who are geared to harvesting carrots in late October and November may have difficulty in maintaining a clean carrot pack.

Corn earworm. Tests with the Heliothis nuclear polyhedrosis virus were continued in 1965 against the corn earworm. At a high rate of application (500 worm units per acre) the control was about equal to that obtained with four spray applications of carbaryl (Sevin) at the rate of one pound per acre during the silking period. It appears that the virus preparation, to be successful, may have to be used like a chemical insecticide, rather than dependence being placed on the disease propagating itself.

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Insect Control Discussed . . . (Continued from page 8)

Golden nematode. An interesting account was given on this recent transplant from Long Island to Vancouver Island, B.C., where it appears to be limited to about 10 square miles. Efforts to control it with soil fumigants indicate that progress is being accomplished. Only potatoes and other solanaceous plants are attacked.

New pests. New pests in the Pacific Northwest include Psilopa leucostoma, a small erhydrid fly which attacks sugar beets in the Walla Walla section of Washington. It is a leaf miner that does not make the blotch-type mines commonly produced by the spinach leaf miner.

The carrot budmite, Aceria peucedan, was reported from Idaho. This eriophyid mite invades carrot fields by air transfer. It causes curious distortion of the umbel and may reduce root size, stand, and seed production.

--H. E. Morrison
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Squash Varieties Compared . . . (Continued from page 1)

Eastern Butternut and V906 were planted about June 1 because the seed arrived late. Harvests were made during the middle of October. The vines had been damaged by frost on September 17, and it was not possible to determine the effect of the frost and differences in planting dates on maturity. For this reason, only total fruit yields (except for nubbins, which were not picked) are included in Table 1. Only the total weight was analyzed statistically.

Each replication was scored arbitrarily on a 1-5 basis (with 5 best) for uniformity of size and shape, and an average was figured.

Sources of strains

1. Farmer Seed and Nursery Co., Faribault, Minnesota
2. Ferry-Morse Seed Co., Mountain View, California
3. Harris Seed Co., Rochester, New York
4. Dessert Seed Co., El Centro, California
5. Agway, Syracuse, New York
6. Asgrow Seed Co., New Haven, Connecticut
7. Seed Research Specialists, Modesto, California
8. Burpee Seed Co., Riverside, California

--J. R. Baggett
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Table 1. Butternut Squash Trial Observations, Corvallis, Oregon, 1965

Strain	Source No.	Mean plot wt.[1] Lbs.	Av. no fruit	Av. fruit wt. Lbs.	Uniformity[2] Size	Uniformity[2] Shape	Typical fruit length Inches	Deviations[3] Long	Deviations[3] Fat	Notes
Dessert	4	122.3	54	2.3	3.5	3.3	6.5-7	2.6	6.0	
Eastern	5	98.1	42	2.3	2.8	2.2	8	1.0	9.3	
V906	5	100.3	37	2.7	2.5	3.2	9	1.0	6.6	
Harris	3	127.8	57.6	2.3	2.6	3.8	7	3.6	8.6	Many immature fruits, large and dumbbell shaped
Asg. 23	6	132.5	56.6	2.3	3.2	3.5	7-8.5	1.6	8.3	
Hercules	4	147.0	41.3	3.6	3.5	3.6	8	2.3	1.6	
Baby Butternut	1	96.8	52.3	1.9	2.3	2.3	7	1.6	9.6	
F.M. Improved	2	143.0	64	2.2	3.7	3.3	8	4.3	4.0	Some very long-necked off types
S.R.S.	7	135.3	62.6	2.2	2.8	3.0	7.5	5.0	6.0	Several large yellow off types
Burpee	8	117.8	53.7	2.2	3.2	3.2	7	1.6	5.6	

1 LSD at the 5% probability level = 19 pounds.
2 Averages based on a 1-5 basis.
3 Extreme long or fat deviations from the typical shape for the strain. Expressed as average/plot.