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Oregon 190 bush green pod bean released

The Oregon State University Agricultural Experiment Station, Department of Horticulture, in cooperation with other departments, has announced release of bush green pod bean 'Oregon 190'. Small increases are being made by seven western seedsmen in 1972.

This bean is a small sieve, tender pod type, with taste closely approaching that of 'Blue Lake' pole bean, and with other pod characteristics closely approaching those of 'Blue Lake' pole bean.

Background: The parentage is highly complex, involving a rust resistant pole bean from Florida, Great Northern beans resistant to yellow mosaic virus, pole Blue Lakes, many bush beans derived from Blue Lake, a Mexican root rot tolerant bean N-203, and California Small White (rust resistant). The original F_3 selection was made in 1965; F_4, F_5 generations were selected in 1966, 1967 as sub-lines; masses of sub-lines have been made in 1968, 1969, 1970, 1971. Seed being released is sub-line 190-17 and is from the 9th generation. The line has been given many quality tests in the Department of Food Science and Technology, and several pilot trials by processors.

Quality: In general, panel tests have shown the pods to be of acceptable processing quality, especially for canning; it is rather dark in color, especially when frozen. Taste closely approaches 'Blue Lake'.

Sieve sizes: 190 has consistently graded out relatively high percentages of small sieve beans; it is much smaller sieved than 'Oregon 58'. Under good culture, sieves 5 and 6 have retained good fleshiness but not comparable to that of 58.

Pod set, yield: Yield of 190 has been relatively high, with heavy pod set in small plot work on the vegetable research farm and in the limited processors trials. It is not a vigorous bean and under unusual cultural stress it cannot be expected to perform well.

Maturity: 190 is early, maturing about the same time as 58, at times about one day later.

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Growth habit: Not as good as 58 but better than the older Oregon lines 949 and 2065. Mechanical harvest has been satisfactory.

Mutants and off-types: Prior to 1969 we had noticed no mutants in 'Oregon 190'. After that time mutants, or perhaps chance, occasional seed mixes, have been noted. Special roguing was done in 1971 to reduce these rogues to a minimum in the stock seed being released.

Disease resistance: 190 has good tolerance to field infection with yellow mosaic virus and "Blue Lake" type tolerance to the halo blight bacterium. Stock seed of 190 has been grown adjacent to virus-infected gladiolus and susceptible plants have been rogued out each year. Neither yellow mosaic nor halo blight has been a critical factor in snap bean production here; halo blight, however, can be a serious problem if infected seeds are planted. Resistance to the organism would be highly desirable. Resistance to the two diseases is considered unique among current bean varieties in the United States. The variety has the usual susceptibility to white and grey mold and root rot. It is resistant to common mosaic virus, but susceptible to the rust strain currently present in western Oregon.

Potential: The 190 shows promise for yield of small sieve size beans of satisfactory quality, especially for canning, and for resistance to the two diseases. Weaknesses have been vigor and to some extent habit of growth; nature and persistence of the rogue problem is not clear at this time. Care is suggested in careful roguing of stock seed for increase.

We gratefully acknowledge the cooperation, over a period of several years, of processing firms, their fieldmen, growers and other personnel in the Willamette Valley of Oregon and of western seedsmen and their personnel who have aided in seed increase.

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Oregon 1604 bush green pod bean conditionally released

'Oregon 1604' bush green pod bean was released conditionally, fall, 1971, for use by bean breeders interested in hybridization of the bean with other lines in winter, 1971, and/or hybridization and observation in the field in 1972. Pilot tests by processors are underway in summer, 1972.

Background: Parentage of 'Oregon 1604' is 'Oregon 58' x 'Oregon 190'. Both these varieties have highly complex parental backgrounds. Involved have been pole 'Blue Lake', many Oregon bush lines derived from pole 'Blue Lake', 'Gallatin 50', 'Tendercrop', 'Great Northern', 'Del Monte 77', 'California Small White', 'Florigreen' pole, 'N-203' and 'Puregold'. Many "sib" (sister-brother) crosses have been involved. At this time we have several sub-lines of 1604; they are being observed for uniformity of plant and pod characters.

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Quality: The processing quality, canned and frozen, has been satisfactory after three years of testing. In 1971, however, after several days of relatively high temperatures for this region, more fibre than desired was found in some samples of 1604. It is suggested to seedsmen that fibre in progeny of 1604 be observed closely and to processors that the line be harvested at a relatively early stage of maturity. The fibre safety factor in a bean such as 1604 is unlikely to match 'Oregon 58' in large sieve sizes

The 1604 line has less irregularity (seed skips) than 58; young pods are moderately irregular but straighter than 58; length of pod approaches that of 58 and it is, therefore, a relatively long podded bean. Set of pods is better than 58.

Yield: In two replicated tests in 1970 and three in 1971, 'Oregon 1604' line has been a consistently heavy yielder. It has performed especially well in early spring plantings. It should be recognized, however, that we have not had sufficient seed of this bean to provide Oregon processors with pilot acreage prior to 1972. In small, single row plots in cooperation with several processors, the line showed heavy sets of pods in summer, 1971.

Pod color closely approaches that of 58 so it is darker than most commercial American bush bean types. Taste panels have thus far indicated that taste closely approaches 'Blue Lake' pole.

Pod smoothness has generally been satisfactory; in 1971, pods from early spring plantings were distinctly smooth, becoming more irregular in later plantings.

Sieve sizes: 'Oregon 1604' is intermediate in sieve size between 'Oregon 58' and 'Oregon 190'. In general, sieve size distribution has far more closely approached that of typical pole bean harvests than 58 (large sieve) or 190 (small sieve).

Pod set and maturity: 1604 is relatively early, near the maturity of 'Oregon 58' and, therefore, in western Oregon 3 to 5 days earlier than 'Gallatin 50; under the usual relatively cool temperatures. It is difficult to predict what the impact of warmer climates might be on time of maturity of 1604. Pod set has been relatively good throughout the western Oregon summer; it is a concentrated blossoming type, with many racemes showing open blossoms at the same time.

Growth habit is considered intermediate between the two parents, somewhat better than 190 but less satisfactory than 58. Environmental factors have a profound effect on growth habits of most Blue Lake derived bush beans. In the prolonged cool spring weather of 1971, 1604 was an intermediate size bush with rather good habit of growth. The planting which developed during the prolonged 1971 warm daytime maximum temperatures of summer was more sprawly than had been anticipated, or than had been seen in 1604 in any prior year. The line has not been harvested mechanically up to this time.

Mutants: An occasional flat pod mutant of the 'Blue Lake' pole type has been found in 1604. Incidence of this type mutant appears to have been less than with 190 but more than with 58. Careful attention will need to be given to roguing for stock seed increases. It is anticipated that the New Zealand grown seed will be relatively free of mutants.

Further tests: This new bean has been increased rather rapidly and needs to be observed closely, especially in pilot trial acreages in 1972. It is of distinct interest because of apparent yield potential of good sieve sizes. It should not be permitted to develop to distinctly large sieve sizes without close quality checking.

Disease resistance: Line 1604 appears essentially similar to most bush beans in susceptibility to root rot, rust, yellow mosaic and white mold. It has some tolerance to halo blight, but is not as resistant as 190.

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Parental potential: 'Oregon 1604' has been crossed with many of our 'Blue Lake' derived bush and other beans. Some F_2 progenies have been observed and, in general, there seems to be promising transmission of the tendency for heavy blossoming and pod set. This varies, as expected, depending upon the parental combinations. It should be borne in mind that 1604 may carry genes for retrogression to less than ideal growth habits and that these habits are highly complex in their inheritance.

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Spacing affects yield, size of cauliflower

Yield of cauliflower from a 7-inch row spacing was about 17 percent higher than from 28-inch rows and 10 percent higher than from 14-inch rows. Percentage of small heads less than 4 inches in diameter was highest from the 7-inch row spacing.

'Snowball Y' cauliflower was seeded with a Stanhay precision planter on June 24, 1971, at the Vegetable Research Farm in beds of 11, 7-inch rows; 6, 14-inch rows; and 3, 28-inch rows. Spacing between plants in the row was about 9 to 10 inches. A rate of about 50-150-50 pounds $N-P_2O_5-K_2O$/A was broadcast and disced in before planting and 25-75-25 pounds $N-P_2O_5-K_2O$/A was banded at planting. Trifluralin at 3/4 pound A.I./A was disced in before planting for weed control. Irrigation was provided at 7- to 10-day intervals. Yield and diameter of heads were determined from a once-over harvest of plots on October 14.

Data in Table 1 show that yield was highest from the 7-inch row spacing and there was little difference in yields from 14- and 28-inch rows. Highest percentage of small heads, 1 to 2 inches in diameter, was produced from plants at the 7-inch row spacing. Highest percentage of heads, 6 inches in diameter and larger, was from plants in 28-inch rows.

These preliminary data indicate that there may be a potential yield increase from planting cauliflower in narrower rows than are presently being used. Because of variability of maturity and size for once-over mechanical harvest, this potential would not seem practical until a more uniform maturing, high yielding variety is developed. Cost of trimming and processing of small versus large heads as well as general acceptability would also need to be considered.

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Table 1. Effect of row spacing on yield and size of heads of cauliflower. Corvallis, 1971.

Row spacing (inches)	Yield tons per acre	% of heads in diameter sizes (inches) 1-2	2-4	4-6	+6	% of plants producing acceptable heads
7	8.4	10	38	36	16	64
14	7.6	4	28	56	12	76
28	7.2	2	23	40	35	76

Vegetable notes

Fontes and Ozbun in New York report that under some conditions the level of carbohydrate found in the shoot tip of broccoli is correlated with floral induction as previously reported for cauliflower. However, if plants are grown continuously at a warm temperature, a high level of carbohydrate does not insure flowering. This suggests that the association between carbohydrate accumulation and floral induction is coincidental and carbohydrate accumulation is not directly responsible for floral induction. (*J. Amer. Soc. Hort. Sci.*, 97:346-348, 1972.)

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In Israel, Eshel and Katan found that tolerance of eggplant, pepper and tomato to diphenamid herbicide was markedly temperature dependent. An increase of temperature during the light period from 68 to 86°F increased phytotoxicity of diphenamid, while temperature increase during the dark period from 59 to 68°F decreased phytotoxicity. Although some differences among the three species in their response to diphenamid were noticed, all of them were affected similarly by temperature. (*HortScience*, 7:67-68, 1972.)

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'The Role of Horticulture in Meeting World Food Requirements' was the title of a symposium held at Kansas State University in 1971. Eleven papers were presented on various phases related to nutritional components of horticultural products and breeding, production and processing of horticultural crops to meet world food needs. (*HortScience*, 7:139-170, 1972.)

Cantliffe grew various radish, spinach and snap bean varieties in New York at different soil N rates and harvested 0, 6 and 12 hours after the initiation of the light period. Radish leaves and snap bean pods contained less NO_3-N as the plants were harvested further into the light period. Nitrate concentration of radish roots and spinach leaves were not changed by harvesting at 6 a.m., 12 noon or 6 p.m. The addition of N fertilizer increased the NO_3-N concentration of radish and spinach but decreased the NO_3-N concentration of snap bean pods. Varieties differed in their capacity to accumulate NO_3 in all three species. No NO_3 accumulated at any photoperiod in leaves or roots of table beets when N was not added to the soil. When N was applied at rates from 100 to 400 pounds per acre, less NO_3 accumulated in both plant parts as photoperiod was extended from 8 to 20 hours. Addition of N to the soil increased the total N content of leaves and roots. Larger total N concentrations were observed in plants grown under an 8-hour photoperiod than in plants grown under longer photoperiods. (*J. Amer. Soc. Hort. Sci.*, 97:414-418, 1972.)

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Ethephon increased the proportions of perfect and completely pistillate flowers on several muskmelon varieties according to Shimotsuma and Jones in Indiana. Lower concentrations were needed for female conversion under short days than long days. Early-maturing varieties appeared more responsive to ethephon than late ones. No daylength-ethephon combination was effective in changing sex expression of watermelon. (*HortScience*, 7:73-75, 1972.)

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