Chemical Composition of some Mexican Climbing Beans, Phaseolus vulgaris L.

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A series of collections of Phaseolus vulgaris L. was separated from the rest of our accessions on the basis of long growing season, 160-180 days and climbing habit more than five meters long. These collections came from the mild temperate humid belt along the mountaineous terrain of Oaxaca, Chiapas and Veracruz. They are usually grown with fruit trees as support. From this series, eleven collections were selected on the basis of locality and color of seed-coat for analysis. The test for HCN gave negative results.

*%ash %fat %protein %fibre %NFE
Min 3.52 0.57 23.50 4.85 60.79
Máx 4.52 1.19 28.96 5.91 66.38
Ave 4.14 0.77 25.96 5.32 63.82

D*ry basis

EFFECT OF POPULATION DENSITY IN YIELD OF A STRING BEAN OF AN INDETERMINATE GROWTH HABIT

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In México, string beans are a popular form of consumption of Phaseolus vulgaris L. Plants of determinate growth habit are the most common for production of string beans although, in localized areas pole beans are used with different types of trellises and population densities.

The aim of the present work was to study the effect of population density on the yield of a climbing, indeterminate string bean cv. Japonés grown in the field with a 3 m tall "tepee" type trellis, made with three stalks of Arundo donax. The was one trellis per square meter and 1,3,5,7 and 9 plants per trellis giving a density of 1, 3, 5, 7 and 9 plants per square meter.
The design of the experiment was randomized blocks with three replications. Fertilizer was applied before planting (May 13, 1983) at the rate of 100-100-60 (N, P₂O₅, K₂O). Plants were grown under rainfed conditions with supplemental irrigation. Pods were harvested every eight days beginning when the plants were seventy days old; this gave a total of seven pickings.

RESULTS: No significant differences were detected in yield of beans with different population densities. The average yield of fresh weight of pods was 5.6 kg/m² from 768 pods/m².

The constancy of yield was related to a decrease in branching of individual plants as the population increased.

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BREEDING FOR RESISTANCE TO COMMON BACTERIAL BLIGHT IN INTERSPECIFIC CROSSES BETWEEN PHASEOLUS VULGARIS AND P. COCCINEUS

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A Phaseolus coccineus introduction, P.I. 165.421, reported as being highly tolerant to Xanthomonas phaseoli, was obtained from the Plant Introduction Station, USDA, Pullman, Washington. It had typical scarlet flowers of runner beans, pole bean growth habit, large purplish seed, and resistance to BCMV races 1 and 15.

A cross (W830) between a navy bean cultivar 'OAC Seaforth' and P.I. 165.421 was made in 1982. All 5 F₁ hybrids had intermediate position of cotyledon at emergence, and purple hypocotyls and flowers. Most of the pods aborted on the F₁ plants, so the hybrids were crossed with P. vulgaris cultivars to obtain seed for blight tests. Fifty hybrid seeds from 4 crosses involving navy beans 'Swan Valley', 'C-20', 'Harokent' and OAC Seaforth were obtained. These F₁ showed segregation for cotyledon position at emergence, color of hypocotyls, flowers and seeds when grown in greenhouse in Spring of 1983. Ample amounts of F₂ seed were produced.

F₂ populations of the 4 crosses and their parents were planted in a blight nursery at Harrow on May 27, 1983 and inoculated with local strains of X. phaseoli on June 23, 1983; leaf reactions were visually scored at 22 and 42 days after inoculation.

Mean blossom date, pod set and leaf blight reaction were midway to the parental values (Table 1). F₂ plant reaction to blight varied from high tolerance to susceptibility. Many plants did not flower until late August or early September, probably due to day length-sensitivity from P.I. 165.421. From 1 to 19% of the plants in each cross were rosette type dwarfs with light green narrow pointed leaves (okra leaf) and if they flowered, aborted pods.

The majority of the F₂ plants had poor pod set. However, some plants that were highly tolerant to blight had desirable agronomic characteristics such as determinate or semi-determinate growth habit, early-medium maturity, and fair amount of pods with small white seed. They were saved individually for further progeny testing and crossing.