phaseoli var. fuscans, Xpf) bacterial blights continue to affect dry bean production in many areas of the U.S., Canada and Latin America. While planting of pathogen-free seed remains effective for control of the Xanthomonas diseases, techniques for detection of internal seed contamination by blight bacteria are often time consuming (seedling injection) or require large bacterial populations (serology). We now report the utility of a combined serological and selective enrichment technique for the detection of internally-borne Xp and Xpf in dry bean seed. Antisera of Xp and Xpf at titers of 1:2000-1:5000 were produced in rabbits by intravenous injection of formalin-killed cells suspended in buffered saline (10⁹ cells/ml). Injections were made at 0(0.1ml), 4(0.3ml), 8(0.5ml), 11(1.0ml) and 14(2.ml) days; sera were collected 7, 14, and 21 days after the last injection. In agar double diffusion tests, Xp and Xpf antisera reacted positively to steamed cells (60 min at 100°C) of 20/20 Xp and 29/29 Xpf isolates, but did not react to steamed cells of 1-2 isolates each of Pseudomonas phaseolicola, P. fluorescens, Corynebacterium flaccumfaciens, and Erwinia herbicola. Xp and Xpf antisera also did not react to 19 internal bacterial contaminants obtained from surface-sterilized bean seed.

Utilizing Xpf R10, resistant to 50 ppm rifampin, and selective plating on media with and without rifampin, we obtained maximum Xpf R10 and minimum bacterial contaminant populations by incubating R10-infected seed (1 infected seed: 4 noninfected seed) in the following selective enrichment medium (SEM): 1.0 gm yeast extract, 25 mg cycloheximide, 2 mg nitrofurantoin, 1 mg nalidixic acid, .05 mg gentamicin in 1000 ml .01M phosphate buffer pH 7.2. The Michigan Department of Agriculture (MDA) test for internal blight contamination of bean seed currently involves: 1) surface sterilization of 1.9 kg seed for 10 min. in 2.6% NaClO; 2) rinsing in sterile H₂O containing 10 gm/liter yeast extract; and 3) injection of a sample of liquid surrounding seed into primary leaf node of young kidney bean seedlings. One ml samples of the surrounding liquid obtained from the MDA, were individually incubated in 25 ml SEM for 24-36 hr on a rotary shaker. Bacteria were then sedimented by 15 min centrifugation at 5000 x g, resuspended in 1 ml buffered saline, steamed 60 min at 100 C, and tested serologically. Sixty-one of 65 bean seed samples found to carry internal blight contamination in the Michigan Department of Agriculture test reacted positively in the serological test.

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ELECTROPHORETIC PATTERNS OF THE GLOBULIN FRACTION OF SOME TYPES OF BEANS

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This research has as its main objective to point out the characteristics of the globulin fraction from 6 varieties of beans from the Bean Breeding Program of the Instituto Nacional de Investigaciones Agrícolas. The globulin fraction was isolated at 5°C in 5% NaCl in 0.2M phosphate buffer at pH 7.5 (ratio of solvent to bean meal, 10:1). The globulins were separated by dialysis and then freeze-dried.
The electrophoretic patterns were determined in polyacrylamide gel in tris-glycine buffer at pH 8.3. The optical density of the gels stained with amido black was scanned in ZK5 attachment of the Zeiss spectrophotometer PMQ3. The globulins of the varieties Negro Arribeño, Flor de Mayo and Negro Mecentral presented an electrophoretic pattern with four fractions at pH 7.6: alpha, beta, gamma and delta. The varieties Cacahuate, Canario 107, Jamapa and Negro 150 presented only 3 fractions: alpha, beta and gamma. The beta fraction of the black bean varieties and Flor de Mayo is resistant to 93°C at pH 7.6, while the three globulin fractions of the Canario varieties are susceptible to heat denaturation.

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DRY WEIGHT ACCUMULATION AND NITROGEN CONTENT IN 4 VARIETIES OF BEAN IN DIFFERENT PHYSIOLOGICAL STAGES OF GROWTH

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The dry weight and nitrogen contents of seeds and other organs were studied during development of the plant. The objective of this research was to discover the relationships between chemical content of the seeds and that of other organs. The varieties Canario 107, Jamapa, Black Valentine and Flor de Mayo were studied, with random block design, involving 4 replications and 5 sampling periods during the growing cycle. The analyzed organs were: root, stem, petiole, leaves, pericarp, flower and seed. The organs that seemed to contribute most to the seed nitrogen were root, stem and pericarp. There was a positive correlation between seed dry weight and pericarp dry weight, with a determination coefficient $R^2=0.1227$. Also a positive correlation was established between nitrogen contents of seed and pericarp, with a determination coefficient $R^2=0.724$.

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CARBOHYDRATE CONTENT IN BEAN VARIETIES

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The content of starch and soluble sugars was analyzed in a collection of bean seeds that represents the genotypic variation in Mexico. The 58 genotypes of Phaseolus vulgaris L. are distributed in six intraspecific groups: Blancos, Colores, Negro Tropical, Negro Arribeño and Bayo. They were contrasted with 10 genotypes of Phaseolus coccineus L. (Ayocote group). The starch content oscillates between 25.5% and 41.89% in all the studied genotypes, with an average value of 31%. The genotypes of Phaseolus coccineus L. have a greater quantity of soluble sugars and starch than those of Phaseolus vulgaris L. Within this last species, almost all the genotypes of the Bayo