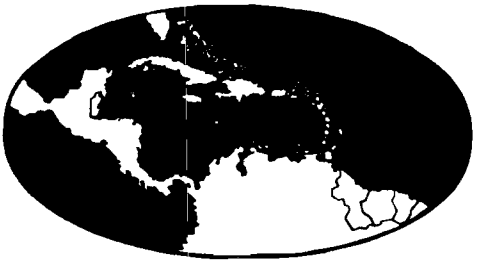
CARIBBEAN FOOD CROPS SOCIETY



THIRTEENTH ANNUAL MEETING
ST. AUGUSTINE TRINIDAD, W. I.
JULY 6-12, 1975

PUBLISHED WITH THE COOPERATION
OF THE
UNIVERSITY OF PUERTO RICO
MAYAGUEZ CAMPUS
1980

VOLUME XIII

SEED PRODUCTION OF RED KIDNEY BEAN (*PHASEOLUS VULGARIS*) AT CHAGUARAMAS AGRICULTURAL DEVELOPMENT PROJECT

C. GONSALVES

It is important to select varieties of crop plants, adapted to conditions in the field where they will be grown. High yield is much more likely when the strong and weak points of the variety and field coincide. In attempting to produce seed material of *Phaseolus vulgaris* for Trinidad, a varietal trial involving 9 varieties obtained from Costa Rica, Japan and USA was carried out, and selection based on general performance and yield was practised.

The Red Kidney bean variety 27 R from Turrialba, Costa Rica, was selected as a superior variety and the best plants from the trial were planted out for single plant observation in progeny rows at a spacing of 60 cm x 40 cm. Five (5) rows were planted per single plant selection. The lines were closely observed and data of the following specific characters recorded: earliness (days to 50% flowering), plant height, height of first pod, number of pods, number of seeds per plant, weight per 1,000 seeds.

We found that the more important selection criteria were earliness, plant height, height of the first pod and number of seeds, while the weight per 1,000 seeds was less important. Selection was then carried out on an independent culling system. Generally, ranging up to 120 seeds per plant, indicates a good multiplication rate.

The se 'A' strains were then planted out, again at a spacing of 60 x 40 cm and further, more severe selection carried out. Each progeny row was carefully examined for uniformity and, presence of virus - infected plants. Off types and virus infected plants were immediately removed from the plots. A high level of field sanitation was exercised, with regular sprays of Polyram Combi (fungicide) to prevent incidence of rust or downy mildew, and Eftol (insecticide) to control beetles, stinkbugs or caterpillars.

From approximately 100 progeny rows, seeds were harvested from the best 50 after roguing out of undesirable plants. This usually gave a total of 20 kg breeder seeds. This was threshed, dried at 30°C for 3 days to 12% moisture and treated with Polyram Combi and Detmol before sowing again.

The breeder seed was then planted out at the commercial spacing 70 cm between rows and 3 cm in the rows, and again strict roguing of off-types and virus-infected plants was carried out. The level of field sanitation was maintained at a very high standard. From the 20 kg of seeds planted out, 350 kg of bulked seeds was harvested.

This was not sufficient for commercial seed production and was planted out at the rate of 80 kg/hectare for multiplication of seed material. The same strict field observation was necessary to ensure that there were no weeds to contaminate the seeds, no virus and no off-types. This aspect of seed production is indeed labour intensive. From this crop, yields of 1,100 kg/ha were obtained. This figure measured total yield, but after cleaning to remove aborted seeds, split beans, cracked seeds etc. a final yield of 1,030 kg/ha was obtained.

This means that the multiplication ratio is 80: 1030 or 1: 13 approximately. This compares favourably with rates of multiplication in other parts of the world, and gives good economic returns.

It is the task of Chaguaramas Agricultural Development Project to make available at least 20 kg of seed material from 8-strain multiplications. With an average multiplication rate of 1: 10 sufficient seeds for sale can be produced in three generations. This results in the following multiplication plan:

1st generation	20 kg - 200 kg
2nd generation	200 kg - 2000 kg
3rd generation	2000 kg - 20000 kg

It is proposed to use this short multiplication plan with the increasing seed demands expected in the future. Unfortunately, the large scale multiplication of Red Kidney beans at CADP is restricted, because it has been proven that high quality seed material can only be produced in the dry season using irrigation. However, the areas where irrigation can be used at CADP are limited.

The seeds that are thus produced are guaranteed for the following: (1) Varietal purity, (2) Germination and vigour, (3) Purity from inert material (dirt, sticks, broken seeds, stones), (4) Freedom from weed seeds, (5) Freedom from other crop seeds, (6) Uniformity of size, based on mechanical grading.

This study suggest that it is quite feasible to produce seeds of locally adapted varieties of beans in an efficient manner for the local market and possibly for export if irrigation facilities are expanded. This will certainly cut down the cost of planting material for the farmers, and increase the total production of Red Kidney beans in Trinidad.