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Characterization of crops and pollen of *Vigna radiata* (L.) Wiczek. (Undhu) and *Cajanus cajan* (L.) Millsp. (Thora) and breeding of *Cajanus cajan* (L.) Millsp. for early maturity of pods

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This reports the results of a breeding programme to reduce the period of pod maturity and plant height in *Cajanus cajan*. In addition, certain studies on pollen and seeds of *C. cajan* and *V. radiata* have been reported from a preliminary investigation carried out before the breeding programme. A living collection of five accessions of *Vigna radiata* (8816, 1816, 3014, 755, 10034) and four accessions of *Cajanus cajan* (7068, 7096, 7065, 7069) obtained from Plant Genetic Resources Centre at Gannoruwa, Sri Lanka was maintained. Specific parameters of plant life were recorded such as date of flowering and dates of pod maturity. Seed characteristics such as seed germination and seedling emergence were studied. Pollen morphology and pollen viability were studied. A histochemical analysis was done to ascertain the presence of starch and lipids in pollens of all accessions.

Seed germination was more than or close to 80 % in all the accessions of *Vigna radiata* and *Cajanus cajan*. Seedling emergence was high in *Vigna radiata* (62.5%). Pollen studies showed that 75.6% and 44.3% of pollen grains were viable in *V. radiata* and *C. cajan* respectively. All viable pollens were able to produce healthy pollen tubes in all the accessions of both species. Yield potential in terms of mean pods per plant of *V. radiata* was relatively low (15.2) compared to the *C. cajan* (111.3) whereas the mean pod maturity period was relatively low in *V. radiata* (2 months). In *C. cajan*, time taken for pod maturity was high and variable among accessions. The period for pod maturity in *C. cajan* accession No.7068 was 3 months and for accession No.7096 was 4 months.

For the breeding programme, *C. cajan* was selected with the aim of shortening the pod maturity period. As the male parent, accession 7096 was selected because it recorded the highest pollen germination rate and accession 7068 was selected as female parent, which, recorded relatively less time period of pod maturity. Reciprocal crosses were performed.

Intra specific hybridization of *C. cajan* was highly successful and F_1 hybrids were produced. The hybrids showed variability among individuals such as insect resistance, dwarfism and early flowering. The hybrids of F_1 plants showed the expected character, which is the reduced period of pod maturity (3.5 months) compared to the parents. There was a reduction in height of plants (56 %), which is important for resistance to lodging. F1 hybrids were fertile (66%) and able to set pods after selfing and further observations are being made.

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