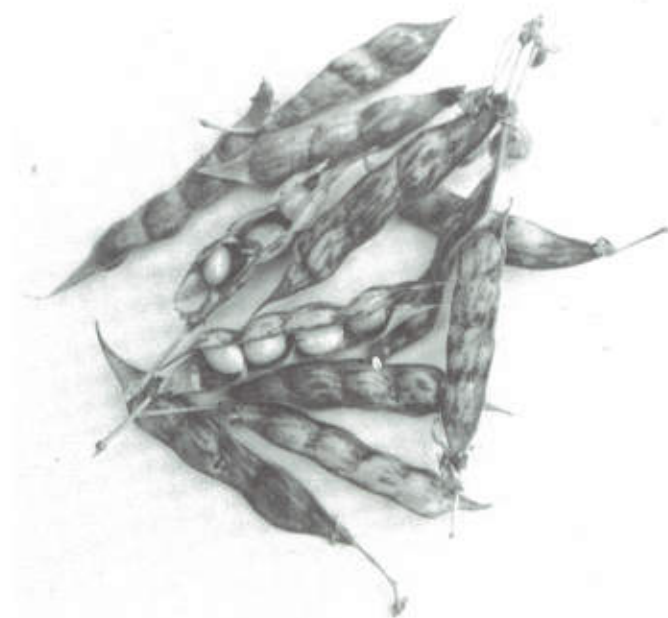


Growing the new Pigeon Pea in Barbados

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A GUIDE TO GROWING IN BARB

GROWING THE NEW PIGEON PEA IN BARBADOS

Pigeon pea (*Cajanus cajan* (L.) Millsp.) is an erect perennial or annual bushy legume. Being a leguminous plant it can fix atmospheric nitrogen.

The crop is currently grown on a small scale in Barbados, in a system of intercropping with sugar cane and other crops. Total production is estimated at 3 hectares yielding approximately one tonne of seed. Of this, half is consumed in the fresh mature green state.

Seasonal production and low productivity coupled with high demand have necessitated large annual imports. During 1981, imports of dried, chilled, fresh and frozen pigeon peas totalled 230,478 kg valued at \$327,263 BDS.

Recently, there has been the development of new pigeon pea varieties which are different from the traditionally planted ones. The new varieties are less sensitive to day-length, short, early maturing and determinate. They can therefore produce year round.

This factsheet highlights recent studies in Barbados aimed at defining a production system and production practices for the new pigeon pea variety UW 17.



Mature pods of the dwarf variety UW 17.

Variety

The cultivar UW 17 which was developed by the University of the West Indies in Trinidad, is an erect, semi-perennial shrub. Pods are borne in clusters at the end of the branches. This is advantageous for mechanical harvesting, as it is easier to handle and reduces the amount of leaf and stem material passing through the machine. Also, if spraying is required the pods are easily accessible. Pods are green in colour, 4 to 6cm (1.5 to 2.5 in) long with 3 to 4 seeds per pod and approximately 10g per 100 seeds. Seeds are brown in colour.

Time to Flowering

Time to flowering varies depending on sowing date. In Barbados, plantings in March, May, June and October resulted in flowering in 90, 115, 111 and 84 days respectively. Average plant heights recorded were 1.1, 1.7, 1.7 and 0.9m respectively. The cultivar is determinate.

Results of trials in Barbados in 1982

Planting date	Days to flowering	Avg. plant height (m)	(ft)
March	90	1.1	3.5
May	115	1.7	5.6
June	111	1.7	5.6
October	84	0.9	3.0



Mature pods of local unimproved variety.

THE NEW PIGEON PEA BADOS

Location

Being a deep-rooted plant, pigeon pea can grow under widely different climatic and soil conditions. It is drought tolerant and grows well under dry conditions with an average annual rainfall of 625mm (25 in). The crop can therefore be grown at most locations in Barbados. However, if conditions are too dry yields may not meet production costs.

Soils

The crop thrives on the alkaline soils of Barbados but the few acid soils which are likely to be encountered in parts of the Scotland District could adversely affect nodulation. All soils utilized must be well drained since pigeon pea is killed by prolonged waterlogging.

On those pH 7.5 soils, regrowth after the first bearing and cutback is likely to be chlorotic (yellow) and plants may suffer severe die back.

Land preparation

Thorough land preparation, i.e. ploughing followed by rotavating and forming into beds, will facilitate mechanical sowing and ensure more even seed germination. When the land is to be cultivated, crop residues should be ploughed in to afford better decomposition of organic matter. Such a practice ensures a high organic matter content thereby increasing the moisture-holding capacity of the soil. It is essential to provide proper drainage, especially in the wet season, by planting on raised beds or ridges. On soils normally subject to waterlogging, this practice would increase yields by 30 per cent. Under rainfed conditions it is advisable to use a mulch to conserve moisture.

Planting

Seeds may be treated with Fernasan^(R) 74W immediately before planting in order to limit attack by soil borne pests and diseases. Plant by hand in rows 0.5 to 1.0m (1.5 to 3 ft) apart, 8 to 16cm (3 to 6 in) between plants in a moist soil at a depth not exceeding 2.5 to 5cm (1 to 2 in). This ensures a high germination rate, provided that post-emergence conditions are favourable. If planting with a Stanhay seed planter, use a ribbed seed belt with a No.24 hole. A belt with 28 holes worked on the B pulley, D2 spring base and P choke will space the seeds 10cm (4 in) apart. Seed rate is 4.5 to 9 kg per hectare (4.5 to 9 lb per ac*) depending on the plant density. This is based on 100 percent germination but will have to be adjusted for germination and

purity of the actual seed involved.

The plant canopy should close across the interrow before flowering, if optimum yield is to be obtained. As planting date affects both plant size and time to flowering it therefore influences plant density. This is an important consideration with UW 17 as this variety can be planted at any time throughout the year.

Weed control

Good seed bed preparation reduces weed growth during early stages of crop growth. Later, additional weed control can be achieved by hand, by machine or by herbicides. Well adjusted mechanical interrow cultivators such as sweeps and rotary cultivators are used.

Listed below are some recommended herbicides for weed control:

Pre-emergence

- Prometryne 50 WP at 1 to 2 kg per hectare broadcasted on the soil surface immediately after planting.
- Chlorthal, 10 kg per hectare
- Diphenamid 2.2 kg per hectare
- Prometryne 1.2 kg per hectare plus Diphenamid 2.2 kg per hectare gives good control for at least 2 weeks with no significant crop damage

Post-emergence

- Paraquat (Gramoxone)^(R) applied at 2.3 litres per hectare in 160 litres of water (2 pts per acre in 40 gals of water) as a directed spray after the plants have reached a height of 0.5m (1.5 ft).

Fertilizer

No fertilizer studies have been conducted in Barbados and generally the crop is not fertilized. However, small doses of nitrogen (not more than 25 kg per hectare) can be used to stimulate nodulation and increase the protein content of seeds. Care must be exercised in the placement of fertilizers particularly phosphorus, which is likely

*For all practical purposes kg per hectare are equivalent to lb per acre.



A prolific pure stand of the dwarf variety UW 17.



An example of the local pigeon pea variety in a typical inter-cropping system.

to be fixed by the soils of Barbados, especially when used for short season varieties such as UW 17. The role of micro-nutrients in pigeon pea production needs further study, as in the calcareous soils of Barbados their inadequate supply may limit yields. Foliar sprays could be beneficial.

Insect Control

- Leaf defoliators — Use Diazinon 60 EC (emulsifiable concentrate) at 0.8 to 1.2 litres per hectare (0.6 to 1 pt per acre).
- Stink bugs — Use Orthene 75S at 1 kg/ha. Use pyrethroid insecticides during harvest.
- Pod borers — Use Malathion EC at 1.2 to 2.4 litres per hectare at flowering. Repeat application 10 to 14 days later.

Disease Control

- Rust — Control in early stages with Mancozeb (Dithane M45) 1.5 to 2 kg per hectare or Chlorothalonil (Bravo, Daconil), 1.5 to 2 kg per hectare at 7 to 10 day intervals.
- Wilt — No effective chemical control is available against this disease. Rotation and good sanitation is recommended.
- Southern Blight — Use a PCNB (Botrilex,^(R) Brassicol^(R)) at 5 to 10 kg per hectare following a seed dressing with Captan, 5 to 7 g per litre (0.7 to 1 oz per gal) and/or deep ploughing of previous crop residues. Fertilizing with Sulphate of Ammonia may also reduce the incidence of this disease.

Harvesting

The crop is harvested at the mature green stage for the fresh market. The period observed for pod development is 21 days and harvesting can be conducted over a 3 week period. Dry seed harvesting is done when the majority of pods have lost their green colour and the seed is sufficiently dry; this will occur about 114 days after planting.

For mechanical harvesting of dry seed the University of the West Indies has developed a header. A considerable amount of leaf and other material passes through so that the seed will have to be dried and re-cleaned after harvest. The leaves can be removed prior to harvest by using Gramoxone.^(R)

If adequate moisture is available, UW 17 will ratoon and flower quickly after regrowth. Generally plants can be cut back 20 to 40cm (8 to 16 in) above the ground.



*Insect damage to pigeon pea pods
Caused by pod borers HELIOTHIS VIRESCENS
(F.) and FUNDELLA CISTIPENNIS (DYAR).*

Yields

Yields from the harvest of mature green pods, "green peas", range from 3,000 to 4,000 kg per hectare. Dry seed yields average from 900 to 1200 kg per hectare.



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