

ASPECTS RELATED TO THE YIELD  
FORMATION IN PIGEONPEA (*Cajanus cajan*):  
A REVIEW



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## ABSTRACT

Pigeon pea is one of the most potential crops for the dry zone agriculturists of Sri Lanka for its several unique

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## ABSTRACT

Pigeon pea is one of the most potential crops for the dry zone agriculture of Sri Lanka for its several unique features.

Pigeonpea is cultivated in a wide range of soils found in the tropics and subtropics including Entisols, Vertisols, Alfisols and Oxisols. Characteristics of pigeonpea such as drought resistance and ability of fixing atmospheric nitrogen are the most striking features.

Pigeonpea is used as dhal, its tender green seeds as a vegetable, dry seed as animal feed, leaves as fodder, and as fuel wood. The protein content of pigeonpea is of high biological value which averages about 21%.

Pigeonpea germination and emerges well from deeper soil layers and generally occurs more slowly. The growth rate of pigeonpea seedling is relatively slow. The markedly slower growth rates appear to be mainly due to smaller seedling leaf areas. Since net assimilation rates (NAR) of pigeonpea are comparable with those of other C3 species.

Pigeonpea exhibits different forms of canopy such as spreading bushes to tall erect shrubs with compact or open foliage. Shading effect during the vegetative period in medium - duration pigeonpea delayed days to 50% flowering by 19 to 29 days to maturity by 26 to 31 days.



Most pigeonpea are more or less indeterminate in flowering habit, with axillary flowering occurs from the apical portion of branches. Flowering may be confined to a three week period or may continue for several months depending on genotypes, environment condition and sowing density.

Pods grow exponentially after anthesis, with growth largely confined to the pod wall for the first 15 days after which seed growth progresses.

Pigeonpea is affected by several climate stresses, although it has a reputation for a well adopted crop to drought environments. Drought during vegetative ontogeny can affect the yield because of reduced canopy.

Pigeonpea is very susceptible to waterlogging which is most likely detrimental during seedling growth in cracking clay soils during monsoonal rains. Temperature is more important for germination. Several pigeonpea genotypes are found at high temperature range at 19-43°C while germination was rapid between 26 and 43°C. No germination occurs at 7.1 or 46.5°C and reduced below 19°C.

As by All India Coordinated Research Project for Dryland Agriculture (AICRPDA) have clearly shown that high productivity from sorghum /pigeonpea intercropping was obtained when the optimal production of both crops were maintained in a 2:1 row arrangement.

Many of the physiological processes of yield formation in pigeonpea reflect the species long history of immensely successful exploitation in various traditional subsistence production systems. Leaf area increased with increasing temperature.

Pigeonpea has the ability of fixing atmospheric nitrogen. But the results are not always consistent.

Agronomic practices are very important for increased production this includes land requirement and management, seed quality, seedling depth, time of sowing plant population, water requirement, weed control and harvest. Pigeonpea grow well in the soil pH 5-8.

Pigeonpea is commonly cultivated as an intercrop mainly with cereals, oilseeds include groundnut, soybean and sesame. Sowing systems vary from place to place depending upon crop combination, soil type, rainfall pattern, farm resources and farmers needs.

Ratoon cropping refers to a multiple harvest system in which regenerating stubbles of the first sown crops are managed for subsequent production. Plant density has been generally recognized as one of the factors. Recent studies by All India Coordinated Research Project for Dryland Agriculture (AICRPDA) have clearly shown that high productivity from sorghum /pigeonpea intercrops was obtained when the optimal production of both crops were maintained in a 2:1 row arrangement.



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Natarajan and Willey observed that in sorghum /pigeonpea intercropping, pigeonpea yields were limited by poor light interception after the sorghum harvest.

Pigeonpea has the ability of fixing atmospheric nitrogen. But the results are not always consistent. Kumar Roa (1969) reported that pigeonpea yield have been increased by up to 22 per cent by the application of fertilizer nitrogen (200Kg N per ha).

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