

Adoption Constraints of Pigeonpea Cultivation in Lucknow District of Central Uttar Pradesh

S.N. Singh¹, V.K. Singh², R.K. Singh³ and Rakesh K. Singh⁴

1. Sr. Scientist (Agronomy), 2. SMS (Agronomy), 3. Programme Coordinator and 4. Programme Assistant (Animal Science), Krishi Vigyan Kendra, Indian Institute of Sugarcane Research, Lucknow (U.P.)

ABSTRACT

Pigeonpea [Cajanus cajan (L.) Millisp.] is one of the most important pulse crops of Uttar Pradesh where it is grown in 0.38 million ha area with the annual production of 0.38 million tones. Its cultivation is predominantly done in Lucknow district mostly under rainfed condition. The production constraints which are being faced by farmers in the area have been analyzed through personal survey. The major constraints taken into account were technological, socioeconomic and agro-ecological which limit the adoption of modern package of practices for its cultivation and ultimately the yield. The incidence of pests and diseases on plants (97.52% respondents), non-availability of quality seed material (96.23% respondents) and non-availability of sulphur based phosphatic fertilizer for balanced nutrition (94.35% respondents) were identified as major constraints which cause setback in the expected production. Hence, there is an urgent need to address the problems of pests and disease incidence, imbalanced application of fertilizers with the arrangement of timely supply of quality seed material through extension and development networks in state, so that the barriers in adoption of improved package of practices could be checked.

Key words: Production constraints, Cajanus cajan cultivation.

Pigeonpea in India is the most important pulse crop which is cultivated in the gross cropped area (3.58 million ha) under pulses providing 20% of the national pulse production (2.51 m tones). This accounts for 90% of the world's pigeonpea production (Nene and Sheila, 1990 and Niranjana *et al*, 1996). In India, pigeonpea ranks second i.e. next to chickpea among important pulse crops. Pigeonpea is of dietary importance with a seed protein content more than that of other important grain legumes (Nene and Sheila, 1990). Besides being rich source of protein, they are also important for sustainable agriculture, enriching the soil through biological nitrogen fixation. Pigeonpea is one of the most important legumes grown in Uttar Pradesh which has 10.61% area (0.38 million ha) and 13.87% in terms of production (0.38 million tones) in the country. It is largely grown in Lucknow district of Central Uttar Pradesh predominantly rainfed cropping systems prevalent in the area. The productivity of pigeonpea in Uttar Pradesh is 9.82 q/ha, which is lower than the average yield of adjoining states viz., Jharkhand (15.11 q/ha) and Bihar (10.64 q/ha) (Ahlawat *et al*, 2005).

The lower productivity of pigeonpea is due to many factors, among which the loss due to severe incidence of pests and diseases is predominant in recent years. In India, pigeonpea is proved to be attacked by more than

200 species of insect pests, among which the podborer (*Helicoverpa armigera*) causes enormous losses (anonymous, 1978). Moreover, wilt is also a serious disease of this crop which causes mortality of seedlings upto 15-25% in normal years and upto 50% in epiphytotic situations (Butler, 1906). This may result in complete loss of crop, if incidence occurs before podding.

Thus, the cultivation of pigeonpea mainly depends upon the management of pests, diseases, timely availability of inputs particularly quality seed material and introduction of improved package of practices which are the major factors for successful production of this crop otherwise they are referred to as main constraints in increasing the productivity.

METHODOLOGY

The study was carried out purposively in five villages viz, Mahurankalan, Kamalapur, Pakra, Bahrauli and Matora of Lucknow district because in these villages, the cultivation of pigeonpea is being done predominantly. Twenty pigeonpea growers from each village were selected randomly. Thus, 100 such growers constituted the sample of study. The data were collected with the help of a structural schedule by personal interview

method with the respondents. Statistical measures such as percentage and rank were used. The major constraints taken into account were technological, socio-economic and agro-ecological which were tabulated and analyzed to identify the major constraint for adoption of pigeonpea production technology. The farmers were asked to rank the constraints as per the severity felt by them. A comprehensive list of technological, socioeconomic and agro-ecological constraints was given to them and they were asked to assign the value I to the most limiting constraint, value II to the next important one and so on. Then the rank values given by the farmers from all the five villages were averaged and percentage was obtained.

RESULT AND DISCUSSION

The data presented in Table 1 revealed that the incidence of pests and diseases on plants (97.52% respondents), non-availability of quality material (96.23% respondents) and non-availability of sulphur-based phosphatic fertilizer for balanced nutrition (94.35% respondents) were identified as major constraints which cause set back in the expected production. This is perhaps be due to the major incidence of wilt and podborer which are the main reason behind low productivity of this crop in the study area. Non-availability of appropriate plant protection chemicals, infestation of weeds and lack of proper knowledge about seed treatment with 91.45%, 59.47% and 53.62% respondents, respectively expressed their concerns for the problems they are facing. Weeds were also responsible for lower yield of pigeonpea pea and farmers expressed that non-availability of labourers, appropriate herbicidal formulations and lack of proper knowledge about its application are the points of concerns before then. Among socio-economic constraints, the three main factors viz, non-availability of inputs in time, non adoption of proper crop rotation and lack of knowledge about scientific crop production were other constraints as perceived by 49.32%, 41.62% and 40.44% respondents, respectively. An attempt was also made to critically analyze the agro-ecological constraints which are also the important factors triggering the low yield of pigeonpea in the study area.

The study further reveals that sometimes occurrence of flood and water logging in river basin, poor soil quality due to mono cropping and aberrant weather conditions particularly fluctuations in atmospheric temperature during pre-flowering stage were also the constraints as perceived by 35.25%, 33.47% and 31.33% respondents, respectively.

Table 1. Particulars showing adoption constraints of pigeonpea growing in the study.

Constraints	Score (%)	Rank
A Technical		
(i) Non-availability of quality seed material	98.23	II
(ii) Non-availability of sulphur based phosphatic fertilizer for balanced nutrition	94.35	III
(iii) Incidence of pests and diseases	97.52	I
(iv) Non-availability of appropriate plant protection chemicals	91.45	IV
(v) Infestation of weeds	59.47	V
(vi) Lack of proper knowledge about seed treatment	53.62	VI
(B) Socio-economic		
(i) Non-availability of inputs in time	49.32	VII
(ii) Non-adoption of proper crop rotation	41.62	VIII
(iii) Lack of knowledge about scientific cultivation practices	40.44	IX
(iv) Difficulty in assessing credit facilities	39.51	X
(v) Increasing cost of inputs	36.72	XI
(C) Agro-ecological		
(i) Occurrence of flood/water logging	31.33	XIV
(ii) Poor soil quality	33.47	XIII
(iii) Aberrant weather	35.25	XII

CONCLUSION:

The findings of the study clearly revealed that high incidence of pests and diseases, non-availability of quality seed material, non-availability of sulphur based phosphatic fertilizer for balanced nutrition, infestation of weeds, non-availability of appropriate plant protection chemicals, non-availability of inputs in time, lack of knowledge about scientific cultivation practices, increasing cost of inputs, soil quality and aberrant weather condition were major constraints as perceived by the respondents in adoption of pigeonpea cultivation practices. The development agencies working in the area should plan their future course of action regarding pigeonpea cultivation technology for enhanced production.

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