



Research Article

ENHANCED FOOD SECURITY THROUGH PARTICIPATORY APPROACH IN GREENGRAM SEED PRODUCTION

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Abstract: Seed production programme on green gram was implemented by Krishi Vigyan Kendra, Agricultural College and Research Institute, Madurai during 2017-18 at Vilathikulam block of Thoothukudi district and Usilampatti, Kallikudi and T. Kallupatti blocks of Madurai district in Tamil Nadu. A preliminary survey of the farms and farmers was carried out with interview schedule during the production season by a multidisciplinary team of researchers by conducting group discussions, meetings and trainings with the participating farmers. The improved green variety, CO 8 was preferred for high yield, increased germination capacity which imparts uniform plant population and least pest and disease incidence, synchronous maturity which paves way for mechanical harvest thereby reducing the labour charge and cost of cultivation. The farmers realised increased gross return of 19% and net return to a tune of 33% as compared to that of own practice. The increased yield resulted in increased benefit cost ratio of 12%. The production quantity increased with increase in respondents year by year and the increase was to maximum during 2017-18.

Keywords: Green gram, Seed production, Net return, BC ratio

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Introduction

Seed is the most important factor in ensuring the harvest of a good crop, and that use of quality seeds alone could enhance crop productivity by 15-25%. One of the main reasons for low productivity of crops is unavailability of reliable quality seeds in the local markets. To enhance productivity of greengram, seed should be of high quality, which will express full potential yield of the genotype under favourable cultivation environments [1]. Prominently good agronomic practices (gap) with their different components for excelling production under changing climatic scenario, necessitate aggregation of all the components of advocated technologies as a unit not with selection of few of them leading to numerous complications, soil health hazards and half hearted response of technologies in question [2]. The vital role of seed in boosting agricultural production is well recognized by agricultural scientists, farmers and development workers [3]. The major constraints faced by community seed producers were inadequate and untimely supply of inputs, inadequate extension contacts, unavailability of foundation seeds, inadequate capital, perceived complexity of seed production techniques, high labour demand and market uncertainty [4]. Greengram or mungbean (*Vigna radiata* (L.) Wilczek), is important pulse crop which originated in the Indian sub-continent [5]. The seeds and sprouts of mung bean (*Vigna radiata*), a common food, contain abundant nutrients with biological activities [6]. Mung bean is sometimes grown for fodder as hay, straw or silage [7]. Mung bean is particularly valued as early forage as it outcompetes other summer growing legumes such as cowpea or velvet bean in their early stages [8]. India is the largest producer, 26% of world's production, and consumer, 30% of total pulses of the world. The domestic production of about 23 million tonnes during 2016-17 shall be still less than the future estimated demand of 29-30 million tonnes. Thus, the average gap of 06 MT is met through imports [9]. During 2014-15, the pulses production was very low. Hence the price was higher in retail markets. In order to meet out the increased demand for pulse, GOI-NFSM launched a scheme entitled Creation of seed hubs for increasing indigenous production of pulses in India at various centres to increase the production and productivity of pulses.

This scheme has an objective to increase the production of seeds thereby increasing the production and productivity of pulses. The study was conducted in farmers' field to ascertain the superiority of released varieties as compared to local varieties and improved practices in comparison with farmers' practice. The factors affecting seed production and the constraints faced in seed production are also determined in the study area.

Materials and Methods

Seed production programme on green gram was implemented by Krishi Vigyan Kendra, Agricultural College and Research Institute, Madurai during 2017-18 at Vilathikulam block of Thoothukudi district and Usilampatti, Kallikudi and T. Kallupatti blocks of Madurai district in Tamil Nadu. A preliminary survey of the farms and farmers was carried out with interview schedule during the production season by a multidisciplinary team of researchers by conducting group discussions, meetings and trainings with the participating farmers. Farmers involved in seed production were selected for this study based on their involvement and experience in seed production and interested new farmers. Stratified random sampling method was used to select 90 farmers from three districts namely Thoothukudi and Madurai.

The percentages of respondent were worked for various factors based on the preference of the farmers. The interested farmers are encouraged to take up foundation and certified seed production by imparting training on seed production techniques, various improved cultivation practices and by providing good quality seeds of high yielding recent varieties at an affordable price. The expense involved in seed production was calculated and the following parameters were worked out with recorded yield. The gross cost is the total expenditure incurred for the seed production while the gross return is total income including by-products. Net return is the difference between gross cost and return while the Benefit Cost Ratio is ratio between gross cost and gross return.

Table-1 Distribution of respondents on the basis of preference for improved green gram variety (CO 8)

Component	Respondents (%)		
	Farmers' Practice	Intermediate	Improved practice
High yield	13	7	80
Line sowing using Seed drill	25	30	45
Seed treatment	20	17	63
Plant population	18	12	70
Pest and disease resistance	25	23	52
Use of IPDM	16	12	72
2% DAP spray	25	20	55
Awareness of pulse wonder spray	32	23	45
Size of seed	51	26	23
Synchronous maturity	5	8	87
Market price	52	27	21
Average	28	20	61

Results and Discussion

The results of the seed production programme conducted and the constraints faced during our study were discussed here.

Respondents preference

The improved variety is preferred by the respondents as compared to local or intermediate varieties [Table-1]. The improved variety was preferred for high yield, increased germination capacity which imparts uniform plant population and least pest and disease incidence, synchronous maturity which paves way for mechanical harvest thereby reducing the labour charge and cost of cultivation. The improved agronomic practices were preferred for ease in weeding with line sowing using seed drill. Farmers preferred 2% DAP spray and pulse wonder spray as they had witnessed decrease in flower fall and thereby increased pod set. The improved variety fetched lesser market price as it was least preferred for its small size of seeds. Improved varieties were widely recognised as fundamental input for ensuring increased production and productivity [10,11].

Table-2 Comparison of income generated through farmers' practice and seed production through improved practice

Component	Farmers' practice	Seed production Through improved practices	Additional income (%)
Yield (kg/ha)	650	977	33
Gross cost (Rs./ha)	28900	31400	8
Gross return (Rs./ha)	45500	56000	19
Net return (Rs./ha)	16600	24600	33
Benefit Cost Ratio	1.57	1.78	12

Profitability of seed production with improved variety and technology

[Table-2] indicates the additional gain of the farmers. Farmers got an additional yield of 33 percent due to the use high yielding variety and improved agronomic practices. The farmers realised increased gross return of 19% and net return to a tune of 33% as compared to that of own practice. The increased yield resulted in increased benefit cost ratio of 12%. The reason behind better yield is due to use of high yielding variety and following the improved package of practice imparted by trainings such as line sowing through seed drill, integrated weed and nutrient management, integrated pest and disease management as well as postharvest handling of green gram seeds. Similar observations were recorded by Chindi, *et al.*, (2017) [10] and Dhanushkodi, *et al.*, (2018) [11].

Percentage of Respondents under seed production

The farmers responded well for the scheme and there was increase in interested farmers who were willing to take up seed production. The production quantity increased with increase in respondents year by year and the increase was to maximum during 2017-18 [Fig-1]. Farmers are willing to take up improved agronomic practices and improved variety through repeated trainings and demonstrations.

Constraints in seed production

The constraints of seed production faced by seed growers lack of subsidy,

fertilisers, increased seed cost as compared to Agriculture Departments, registration fees, transport charges to the processing unit and processing charges and payment of procurement price immediately after seed procurement etc.

Application of research: Study of food security

Research Category: Food Security

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Study area / Sample Collection: Vilathikulam block of Thoothukudi district and Usilampatti, Kallikudi and T. Kallupatti blocks of Madurai district in Tamil Nadu

Cultivar / Variety / Breed name: Greengram

Conflict of Interest: None declared

Ethical approval: This article does not contain any studies with human participants or animals performed by any of the authors.

Ethical Committee Approval Number: Nil

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