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Impact of Scientists-Farmers Participatory Mode Quality Seed Production in Horticultural Crops

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A B S T R A C T

Due to advent of private seed companies with the liberalization of seed trade in 1988, the public sector seed corporations have started declining and becoming inept. With an objective of developing an alternative seed production system to compete private sectors, the University of Horticultural Sciences, Bagalkot in Karnataka implemented Scientists-Farmers Participatory Mode (SFPM) of vegetable seed production in selected villages. A group of farmers were selected at hobali level and were supplied the foundation seeds of new promising public varieties to an extent of 0.4 ha. And two to three training programmes were conducted in targeted villages for quality seed production. The seeds produced by the target group was processed and packed scientifically in the university seed processing unit and arranged for distribution to the farmers at affordable price. By this new innovative and modified system of seed production the university could be able to replace old varieties and farmer saved seeds of onion, chilli and drumstick in this region. The University of Horticultural Sciences, Bagalkot produced 3029 kg, 743 kg and 12826 kg of chilli, drumstick and onion seeds of new public varieties under Scientist's-Farmer's Participatory Mode Programmes respectively during 2014-15, 2015-16 and 2016-17. From this new alternate model of seed system, there should be large scale promotion of regional seed system involving farmers, NGO and voluntary organization for quick and effective replacement of old, low yielding and disease susceptible varieties with new high yielding, disease resistance for enhanced food production and food security.

Introduction

Seed is a vehicle for delivery of improved technologies along with utilization of inherent genetic potential of variety/ hybrid. Seed offers to integrate production, protection and quality enhancement technologies in a single unit in cost effective way. Indian farming system is characteristically low land holding in nature and seed can play pivotal role in achieving higher productivity as it is smallholder friendly and in principle equally applicable on small or large farms. Seed can play critical role in achieving higher productivity, use of quality seeds alone could increase productivity by 20-25 % highlights the important role of seed in agriculture (Anon, 2013).

Seed is the critical input for achieving sustainable production and efficacy of all other inputs depends upon quality supply of seed to farmers at right time. Development of improved varieties/ hybrids in various crops, supported by efficient, cost effective seed production system is the key for securing agricultural production. Diversification of areas of seed production and development of appropriate seed production technology needs to be focused for expansion of seed production. Seeds of appropriate characteristics are required to meet the demand of diverse agro-climatic conditions and intensive cropping systems. The growth of plant and the quality of seed production are strongly influenced not only by genetic factors but also by the environmental condition, in which production is undertaken. Emphasis should always be laid on those factors which contribute to and affect seed quality like selection of crop and variety, seed source, rouging, harvesting and post harvest operations *etc*.

Karnataka state is endowed with varied agro-climatic conditions making it suitable for successful cultivation of different horticulture crops like fruits, vegetables, spices, plantations crops, flowers, medicinal and aromatic plants on commercial scale. Horticulture crops are known to give high net returns per unit area and also ensure nutritionals security to mankind. In Karnataka important vegetables cultivated are onion, chili, tomato, brinjal, bhendi, cucurbits, cole crops, leafy vegetables, root vegetables and beans. Karnataka produces about 17.80 million MT of horticulture produce from an area of 1.87 million hactare accounting for 7.40% of horticultural production in the country. Major share of production is from vegetables (50.88%), fruits (35.25%) and plantation Crops (10.07%). The productivity of vegetables in India (15.3 t/ha) and Karnataka (16.07 t/ha) is low as compared to other countries vegetable producing countries (Fig. 1). In order to enhance the productivity, the quality seeds of improved varieties are most essential. The timely availability of quality seeds in required quantity at farmer's doorstep is absolutely necessary.

India is the second largest producer of vegetable in the world constituting around 11 to 12%, next only to Chain. The current estimated requirement of vegetable seeds at the country's present production level is to be around 25,000 tonnes for tropical and sub-tropical vegetables and 250 tonnes in the temperate kind. It is therefore, necessary to intensify the research efforts in Government, Semi Government and Private Companies. In India, presently many public and private sectors together are producing 1580 tons of vegetable seeds against 8852 tons of requirement, leaving the gap of 6968 tons. Similar situation is also facing by Karnataka state.

Karnataka is considered as hub of seed production and have been identified in the global seed map. Vegetable seeds produced here are exported to every corner of the world by the private seed industry. As vegetable seed industry is dominated by the private industry public industry are less identified in vegetable industry. Presently majority of the vegetables grown in the state are dominated by private hybrids rather than the public hybrids. However, in crops like onion, chilli, beans *etc*. still varieties are ruling as there are no popular hybrids in this crop. Hence there is a lot of scope to public sector organizations to compete with private seed companies in production of quality seeds this type of vegetable crops. Public sectors can produce seeds in crops like onion, chili, bhendi, leafy vegetables, seed spices and papaya. The list crops and approximate seed requirement in the state is presented in Table 1.

There is a lack of quality seeds requirement every year and this can be addressed by the public sectors. Further, Public sectors alone cannot produce seeds and meet the demands and hence farmers need to involved as a producer. Scientists Farmers participatory seed production programme and buy back system are successful methods to produce quality seeds in large quantity.

Materials and Methods

In order to enhance the availability of quality seeds of newly released public varieties, the Seed unit, University of Horticultural Sciences, Bagalkot, Karnataka implemented Scientists-Farmers participatory mode seed production programme with buy back system to produce quality seeds vegetable crops like onion, chilli, drumstick, beans, bhendi *etc*. in large quantity. In which, every year university has selecting interested farmer or group of farmers in three districts of northern Karnataka which comes under university jurisdiction based on criteria which are required for quality seed production with economic yield.

The selected farmers were supplied with the goo quality foundation seeds for production of certified seed for one acre each. The seed production specialists of the university organize the 2-3 trainings programs at village level in the selected beneficiary group on various aspects of quality seed production. In addition to the training programmes on-farm demonstrations and field days were also conducted about different practices of quality seed production (Plate 1).

Further, seed production is offered for certification from Seed Certification Officers (SCO) of Karnataka State Seed Certification Agency (KSCCA), custom seed processing and seed testing facilities were also provided after processing. After the results of seed testing, those seeds produced are meeting minimum standards of seed certification were procured by the university, after procuring the seeds were treated, bagged, labeled and sold to the end user at reasonable price (Fig. 2).

Responsibilities of University of Horticultural Sciences, Bagalkot**;**

Identification and selection of seed growing farmers, preference should be given to progressive farmers as seed production need technical skill.
Supply of basic seed materials to confirm the authentication source of seeds used for sowing.
Technical guidance to seed growers in maintaining the field and seed standards.
Field inspection for seed quality control and assurance.
Seed Processing and upgrading the seed quality.
Seed Testing for quality management.
Seed Packing, labeling storage and marketing.

Responsibilities of Farmers**;**

Production of seeds under the guidance of scientists of the university and also certification officials.
Follow instructions given by the scientists and carryout all cultural and special operations like isolation and rouging to meet the field and seed standards.
Submit raw seeds having moisture not more than 8 per cent to the university.

Results and Discussion

Under the novel programme called “Scientist Farmers Participatory Mode Seed Production Programme” the university has produced quality seeds of new and popular varieties of onion (Var. Arka Kalyan, Bima Super, Bheema Red and Bheema Shakthi), Chilli (Byadagi Dabbi and Byadagi Kaddi) and

Drumsick (Bhagya and KDM-1) involving the farmers/seed growers of more than 16 villages in three districts which comes under university jurisdiction (Table 2). With implementation of this programme, more than 5000 farmers are in direct contact with the university in getting the benefit of new technologies, varieties, seeds and know how. Due to this programme, there will linkage between scientist and the farmers in identifying the problems faced by the farmers and which helped the scientists in formulation of technical programme and research activities. The availability of skilled human resources at the grass root level can be used for quality seed production and promotion of horticultural technologies both by public and private.

Table.1 Major vegetables production area and seed requirement in Karnataka state

Sl. No.	Crop	Area (In lakh ha)	Seed requirement (In tons)	Popular varieties
1	Onion	1.64	820	Arka Kalyan, Bellary red, Rose onion, Nasik red
2	Beans	0.15	600	Arka Komal, Suvidha
3	Chili (green + dry	1.35	337	Pusa jwala, Byadagi kaddi and dabbi
4	Bhendi	0.88	132	Arka Anamika, Parbhani Kranthi
5	Coriander	0.765	918	Arka Isha and Local varieties
6	Fenugreek	0.0687	275	Co-1, Local varieiteis
9	Leafy vegetables	0.154	30	Local types
10	Papaya	0.633	1.58	Solo, Surya

Table.2 Details of seed produced at UHS, Bagalkot under SFPMSP

Sl. No	Year	Crop	No. of Farmers	No. of villages Covered	Quantity of Seeds Produced (Kg)
1	**2014-15**	Onion	12	04	1196
		Chilli	05	02	619
		Drumstick	10	10	217
		Total	**27**	**16**	**2037**
2	**2015-16**	Onion	47	15	6972
		Chilli	23	12	1237
		Drumstick	15	10	310
		Total	**85**	**37**	**8240**
3	**2016-17**	Onion	12	04	4658
		Chilli	04	02	1173
		Drumstick	12	10	216
		Total			**7165**

Table.3 Impact of SFPMSP programme on quality seed production and enhancing the horticulture production

Sl. No	Seed Crop	Variety	Total quantity of seeds produced (kg)	Total quantity of seeds sold (kg)	Total Area to be covered (Acre)	Expected yield from area covered (Q)	Expected Income (Rs. In crores)	Remarks
1	Onion	Arka Kalyan	9718	9012	4506	3.60.480	43.25	These varieties are highly accepted by the farmers of Karnataka
		Bheema Super	2368	2168	1084	97.560	11.70	
		Bheema Red	361	361	180	18000	2.70	
		Total	12447	11541	5770	4.76.040	57.65	
2	Chilli	Bydagi Dabbi	2418	2418	7254	87.048	113.17	These cultivars most popular among the farming community
		Bydagi Kaddi	611	611	1833	22.912	18.32	
		Total	3029	3029	9087	1.09.960	131.41	
3	Drumstick	Bhagya KDM-01	743	743	2229	22.29.000	445.80	This variety is in high demand

Fig.1 Vegetable productivity (t/ha) scenario

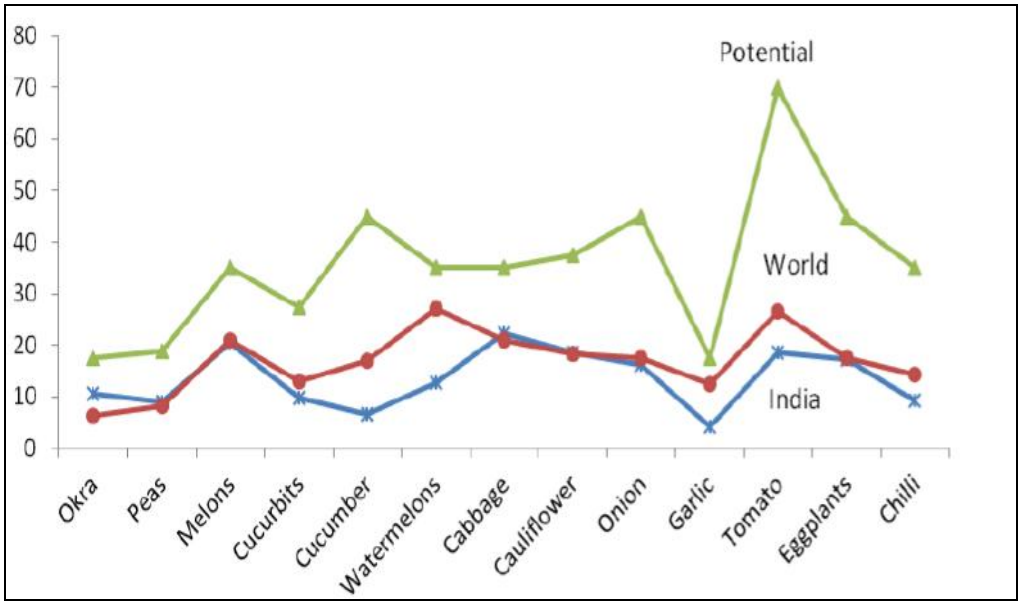
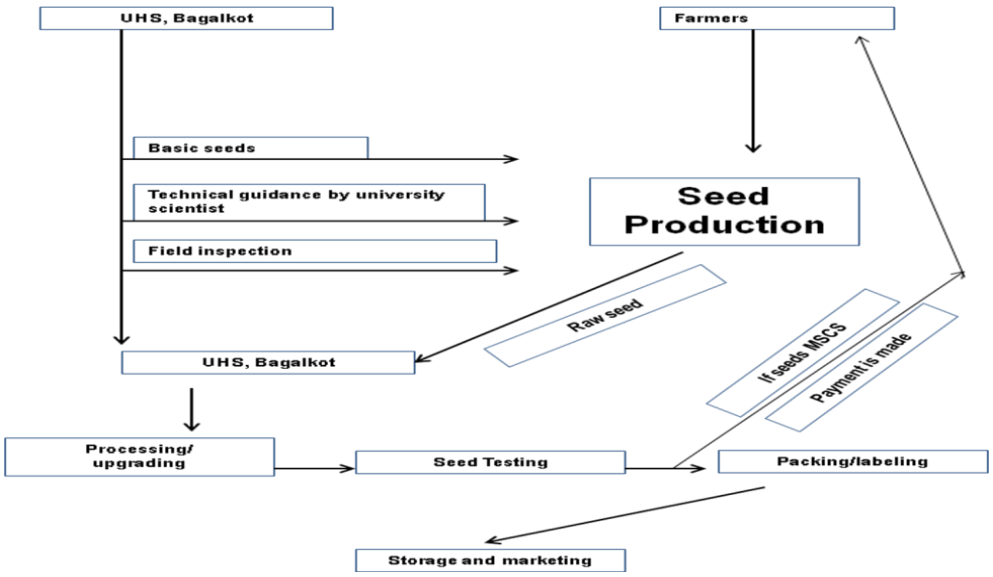


Fig.2 Operation flow chart of Scientists-Farmers Participatory Mode Seed Production (SFPMSP)



Impact of SFPMSP programme on quality seed production and enhancing the horticulture production.

Bridging the gap between supply and demand of the quality seeds of public sector.

Seed production potential of the university is increased for timely supply of quality seeds to the farmers.

University can also supply basic seeds to other seed producing agencies like KSSC, NSC, KOF and other private agencies for large-scale multiplication of quality seeds.

Dissemination of seed production skills to farmers through trainings, demonstrations and field days.

Employment generation through engaging the unemployed youths in the seed production programme.

Develop intimate Scientists-Farmers relationship, resulting in efficient transfer and implementation of new technologies including varieties / hybrids which help in overall development of farming community.

References

Basavegouda (2011). Impact of seed village programme for enhancing the availability of quality seeds. *National Seed Congress*, January, 29-31, 2011, Mahatma Phule Krishi Vidyapeth, Rahuri and NSRTC, Varanasi, pp. 164-165.

Deswal DP, Vinodkumar, VS Mor and Sumit Deswal (2013). Seed replacement rate and its impact on agricultural production of major crops. *XIII National Seed Seminar*, 8-10 June, 2013, Bangluru, pp. 183-184.

Vswanath K and S Gangadharai (2012). Impact of scientist's farmers participatory seed production on socio-economic status of farmers in cauvery command area. *National Seed Congress* 23-25 January, 2012 Chandigarh, pp. 220.

Jhani Rani K, Keshavalu K, Razia Sultana and M Brahmiah (2013). Seed village programme in andhra pradesh: problems and perspectives. *XIII National Seed Seminar*, 8-10 June 2013,

Bengluru, pp. 177.

Anonymous (2013). Indian agriculture: performance and challenges, state of Indian agriculture 2012-13. *Directorate of Economics and Statistics, Department of Agriculture and Cooperation, Ministry of Agriculture*, Government of India, New Delhi, pp.1-22.

APEDA (2013). Exports from India of fruit and vegetable seeds.

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