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Vishal Raina
Mega Seed Project, Directorate of Research, SKUAST-Jammu and Kashmir, India

Narinder Panotra
Directorate of Research, SKUAST-Jammu Jammu and Kashmir, India

Anjani Kumar Singh
Mega Seed Project, Directorate of Research, SKUAST-Jammu and Kashmir, India

Magdeshwar Sharma
Mega Seed Project, Directorate of Research, SKUAST-Jammu and Kashmir, India

Pardeep Wali
Mega Seed Project, Directorate of Research, SKUAST-Jammu and Kashmir, India

JP Sharama
Directorate of Research, SKUAST-Jammu Jammu and Kashmir, India

Correspondence
Xiaodong Dong
Vishal Raina
Mega Seed Project, Directorate of Research, SKUAST-Jammu and Kashmir, India

Quality seed and planting material production by mega seed project-Chatha to enhance the socio-economic conditions of farmers of Jammu region

Vishal Raina, Narinder Panotra, Anjani Kumar Singh, Magdeshwar Sharma, Pardeep Wali and JP Sharama

Abstract
Quality seed is the most vital and basic input in ushering sustainable agricultural production through enhancing crop productivity. Presently, majority of the farmers are using their farm saved seeds of conventional varieties. Seed replacement rate in the country is very low ranging from 15 to 35% in developed crops. Private seed sector is mainly involved in production & supply of high value-low volume crop seeds to the farming community. So, in order to safeguard the farmers, public seed sector *viz,* SAU's, ICAR institutes, SSCs, NSC & SFCI are involved in production and supply of quality seeds of improved varieties/hybrids of low value- high volume crops to the farmers. Mega Seed Project-Chatha, SKUAST-Jammu a centre of ICAR-Seed Project "Seed production in Agricultural Crops" is constantly striving hard to produce quality seed and enhance the economy of farmers. The present compilation represents the Quality Seed production of Paddy, Wheat, Vegetables, Floriculture, Agroforestry, Horticulture Plants, etc. of year 2015-16 produced by Mega Seed Project-SKUAST-Jammu. Paddy seed produced of different varieties during 2015-16 by various seed producing components of SKUAST –Jammu: Stations/Farms/Div./KVK's etc was 346.90 quintals and Wheat seed produced of different varieties was 1050.48 quintals.

Keywords: Quality seed production, foundation seed, seed replacement rate

Introduction
For a long time, seed production in the country mainly depended on the farmers who used to save seeds for their own use as well as for nearby farmers of the locality. The Royal Commission on Agriculture (1928) had given stress on increased breeder seed production and varietal purity and suggested to have a separate organization within agriculture department to deal with seed distribution and testing. In 1945, the private vegetable seed companies had developed facilities for producing seeds of temperate vegetables in Quetta and Kashmir valley; these companies formed an All India Seed Producers Association in 1946. A standing committee on seeds was constituted in 1952 to formulate a programme for strengthening seed production and distribution in the country. Systematic seed production based on scientific principles was initiated by formation of National Seed Corporation (NSC) at central level in 1963 and State Seed Corporations at the state levels with the primary responsibility of foundation seed production of varieties of national importance. The introduction of All India Coordinated Research Project (AICRP) in Maize during 1957 and Sorghum & Pearl Millet during 1960, led to development of several hybrids which necessitated the enactment of seed legislation. In 1966, Seed Act was passed to regulate the sale of seed in the country. One of the landmarks in the history of seed programme of India has been the launching of AICRP on seed called "National Seed Project" in 1979, with 14 centers in different Agricultural Universities. In 1991, another AICRP on "Seed Borne Diseases" was merged with it and now this project has 35 "Breeder Seed Production" (BSP) centers and 23 "Seed Technology Research" (STR) centers in the country at various Agricultural Universities/ ICAR institutes.
Agriculture occupies an important place in the economy of Jammu & Kashmir. The share of Agriculture and allied sectors in the Gross Domestic Product (at 1999-2000 prices) for the year 2008-09 as per preliminary estimates stands at 25.81 %. On the other hand, nearly 70% of the population in the state derives its livelihood directly or indirectly from agriculture sector. Net sown area in the J&K state is 7.39 lakh ha (DOS 2008-09) and average holding is 0.67 ha

(Agri Census, 2000-2001). It has become evident that in order to achieve the food production targets of the future, a major effort will be required to enhance the seed replacement rates of various. The replacement of the farmers saved seed with the certified or high quality will lead to improvement in yield potential to the extent of 15 to 25% in different crops. The replacement of old or obsolete varieties with the recently released high yielding and disease resistant varieties has been the major consideration to increase the agriculture production. The varietal replacement component is very low in wheat, paddy, maize, oil seeds, pulses, fodder crops etc., particularly, in far flung areas where extension agencies have poor network. Hence, there is need to bring awareness in the farming communities in the state with respect to recently released varieties, their adaptive potential and technological advances to realize the high yields.

A relative comparison of seed replacement rates at the National level with the J&K state presents a very miserable situation in most of the crops. 80-85 % of the farmers still use the seeds of traditional low yielding cultivars. Even the seed of hybrids, as in case of maize, is repeatedly used by farmers from the farm saved stock. Efforts have to be made to increase the seed replacement rates in the major crops. The availability and usage of hybrids will have to be increased. This will enhance the production and productivity of crops in the state. Lateral exchange of quality seeds among the farmers or horizontal transfer of seeds (farmer to farmer) may also help in diffusing new varieties faster.

With establishment of ICAR funded Seed Projects in State Agricultural Universities (SKUAST-Jammu and SKUAST-Kashmir), the availability of quality seeds have improved. The technical and infrastructure facilities are available at SKUAST-Jammu to train the farmers for seed production as well as to produce and supply the quality seeds of different crops (Pardeep *et al.* 2015-15, Dadlani *et al.* 2009) [1].

Further, improving the farmers saved seed through training and demonstration is another factor that can influence the Seed Replacement Rate (SRR), which is important in increasing the productivity.

Material and Methods

Various Seed Producing components of SKUAST –Jammu: Stations/Farms/Div./KVK's etc contributed for providing the quality seed/Planting material for processing/distributing to the Dept. of Agriculture/Farmers. The name of the centers contributing for the same are: The Seed production farm at Chakroi, Research Farm-Chatha, Division of Plant Breeding and Genetics, Division of Fruit Science, Div. of Vegetable Science and Floriculture, Div. of Agroforestry, ACHR-Udheywala, Adv. Centre for Rainfed-Dhiansar, RHRSS-Bhaderwah, Pulse Research Centre-Samba, Rainfed Research Sub-Station for Sub-tropical Fruits-Raya, KVK's of SKUAST-Jammu.

Results and discussion

Paddy seed produced of different varieties during 2015-16 by various seed producing components of SKUAST –Jammu: Stations/Farms/Div./KVK's etc was 346.90 quintals and Wheat seed produced of different varieties was 1050.48 quintals. In Paddy B-370 variety we produced 1.5 Qtls. of Breeder Seed, 150.00 Qtls. of Foundation Seed and 166.00 Qtls. of Certified Seed,

In Wheat HD-2967 variety 423.00 Qtls. of Foundation Seed was produced, in WH-1105 variety 214.00 Qtls. of Foundation Seed, In WH-1080 variety 120.00 Qtls. of Foundation Seed was produced, in WH-1021 variety 85.00 Qtls. of Foundation Seed was produced and in PBW-175 variety 52.96 Qtls. of Foundation Seed was produced. Quality Planting material of Agroforestry crops produced in 2015-16 are: *Populus deltoids (ETP's)*1500 plants, *Aloe vera (plantlets)*200 plants, *Cymbopogon flexuosus (Rooted slips)* 2000 slips, *Gmelina arborea* 10 plants, *Stevia* 200 plants, *Neem* 200 plants, *Melia* 50 plants, *Bacopa monnieri (Sukers)* 5 kg, *Mentha spp. (Suckers)* 10 kg, *Acorus calamus (Rhizomes)* 10 kg, *Ocimum spp. (Seed)* 100 gm (Table 2). Quality Planting material of Fruit crops produced in 2015-16 are: *Litchi* 280 plants, *Mango* 867 plants, *Anola* 501 plants, *Karonda* 88 plants, *Eureka lemon* 1110 plants, *Peach* 310 plants, *Plum* 438 plants, *Pomegranate* 580 plants, *Pea* 1220 plants, *Phalsa* 217 plants, *Custard apple* 89 plants, *Galgal* 95 plants, *Papya* 278 plants, *Beal* 90 plants, *Jack fruit* 15 plants, *Sweet Lime* 15 plants, *Kinnow& Malta* 4634 plants (Table 2). Vegetable Crops Seeds/ Planting material produced in 2015-16 are : Knol khol (seed) 10 kg, Marigold (seed) 2 kg, Bottle gourd (seedlings) 3000 plants, Bitter gourd (seedlings) 3000 plants, Cucumber (seedlings) 3000 plants, Tomato (seedlings) 15000 plants, Brinjal (seedlings) 2500 plants, Broccoli (seedlings) 20000 plants, Knol Khol (seedlings) 25000 plants, Cauliflower (seedlings) 10000 plants, Chinese cabbage (seedlings) 7500 plants, Lettuce (seedlings) 5000 plants (Table -2**)** (Hosamani *et al.* 2012, Kaddi *et al.* 2015, Singh at al 2015) [3, 4, 5]. Quality Planting material of Ornamental crops/ Planting materials produced in 2015-16 are: Marigold 1,13,400 plants, Gladiolus 6000 bulbils and Tuberose 11000 plants (Table-2) (Meena *et al.* 2015) [5]. The quality seed and planting material was provided to the farmers of Jammu region through Dept. of Agriculture and directly sold to farmers through University /Kissan Mela open sale.

Following is the detail of seed production during 2015-16 at Mega Seed Project, SKUAST-Jammu.

Quality seed production during 2015- 16 (in quintals*)*

Particular	Kharif 2015		Rabi 2015-16	
	In Institute/University farm		In Institute/University farm (Approx. yield)	
Field Crops	Target	Achievement	Target	Achievement
Breeder seed	28.2	7.4	100.0	0.0
Foundation seed	424.0	173.50	1555.0	904.96
Certified seed	100.0	166.00	0.0	145.52
Total	552.20	346.90	1655.0	1050.48

Table 1: Seed Production undertaken in Institute/university farms during *Kharif* 2015 (in quintals)

Crop	Variety	Breeder seed		Foundation seed		Certified seed	
		Target	Production	Target	Production	Target	Production
Paddy							
	B-370	8.0	1.50	400.0	150.0	0.0	166.0
	Pusa-1121	6.0	1.0	0.0	0.0	100.0	0.0
	Basmati-564	0.0	0.20	0.0	0.0	0.0	0.0
	Jaya	3.0	0.0	4.0	15.0	0.0	0.0
	Giza-14	0.20	0.50	0.0	0.0	0.0	0.0
	K-448	0.0	0.0	20.0	7.5	0.0	0.0
	K-39	0.0	1.20	0.0	0.0	0.0	0.0
	K-343	0.0	1.0	0.0	0.0	0.0	0.0
	SJR-5	0.0	2.0	0.0	0.0	0.0	0.0

Table 2: Quality Planting Material produced in 2015 (in numbers) (in numbers)

Crop	Production Nos.	Crop	Production Nos.
Planting material		*Fruit crops*	
Agroforestry		Custard apple	89.0
Populus deltoids (ETP's)	1500.0	Galgal	95.0
Aloe vera (plantlets))	200.0	Papya	278.0
Cymbopogon flexuosus (Rooted slips)	2000.0	Beal	90.0
Gmelina arborea	10.0	Jack fruit	15.0
Stevia	200.0	Sweet Lime	15.0
Neem	200.0	Kinnow& Malta	4634.0
Melia	50.0	Vegetable Crops Seeds/ Planting material	(In kg)
Bacopa monnieri (Sukers)	5.0 kg	Knol khol (seed)	10.0 kg
Mentha spp. (Suckers)	10.0 kg	Marigold (seed)	2.0 kg
Acorus calamus (Rhizomes)	10.0 kg	Bottle gourd (seedlings)	3000.0
Ocimum spp. (Seed)	100 gm	Bitter gourd (seedlings)	3000.0
Fruit crops		Cucumber (seedlings)	3000.0
Litchi	280.0	Tomato (seedlings)	15000.0
Mango	867.0	Brinjal (seedlings)	2500.0
Anola	501.0	Broccoli (seedlings)	20000.0
Karonda	88.0	Knol Khol (seedlings)	25000.0
Eureka lemon	1110.0	Cauliflower (seedlings)	10000.0
Peach	310.0	Chinese cabbage (seedlings)	7500.0
Plum	438.0	Lettuce (seedlings)	5000.0
Pomegranate	580.0	Ornamental crops/ Planting materials	(in numbers)
Pear	1220.0	Marigold	1,13,400.0
Phalsa	217.0	Gladiolus	6000.0
		Tuberose	11,000.0

Table 3: Rabi 2015-16: Seed Production undertaken in Institute/ university farms (in quintals approx.)

Crop	Variety	Foundation seed		Certified seed	
		Target	Production (approx.)	Target	Production
Wheat	HD-2967	330.0	423.0	0.0	0.0
	WH-1105	45.0	214.0	0.0	0.0
	WH-1080	90.0	120.0	0.0	0.0
	WH-1021	65.0	85.0	0.0	0.0
	VL-907	30.0	0.0	0.0	0.0
	PBW-175	890.0	52.96	0.0	145.50
	RSP-561	105.0	10.0	0.0	0.0

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