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Quality seed production can enhance income for farmers round the year

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Abstract

Assessment of quality seed is a key factor for improving crop productivity and farm income. This case study highlights the successful transformation of Mr. Kh. Kobing, a 54-year-old farmer from Mantripantha Village, Chandel district, Manipur, through quality seed production under the guidance of Krishi Vigyan Kendra (KVK), Chandel. Mr. Kobing owns 0.75 ha of agricultural land and previously cultivated local rice and seasonal vegetables using farm-saved seeds obtained from fellow farmers. His farming practices were characterized by inadequate knowledge of improved crop varieties, seed treatment, balanced fertilizer application, line sowing, proper spacing, and pest and disease management, resulting in low productivity and limited income. During the financial year 2017–18, Mr. Kobing participated in a farmer training programme on quality seed production of kharif and rabi crops organized by KVK Chandel. The training enhanced his knowledge regarding high-yielding varieties (HYVs), scientific crop management practices, and the availability of quality seeds from KVK Chandel and ICAR Research Complex for NEH Region, Manipur Centre. Subsequently, through participation in Farmer Participatory Seed Production (FPSP) programmes, he gained access to quality seeds and technical guidance for seed production. Motivated by the positive outcomes, Mr. Kobing expanded his activities to seed production of rice variety RC Maniphou-10, groundnut variety ICGS-76, soybean variety DSb, maize variety RCM 1-76, and lentil variety HUL-57. The adoption of improved technologies significantly enhanced crop productivity and enabled him to earn additional income through the sale of certified quality seeds. His income from farming nearly doubled compared to the pre-intervention period. The case demonstrates that capacity building, access to quality seed, and scientific crop management can substantially improve agricultural productivity, income generation, and livelihood security of small and marginal farmers in the region.

Keywords: Agricultural land, Kharief and Rabi season, double income, production

Introduction

In the hilly terrains of Manipur, smallholder agriculture forms the backbone of rural livelihoods. However, many farmers in the region continue to face low crop productivity due to a reliance on traditional farming practices, a lack of access to quality inputs, and limited awareness of modern scientific interventions. The story of Mr. Kh Kobing, a 54-year-old farmer from Mantripantha Village in Chandel District, typifies both the challenges faced by smallholders and the transformative power of institutional intervention. Mr. Kobing initially practiced subsistence farming, cultivating local rice varieties and seasonal vegetables. Like many traditional farmers in his locality, he lacked technical knowledge regarding High-Yielding Varieties (HYVs) of crucial crops such as rice, groundnut, soybean, and maize. The turning point in Mr. Kobing's farming journey occurred during the financial year 2017–18, when he attended a capacity-building training programme on the quality seed production of Kharif and Rabi crops organized by the Krishi Vigyan Kendra (KVK), Chandel. This exposure introduced him to the vital role of quality seeds of HYV crops and connected him directly with reliable institutional supply nodes, specifically KVK Chandel and the ICAR Research Complex (RC) for NEH Region, Manipur Centre. By actively participating in the Farmer Participatory Seed Production (FPSP) initiative, Mr. Kobing transitioned from a seed consumer to a skilled seed producer. This intervention not only secured his access to quality seed inputs but also opened up a lucrative pathway for income

diversification. By selling certified, high-quality seeds back to his community and local agencies, he successfully doubled his agricultural income.

Brief on Background information

Mr. Kh Kobing, 54 year, a farmer from Mantripantha Village has a land holding area of 0.75ha. Before KVK Chandel intervention, the farmer cultivates local Rice and Seasonnel vegetables. He has no knowledge on Quality Seeds of high yielding varieties of Rice, Groundnut, Soybean and Maize. He usually availed seeds from his farmer friends with no appropriate application of fertilizers and FYM. Besides, he had no knowledge on seed treatment, line sowing, plant spacing and pest and diseases management. In the Financial year 2017 -18, he attended farmers training programme on quality seed production of kharif and rabi crops, which was organized by KVK Chandel. He came to learn the quality seeds of HYV crops and its availability at KVK and ICAR RC for NEH Region Manipur Centre. By involving in Farmer Participatory Seed

production, Mr. Kobing could accessed to quality seeds and also double his income by selling the quality seeds which he produced. With the success of his endeavor, he started involved in Seed Production of Rice variety RC Maniphou-10, Groundnut variety ICGS 76, soybean variety DSb, Maize variety RCM 1-76 and Lentil variety HUL -57.

Mr. Kobing stands as a model farmer in Chandel District, spearheading seed production for high-performing crop varieties, including:

- **Rice:** RC Maniphou-10
- **Groundnut:** ICGS 76
- **Soybean:** DSb-23 (DSb)
- **Maize:** RCM 1-76
- **Lentil:** HUL-57

This case study documents his journey of adoption, the specific scientific interventions deployed, and the socio-economic impacts of transforming a subsistence farm into a vibrant, seed-producing enterprise.

Year of adoption of the Intervention by Farmer for Doubling Income	2017-18
Total land holding of the farmer in ha. (Where intervention is taken up)	1.00ha
Crops/ enterprises under taken before	Rice variety Local and Local variety vegetables
Area (ha.) during the initial years	0.50ha
Current status of land holding (include area expansion & reason of expansion)	1.00ha, area of expansion is 0.50 ha and the reason of expansion is lease in field cultivation for higher income by intervention of high yielding improved varieties.
Problems Faced by Farmers before	Unavailability of Quality seeds of HYVs of Rice, Maize, Groundnut and Lentil.

Materials and Methods

Brief on Details of the technology

Mr. Kobing adopted Seed production of Rice Variety RC Maniphou 10, Groundnut variety ICGS -76, Soybean variety DSb-19, Maize variety RCM 1-76 and lentil variety HUL 57. Under the seed production of Rice, seeds are to be sown in the nursery field, in that nursery bed should be prepared from the month of May to July depending on the availability of water. Seeds are soak in the water for 24 to 32 hours and incubate the seeds for 24 hours in a shady area and sown in the nursery bed. Seed treatment is done with Carbendazim @2gm per kg seed. 700-800 m² area is required for transplanting of one hectare area. Seed rate for 1ha area is 40kg. Seedlings are transplanted after 20 to 25 days at a spacing of 25 x 10 cm of 1 to 2 seedlings per hill. Fertilizer dose is 60:40:30 (NPK Kg/ ha). Half of N, full of P₂O₅ and one-third of K₂O are applied as basal at the time of final leveling. After complete removal of water, one - fourth N and one – third K₂O at 30 -35 days after transplanting (tillering stage) must be applied. The remaining one-fourth N and one-third K₂O are applied at 45 days of transplanting (panicle initiation stage.). For Insect and pest management, seed treatment with carbendazim is followed and depending upon the pest and diseases infestation, control measures are taken up. The most common pest infestation is stem borer, Gall midge and Leaf hopper and for these Coragen @3ml/15litre of water and Thiamethoxan @ 5 gm/ 15 lit. of water is recommended and in diseases the most common diseases found are Blast, Bacterial leaf blight and sometimes Sheath blight and Stem rot and the control measures followed are Tricyclazole @10gm/15 lit. of water, Bactrinashak @ 5 g/litre of water and Hexaconazole 5% @15ml/15 litre of water.

Groundnut is sown from 1st week of May to 1st week of June. Seed rate is 65 to 75 kg/ha. Sandy loam and loamy soils are preferred for groundnut cultivation. Seeds are sown 30 x15 cm (Row to Row and Plant to Plant). Seed treatment with Carbendazim@ 2gm/kg seed is done before sowing. Fertilizer requirement is 20:60:40 NPK kg/ha and Lime 500kg/ha. To control leaf eating and sucking pest, Rogor 30EC @ 2ml/lit water and to manage the most common disease of groundnut is Tikka leaf spot, spraying of Dithane M-45@ 2gm/lit water and Bavistin @1gm/lit water at 35, 50 and 65 days after sowing.

Maize can be grown on any type of soil without any water stagnation. It is sown from the month of March to April and can be extended up to May. Seed rate is 20-25kg/ha and sown at a spacing of 60x30cm (Row to Row and Plant to Plant). Fertilizers recommended is 80:60:40 NPK kg/ha. For pest and Diseases management seed treatment with Carbendazim @2gm/kg seed and Chloropyriphos @2ml/kg seed is followed.

Soybean requires well drained sandy loam or light to medium loamy soils. Seed rate is 40 to 45kg/ha. and time of sowing is April to June. Fertilizers 20:60:40 NPK kg/ha and Lime 1t/ha. Seeds are sown at a spacing of 45x30cm (Row to Row and Plant to Plant). Seed treatment with Dithane M -45 @2gm/kg seed to control disease infestation and for leaf eating and sucking pest Chloropyriphos @2ml/litre is recommended.

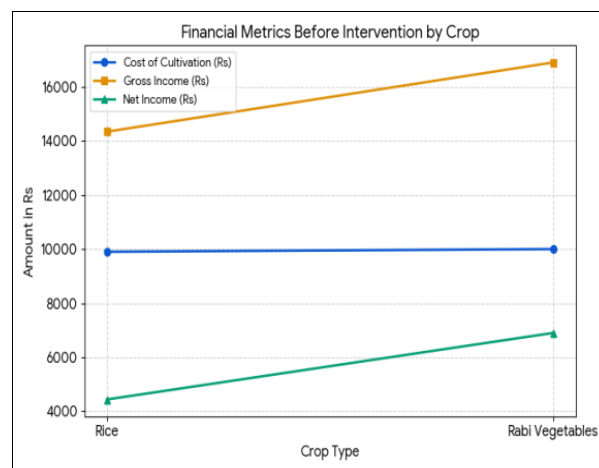
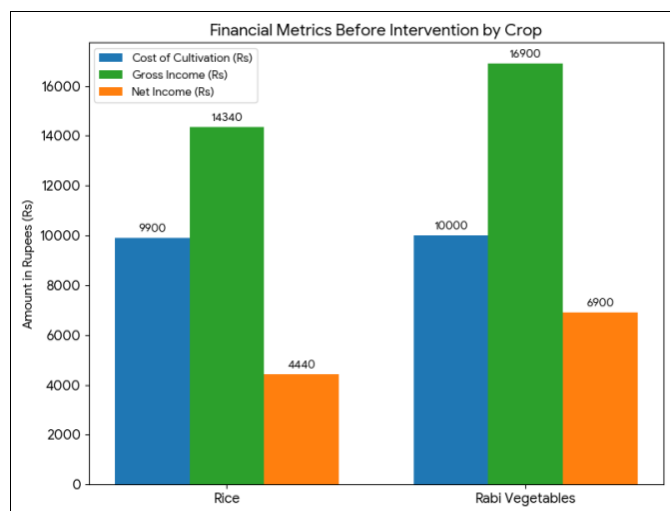
Lentil also requires light loamy soils. Seed rate is 40kg/ha and sown at a spacing of 30x15cm (Row to Row and Plant to Plant). Seed treatment with carbendazim@2gm/kg seed to control disease infestation is recommended. Fertilizer dose of 20-50-30kg/ha NPK is also required. Only as per the specific incidence of pest, control measures are taken up. Up till now, no incidence of pest reported from the farmers.

Brief on Performance of Technological Intervention (Result)

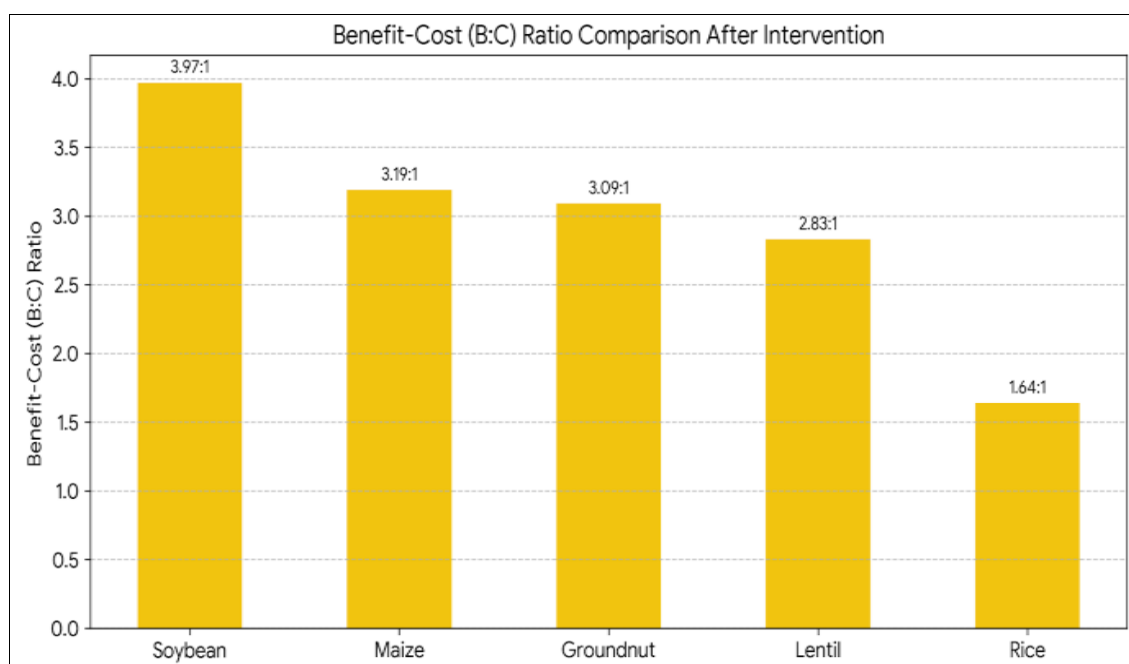
The details of the farmer benefitting over the previously adopted technologies are

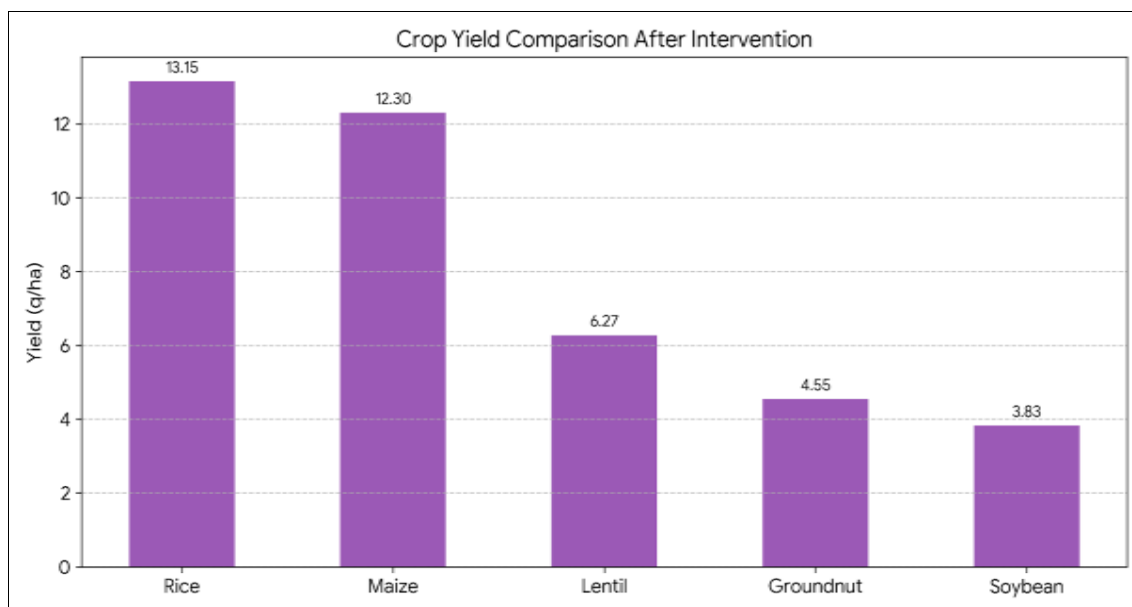
Before intervention

Crop	Variety	Area(ha)	Yield(q/ha)	Cost of Cultivation(Rs)	Gross Income (Rs)	Net Income(Rs)	B:C
Rice	Local	0.25	9.56	9900	14,340	4440	1.44:1
Rabi Vegetables	Local	0.25		10000	16900	6900	1.69:1
Total					31240	11340	

**After intervention**

Crop	Variety	Area(ha)	Yield(q/ha)	Cost of Cultivation (Rs)	Gross Income (Rs)	Net Income (Rs)	B:C
Rice	RC Maniphou -10	0.25	13.15	20000	32875	12875	1.64:1
Groundnut	ICGS -76	0.25	4.55	13250	40950	27700	3.09:1
Maize	RCM 1-76	0.25	12.30	17300	55350	38050	3.19:1
Soybean	DSb-19	0.25	3.83	8670	34470	25800	3.97
Lentil	HUL 57	0.75	6.27	22125	62700	40575	2.83:1
Total					226345	145000	

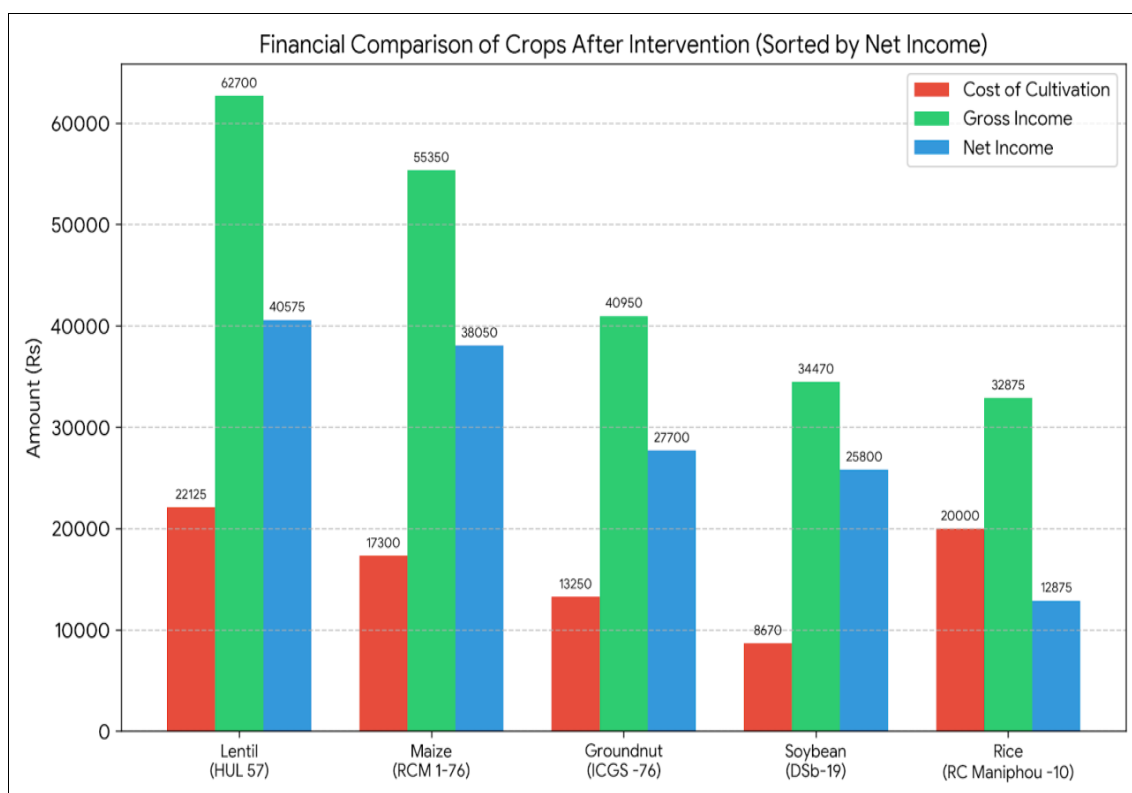




Results and Discussion

The farmer used to get an annual income of Rs. 31,240/- from selling Rice and vegetables. He also faced problems in getting improved high yielding variety seeds and technical know - how. With the DFI interventions such as trainings on Seed Production

of cereals, oilseeds and pulses, distribution of high yielding variety seeds, he is getting annual income of Rs 226345/-. In addition, there is cost saving of Rs. 145000/- in the Seed production of Rice, Groundnut, soybean, maize and Lentil.



Brief on Institutional involvement (source of seed procurement, involvement of any govt. agency, any training provided by institute etc.)

Seeds are procured from ICAR RC for NEH Region, Manipur Centre and KVK Chandel. Farmers training programmes are conducted related to Quality seed production organized by ICAR RC for NEH Region, Manipur Centre and KVK Chandel

Brief on Horizontal spread of technology

By seeing the success of the farmer through the intervention of

Farmer Participatory Seed production of various crops like Rice variety RC Maniphou-10, Groundnut variety ICGS 76, Soybean variety DSb 19, Maize variety RCM 1-76 and Lentil variety HUL 57, the neighboring farmers are impressed and they were influenced to follow his steps. As many as 50 farmers are indirectly influenced and 20 villages could know the scientific information through him.



maize variety RCM 1-76



Maize variety RCM 1-76



Mr. Kobing in his field -



Rice variety RC Maniphou 10 Groundnut ICGS-17 and Soybean DSB-19

Conclusion

The success of Mr. Kh. Kobing demonstrates the positive impact of Farmer Participatory Seed Production (FPSP) and scientific agricultural interventions on the livelihood of small and marginal farmers. Through training, technical guidance, and access to quality seeds provided by KVK Chandel, he transformed his traditional farming system into a profitable seed production enterprise. Adoption of improved crop varieties such as RC Maniphou-10 rice, ICGS-76 groundnut, DSB-19 soybean, RCM 1-76 maize, and HUL-57 lentil significantly enhanced his productivity and income. Beyond his personal achievements, Mr. Kobing emerged as a local resource farmer and role model in the community. His success inspired neighboring farmers to adopt improved seed production technologies and scientific crop management practices. As a result, nearly 50 farmers were indirectly influenced, and the benefits of the technology reached about 20 villages through farmer-to-farmer extension. This demonstrates the multiplier effect of successful frontline demonstrations and participatory approaches in disseminating agricultural innovations. The case highlights that capacity building, quality seed availability, and continuous technical support can empower farmers to become self-reliant seed producers. This is a remarkable financial turnaround. By shifting

from a standard commercial buyer to an active seed producer, this farmer didn't just increase their revenue—they completely altered their farm's economic structure through **cost** avoidance and value addition. To understand exactly how Doubling Farmers' Income (DFI) interventions achieved this, we can break down the transition across three main pillars: baseline struggles, the technical interventions, and a structural analysis of the new income.

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