

Ground Nut Seed Production Through Producer Company in Rainfed Agriculture Zone of West Bengal

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Abstract The ground nut technology adoption program was based on varietal adoption and replacement, nutrient management that includes application of gypsum, line sowing and irrigation scheduling on critical requirement basis. The operational area was representative of rainfall scarce agriculture in western part of West Bengal. The agriculture extension support system was inadequate and whatever existed, farming community hardly has access. In the first year of project implementation, successful demonstration of ground nut production technology generated enthusiasm among the farming community. In second year, farming community demanded the extension services that were more qualitative in nature. Service demand included more of training and advisory services than on inputs being merely supplied. The farmers demanded extension service within short time frame because of scale, size and precision of technology demonstration. The development of Farmers' Institution in technology transfer was itself a process innovation as cluster committee, village committee. In successful technology transfer of ground nut in

project area, the pertinent issue was to maximize farmers' income marketing through product aggregation and product value addition through seed production. Producer company undertook seed production programs and seeds were marketed to State Farmers' Corporation of India (SFCI) a public sector seed production agency through buy-back contract resulting the premium price for the quantity of the product they produce.

Keywords Ground nut seed production, Producer company, Rainfed agriculture zone.

Introduction

Producers' organizations—which range from the local and national to the regional and global—provide a mechanism for creating and articulating demand and improving the bargaining power of their members. The institutional capacity of such organizations varies immensely, and in many contexts there are legitimate questions to be posed about their governance, accountability and representation notably of women, as well as of agricultural workers. Organizations of rural producers are often not represented in the overall governance of research organizations, and rarely are they engaged in budget allocation and priority setting. The seed takes the major share (50%) in groundnut crop production cost. The seed system in the country, consists of public, private and civil sector, majority of large and few medium farmers save their own seed and lend the surplus seed to the small farmers with understanding that, one and half times

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the quantity of seed borrowed will be returned (1).

On the other hand, there are numerous successful examples of engagement of producers' organizations on various scales in agricultural innovation programmes, advisory services and research. For instance, in Senegal, rural producers' organizations have been involved in the reform of agriculture advisory services from the national through the local level, in setting the research agenda and the governance of service delivery. There is a need to further such opportunities to engage these organizations and to build their capacity and voice so they can better represent the interests of their members as clients and partners of research and service institutions. The involvement of small holder farmers as partners in agricultural research and advisory services is necessary which presuppose favorable policy environment. Effective partnership needs building coalitions, sharing responsibilities and creating synergies among governments, civil society, the private sector and above all, farmers and their organizations. NAIP through its project implementation design gave such opportunity to link various stakeholders and synergize capabilities of respective stakeholders for the benefit of small holders farming in backward zone. Producer company as Farmers' Institution was formed under the aegis of NAIP. Producer company undertook two activities: Seed production through the buy-back contract and marketing of ground nut through product aggregation to wholesaler.

The technology transfer paradigm in NAIP was characterized by involvement of civil society organizations in project implementation with equal partnership as consortium partners. The consortium was represented by public sector research institution emerging as lead agency and civil society organizations with grassroots presence as delivery agency dealing with developing Farmers' Institution. The multiplicity of problems so inherent in rainfed farming was addressed through collective effort of Farmers' Institution and public sector research institution. In the sub-project of NAIP Component-3 of Bidhan Chandra Krishi Viswavidyalaya (BCKV) is playing as public sector research institution while Access Development Services (ADS), Indian Gramin Services (IGS) acted as social mobilization agency engaged in institution building. In Ladhshuli Cluster, the consortium partners were BCKV, West Bengal University of Fisheries

and Animal Science (WBUFAS) and Access Development Service. The precise objectives of this paper are: To study the profile and evolution of producer company, and to analyze the business activities of producer company.

Materials and Methods

The present paper owes its methodology to collection and analysis of secondary and primary information about the producer organizations (PO)/producer company (PC) being experimented worldwide for the benefit of small holder farming. Participatory tools mainly the focussed group discussion (FGD) was used to track the process involved in shaping out the activities of producer company. Semi structured interviews (SSI) was used to elicit the farmers and other stakeholders' response about the programs of producer company. Information was analyzed and presented in the matrix according to the nature of information emanated from the stakeholders.

Selection of villages for seed production program

Sub-project of NAIP Component-3 led by BCKV consortium had three clusters. The producer company activity as presented in this paper dealt with the activities taken up in Lodhashuli cluster of West Midnapore district in West Bengal. The farmers under this project in Lodhashuli cluster was around 1000 in numbers. The number of farmers participated in the business activity of producer company was 96 and the area covered was 20.30 ha which was spread around 7 villages (Table 1). The producer company

Table 1. Farmers' participation matrix in ground nut seed production.

Sl. No.	Village	No. of farmers	Varieties	Area (ha)
1.	Lohajhalia	11	Tag-24 and K-6	1.569
2.	Baitagobindapur	24	Tag-24 and K-6	4.452
3.	Radhagobindapur and Patashimul	56	Tag-24 and K-6	12.768
4.	Khajurgoria	1	Tag-24	0.168
5.	Jambadia	2	Tag-24	0.42
6.	Mantipa	1	Tag-24	0.084
7.	Gobindapur	1	Tag-24	0.84
	Total	96		20.30

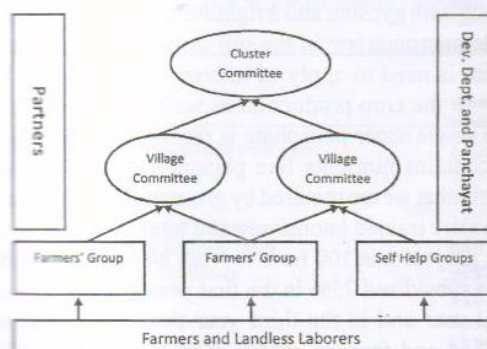


Fig. 1. Institution building process.

had two activities in Lodhashuli cluster: Seed production of ground nut; product aggregation and bulk sale of ground nut to the wholesaler.

Results and Discussion

Profile and evolution of producer company

Cluster committee

The farmers' groups were formed through the discussion with the farmers in each village. Village committee was formed at the village level to organize extension services in more integrated manner. Village committee was federated into cluster committee at the cluster level. The cluster committee acted as extension service provider. The project was being implemented in 7 villages and therefore seven numbers of village committee (VC) were formed. The institution building through federative process is depicted in (Fig.1). Farmers' groups discussed the capacity building issues and undertook crop oriented group activities. The field level project staff acted in tandem with the cluster committee and village committee. The field staff of the project, cluster-in charge, proactive members of the cluster committee and village committee created core activity groups which implemented the project in the grassroots. The major project activities included: Organizing technology demonstration; organizing training program; distribution of inputs; collection of farmers' contribution from distribution of inputs; discussion about the crop development in the meeting of village committee and cluster committee.

Formation of producer company

The cluster committee was federated into the producers' company named as "Grameen Agro Producer Company". The incorporation of Grameen Agro Producer Company (GAPC) was on 3rd January, 2012. Farmers' groups (FG) which was working under village committee (VC) was used as farmers' group (FGs) working as base level foundation of producer company. Producer company acted as apex body of farmers' group (FG). The farmers were trained to nurture FGs and to negotiate with external resource institutions such as government, financial institutions and markets. Producer company activists as chosen from the farmers, group (FG), village committee (VC) and cluster committee were trained in undertaking output marketing and organizing seed production program. The generic activity profile of the producer company was as follows: Discussion of alternate farming systems with groups of farmers suitable to their specific situations and generate household farming plans/portfolios; identifying training and extension needs and potential local resource persons (LRPs) to function as community based extension agents; training of local resource persons (LRPs) to provide extension support to farmers adopting new farming systems; link/developing supply channels for inputs and services; on-field handholding support by LRPs to ensure appropriate usage of quality inputs; demonstration of usage and effectiveness of relevant farm mechanization practices; developing production clusters for producing significant volume of marketable surplus; identifying and building aggregation/desegregation centers in production cluster wherever required; linking the production cluster with market players (traders, commission agents and retailers; the entire activities took 24 months and finally producer company emerged as viable institution through the evolution of institution building process.

Legality of producer company

Any ten or more individuals, each of them being a producer, any two or more producer institutions, that is, producer companies can get a producer company incorporated under the Act. The companies shall be termed as limited and the liability of the members will be limited to the amount, if any, unpaid on the shares.

Table 2. Area-production data of ground nut intervention in NAIP.

Season	Year	Number of farmers	Area (ha)	Yield (t)/ha	
				Yield (t) /ha in NAIP	in non NAIP village
Kharif	2009	1420	185.04	2.0	1.2
Rabi	2009	802	90	2.5	1.9
Kharif	2010	1500	43.60	2.0	1.12
Rabi	2010	750	38	2.5	2.0
Kharif	2011	1500	77	2.0	1.4
Rabi	2011	750	16.8	2.40	2

As such, "producer companies would not be vulnerable to takeover by other companies or by MNCs." Producer company incorporated under the Companies Act, 1956 (No.1 of 1956) 10th day of September, 2004 within the meaning of Section 581A (1) of the Act.

Business activities of producer company

Technology transfer in ground nut

The technology adoption in precise was introduction of *kharif* ground nut and improvement of production technology in *rabi* ground nut. The project identified some critical gaps in the farming system. Among the critical gaps, absence of viable second crop in *kharif* was identified as major bottlenecks in farming system productivity. Farmers used to take *Aman paddy* as major crop in *kharif* season. Most of the uplands were current fallow in nature. The ground nut used to be cultivated in *rabi* but with non-descript degenerated variety which was consistently low yielder (1.0 to 1.5t/ha). The seed replacement rate was quite low and farmers used to care less for the crop. Through NAIP the variety named TAG-24 was introduced in the first year (2008) with specific technology, which is given in the further next paragraph. The yield jumped to 2.0-2.5 t/ha with good quality kernel having uniform maturity. The productivity enhancement in NAIP village area was quite obvious. The difference was quite higher indicating the superiority of the NAIP technology. The production in NAIP village was 2.5 ton/ha, 40% higher than the Non-NAIP village (Table 2). The agro-ecological practice was improved through line sowing, nutrient application

along with gypsum and irrigation scheduling. If available micronutrient in the soil is too trace in amount, there is need to apply of micronutrients. Which increase the crop production as well as application of the single super phosphate is recommended because it contains nutrients like phosphorus, calcium and sulfur that we are required by groundnut (2). The farmers were trained intensively and total coverage under the project was 100 ha involving 800 farmers. Input was subsidized 75% in the first year, 50% in the second year and in the third year the subsidy was reversed and farmers made 100% contribution. The ownership of farmers in input procurement justifies the technology acceptance and subsequent continuance in ground nut.

Technology used in ground nut in NAIP Component-3

Variety: TAG-24, Spacing: 40-45 cm (R × R), Seedrate-150 kg/ha, Seed treatment -SAFF-3g/kg (carbendazim and mancozeb), fertilizer-urea 35-40 kg/ha, SSP-150-180 kg/ha, MOP-35-40 kg/ha (less), micronutrients-gypsum-180-190 kg/ha during earthing up, boron 2-2.5 kg/ha- spray during 1st flowering, irrigation: rainfed, disease control measure for root rot (SAAF 2.5 g/liter), duration-115-120 days, yield-20-25 q/ha).

Crop economy

Crop economy in the project

Groundnut is the sixth most important oilseed crop in the world. It contains 48-50% oil and 26-28% protein, and is a rich source of dietary fiber, minerals, and vitamins. Groundnut is grown on 26.4 million ha worldwide with a total production of 37.1 million metric ton and an average productivity of 1.4 metric t/ha (3). The cultivation of the crop with scientific method is dragging the attention of the agriculturists. The cost of cultivation in ground nut and the profit comparison between seed ground nut and raw ground nut clearly exhibits the profitability of seed production enterprise. The profit in seed production enterprise is more than 26,000/ha. In product aggregation the gain over farmers' own sale is around 1600/ha (Table 3). The implication is that through transfer of technology farmers gained quite considerably through increased yield.

Table 3. Cost of cultivation of ground nuts in Lodhasuli cluster (*per ha).

Sl. No.	Particulars	Cost (Rs/ha)
1.	Certified seeds/Seeds treatment	8300.00
2.	Irrigation	925.00
3.	Hired labor	1168.00
4.	Family labor (imputed)	3531.00
5.	Machine and bullock labor	640.00
6.	Manure and fertilizers	3683.00
7.	Pesticides	320.00
8.	Depreciation	463.00
9.	Interest on working capital	1325.00
10.	Total cost	20355.00
11.	Marketing cost	28800
12.	Other cost	900
13.	All cost (Sl. No. 1-12)	50055
14.	Average selling price (per quintal seed @ Rs 46/kg)	4600.00
15.	Average selling price (per quintal seed @ Rs 35/kg)	3500.00
16.	Gross value of output (seed @ Rs 46/kg for 24 q/ha production)	110400
17.	Gross value of output (product aggregation)	100800
18.	Gross value of output (own sale)	84000
19.	Profit at all cost (Rs) for seed	60345
20.	Profit at all cost (Rs) for product aggregation	50745
21.	Profit at all cost (Rs) for own sale	33945
22.	Profit of seed production over own sale	26400
23.	Profit of product aggregation own sale	16800

Product aggregation and seed production ensured further gain. Therefore overall gain as compared to non-NAIP area is tempting enough to persist with the technology adoption and producer company engineered market based intervention.

Ground nut value chain

Analyzing value chains in a systematic manner helps to identify blockages along the value chain and determine who in the chain benefits and who does not. It is also essential for identifying where initiatives and investments can have greater impact on small-holder engagement. This innovation helped to build the trust among the farmers for the seed production of the possible crops ahead in the project area. The ground nut value chain includes input supply, production, traders, local processing, wholesaling, mixture factory, retailing and processing or oil extraction. Final processing and oil extraction happens outside

Table 4. Financial transactions in seed production program through producer company.

Sl. No.	Transaction	Activities against
1.	Paid Rs 134,850.00 to SFCI through the cheque of producer company	Purchase the foundation seed of 24.90 q of Tag-24 and K-6 variety of the groundnut from the SFCI
2.	Received Rs 639,216.00 through RTGS transfer to the producer company's bank account	Received the aforesaid amount for the 80% payment of the seed received by the SFCI

the state while retailers operate at the nearest town level. At the village level against 1000 farmers on an average 5 village level traders operate. Small traders operate across villages and sell it to wholesale traders. Wholesale trader sells the unprocessed shell to the retailer at the town level which ultimately is sold to big retailer outside state. Farmers in normal situation are dependent on input suppliers, seed suppliers and credit providers for starting cultivation. The problems they face at this level are uncertainty in timely supply of quality seed or desired level of variety. Through the intervention in NAIP, to start with the cluster committee and later producer company integrated all value-chain based activities. The activities included the responsibility of quality input supply on time, and market related support for the aggregated and value added product that fetched better price (Table 4)..

Impact of the seed production program

Economic impact

The problem is further accentuated by the low seed multiplication ratio in groundnut. The vertical seed replacement rate for groundnut in India during 1999-2000 was 6.15% (4). Due to non replacement of the traditional seeds the productivity of the groundnut was poor; after vertical seed replacement per hectare production was improved by 30% because of the technology adoption in ground nut compared to non-NAIP region. Seed production and product aggregation driven sale increased the net return to farmer by 40 and 30% respectively. The other sub system effect is expected to be entrepreneurship in seed produc-

tion in other crops. The farmers have actively shown interest in undertaking rice seed production. The opening of different income avenues has already created competition among local ground nut vendors. They have already improved their price quotation to farmers in case of collection from farmers' doorsteps. Additional employment will be generated due to increased coverage of ground nut. The seed production entrepreneurship will enhance minimum wage rate for farmers and will reduce migration.

Conclusion

The seed production entrepreneurship and marketing of produce through product aggregation has opened up new income avenues for the farming community under NAIP sub-project. The institutional mechanism through producer company has created social mobilization to guide farmers in product value addition and product aggregation. The linking with different segmentation of market has rightly sent the signal to improve their productivity by adopting technology offered by the project. The technology gain

has been consolidated further because of such market based interventions out of the initiatives triggered from within the community through their own institution. The next step would be to scale up the initiatives. For this reason producer company needs to develop a good business fund which will be operated through "revolving fund" mechanism. The PIU, NAIP has the opportunity to fund such initiatives sustenance of technology gain which was direct product of NAIP project.

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