

Agriculture Production Cluster: Breaking the Market Hegemony in Gumla

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Recognizing the potential that agriculture has in changing the lives of small landholders, the initiatives to develop an Agriculture Production Cluster, under the Special SGSY project, led to collectivization at all levels, helping asset creation and credit linkage; as a result, some marginal farmers are now emerging as big farmers

The unprecedented returns from vegetable cultivation for the farmers of Gumla district, one of the Naxal-affected districts of Jharkhand, have rejuvenated them. Vegetable growing and selling had never been so lucrative. The fear of low returns had always haunted the farmers, keeping them away from vegetable cultivation. The perishable nature of the commodity, the urgent credit requirement, the legacy of indebtedness, the absence of proper storage facilities, the poor road network, the inadequate market information, the low volume of produce and the poor negotiation skills had always frightened the vegetable growers in the area. The vegetable business had been limited to the big and the affluent or the so-called 'progressive' farmers only.

Government agencies have, over the years, tried to create favourable conditions for agricultural producers; however, due to market imperfections, the intended benefits have not reached the farmers. Ironically, it is the farmers who have had to bear the brunt of inefficient agricultural input supply and market sales mechanisms.

PRADAN took up the ambitious task of ensuring better price returns to the farmers for their crops, especially vegetables. Building on the edifice of the Social Mobilization, and Soil and Water Conservation activities promoted in the area in the past, namely, the three consecutive projects of the UNDP and the MoRD, the latest being the MoRD's Special SGSY programme (January 2009 to June 2013), PRADAN seeded the concept of promoting and developing Agriculture Production Clusters (APCs) in the district.

An APC is an innovative concept, propelling the agriculture productivity of a particular geography with the ultimate objective of increasing the profit margin of the primary producers. Areas with similar agriculture practices and cropping patterns are identified for the purpose. Usually, three to four crops are selected and promoted as major crops for that particular area. Based on the production patterns and the market study of the farmers in a hamlet, 25 to 30 farmers are mobilized into an informal collective. A comprehensive survey, capturing all the details of individual land holding, soil type, irrigation facilities, water availability, seasonal cropping pattern, consumption requirements, marketable surplus, etc., is sketched out. Largely, hamlets with the presence of robust SHGs are selected for the interventions. Local and adjoining town markets are assessed for marketing opportunities.

In the initial stages, the focus is on attaining production efficiency. Under the catalytic supervision of PRADAN, farmers are assisted to do a cause-and-effect analysis of issues pertaining to crop failure, crop planning, low production, crop wastage, price realization, etc. Traditionally, vegetable cultivation has been individual-centric and collective crop planning is unheard of in the region. This perpetuates farmers with a low scale of production to be content with the low price offered by middlemen or market intermediaries. Collective raising of seedlings, transplantation and harvesting by the farmers make the proposition lucrative enough for bigger players, interested in bulk buying; in the process, they willingly share the additional profit with the producer.

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Around 600 farmers from different hamlets of contiguous villages came together to form an APC. Youth were identified to work as conduits, providing the much-required backward and forward linkages. Based on the collective assessment of the requirement of seeds, fertilizers, pesticides and insecticides,

the young entrepreneurs act as village-level suppliers of farm inputs at competitive rates. Similarly, service providers/entrepreneurs are created to aggregate and sell the produce to the market.

PRADAN has been working in the district since 1996. Gumla district in Jharkhand has 67 per cent tribal population (2001 Census). The district is covered by dense forests, hills and rivers. Agriculture is the primary source of livelihood for about 80 per cent of the families. Undulating terrain, rain-fed agriculture, lack of technical knowledge and poverty are the major challenges for the farmers of Gumla. The district has strategic geographic advantage. Ranchi, the state capital, is just 104 km to the east and Rourkela, the industrial town in neighbouring Orissa, is just 160 km to the south. To the south-west, the district shares its borders with Chhattisgarh and is around 200 km away from Ambikapur district in Chhattisgarh. The presence of these developed towns and cities in its periphery provides ample marketing opportunities for farm and other produce.

Ensuring round-the-year food security to the impoverished populace was the primary target for PRADAN. The first step was the large-scale social mobilization through the formation of Self Help Groups (SHGs) and the creation of community based livelihood assets by undertaking soil and water conservation,

and initiating irrigation infrastructure development projects. Recognizing the potential that agriculture has to change the lives of the producers, especially the small landholders, initiatives to develop an APC was taken under the Special SGSY Project. Until 2009, crop productivity enhancement measures, through technological and procedural interventions, remained the focus of PRADAN.

However, in 2009, it was realized that the benefits were still not being realized by the primary agriculture producers because the extra profits were mainly being devoured by the middlemen and other market intermediaries.

The project drew from the learnings of previous interventions that helped in promoting an APC such as round-the-year controlled grazing, credit availability to the SHGs, irrigation support up to an extent, good community mobilization, trust of the community and the experience of working in the area.

Whereas production was enhanced and reached a desired level, the market remained an enigma for farmers. Any incremental effort in the production enhancement programme was being counteracted by imperfect market conditions. To provide decent living conditions to farmers through interventions made for improving crop productivity, PRADAN set a modest yearly target of providing Rs 50,000 cash earning per family. However, the district's ability to consume this incremental gain in crop produce was judged to be abysmally low.

With an objective of providing round-the-year food security to the Project families along with creating a provision of an additional income, PRADAN set the following modest targets:

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- A. Achieve year-round food security for 3,000 target families.
- B. Provide an additional Rs 50,000 as cash income annually per family for 3,000 families through year-around vegetable production
- C. By 2015, saturate four blocks of Gumla district, by ensuring round-the-year food security and the above cash income
- D. By 2015, build a system for input/output/enablers around agriculture.

As a precursory step to establishing an APC, a market diagnostic study was undertaken, to understand market dynamics, supply-demand factors and trends, and the value chain of different crops. The study was conducted in Gumla and the adjoining districts of Ranchi, Rourkela and Ambikapur. Discussions were held with major market players such as vegetable wholesalers, transporters, small traders and producers. The study brought out the following:

- ♦ The demand for fresh vegetables well surpassed the existing supply of products in the region. This deficit in the regional market for fresh vegetables created an opportunity for the promotion of an APC in Gumla.
- ♦ Due to heavy downpour and water-logging between August and December, the farms of West Bengal, Bihar, Orissa and Jharkhand are not suitable for vegetable production. Therefore, vegetables come from distant places, as far as Bangalore and Nasik.
- ♦ Middlemen, between the producer and the market agent, make huge profits, resulting in a longer and costlier value chain of vegetables.

- ◆ Market intermediaries are ready to pay a premium of Rs 2–3 per kg for fresh vegetables.
- ◆ Sorting-grading-packaging is an important component in marketing, which is grossly ignored by small and marginal producers.

The baseline survey conducted with the farmers to understand the existing cropping pattern revealed the practice of cultivating more than 30 types of crops in a year; the cultivation of vegetables, however, was mostly confined to household consumption only. Household-level nutritional security, low input cost, and lower susceptibility to pest and disease attacks were the important parameters determining the farmers' choice of which vegetables to grow.

To promote production clusters, some crops were selected on the basis of the small-holder's attractiveness and market attractiveness. After discussions with the farmers and a thorough market scan, crops for large-scale commercial cultivation were selected. The district mainly has marginal farmers, with low landholding of less than 2–3 acres; therefore, the growing of high-risk vegetables was ruled out.

From a list of 30 types of vegetables—tomato, chilli and cabbage for the *kharif* season; cauliflower and green pea for the *rabi*; and cucumber, bitter gourd and watermelon for the summer season were selected for intensive cultivation. In order to get maximum returns from the harvest, the sowing time was so planned that the harvest would be available either 15–20 days prior to or after the normal crop produce cycle.

Table 1: Criteria for Identifying Farmers

Criteria	Description
Social mobilization	Existence of vibrant SHGs to support the farmers by providing credit and to collectivize them for input-output linkage
Road connectivity	Should have all-weather, good road connectivity
Labour	Off-season vegetable demands intensive labour; therefore, families with at least two adult members were identified

STRATEGIES TO PROMOTE APCs

- ◆ Increasing and intensifying the production of selected crops through the adoption of improved technology, optimal Package of Practices (PoP) and strengthening of input market linkages
- ◆ Utilizing land in the most efficient manner possible, growing crops that are both profitable, sustainable and cater to local, regional and national market demand
- ◆ Ensuring optimal price realization through:
 - a. Improving quality through sorting/grading, packaging.
 - b. Building linkages with output markets and direct market linkage.
- ◆ Building farmer capabilities and perspective on the elements of production and marketing, and establishing community institutions, where required, to support farmers.
- ◆ Ensuring vegetable production as a sustainable and integrated part of any other livelihood.

AREA AND FARMER SELECTION

Initially villages and hamlets with a predominance of farmers with a fair level of vegetable growing experience were selected. The criteria mentioned here were used to finalize the cluster.

Criteria	Description
Land size	Families with at least 15 decimals of irrigated land
No. of families/ cluster	25 to 30 farmers per hamlet for ensuring minimum level of product aggregation

KEY INTERVENTIONS IN PRODUCTION

Access to quality input and building an input management system

Raising the same crop at the same time creates a surge in demand for critical input items. Ensuring the timely and adequate availability of quality input material at a reasonable price in the local market poses, therefore, a plethora of challenges. An input management system has been devised. Based on the indenting, all inputs are to be arranged collectively by the SHG, thereby lowering the input cost. Support services to farmers for building relationships with seed, fertilizer and pesticide companies and shops have been established. A cross-learning forum for farmers, regarding the input and its quality, has also been established. Arrangements have been made for a few of the locally unavailable inputs (dolomite, boron, etc.) to be sourced by the villagers from the outside market; at a later stage, entrepreneurs will be encouraged to establish village-level input shops.

Enhancing production capacity of small farmers with standard quality

Owing to the market becoming increasingly quality conscious, fresh and high quality vegetables are critical for penetrating existing markets. Whereas the local markets are more price sensitive, the bigger and regional markets in Ranchi, Ambikapur and Rourkela are willing to pay premium rates for quality products. The production of quality crops in large volumes could, therefore, attract big players. Various steps have been undertaken

to increase the vegetable production in the region. Refinement of the package of practices (POPs) on the basis of farmers' experience and expert advice has been sought. New varieties and new crops have been experimented with. The prime focus has been on the selection of land and field sanitation, and bunding. Time-bound intervention, planning and execution have been streamlined, and the use of compost, trichoderma and glyricidia has been promoted. The use of micro-nutrients such as zinc, magnesium, calcium and boron has been introduced. Steps have also been taken to increase the quality of vegetable production, to meet the standards for grading and sorting of produce. Proper packaging of the produce has also been undertaken to ensure better prices.

Skill and knowledge development of small farmers

The grooming of local/community resource persons (CRPs) to support farmers in their production practices has been completed. The CRPs and the farmers have been exposed to many different production areas and to the regional markets. Regular training has been provided for technical, motivational and system settings. Entrepreneur skill-building training has been provided to the local youth, helping them understand the business opportunities around an APC. Farmers have been provided with cross-learning forums, and their performance, processes, problems and progress is reviewed regularly. The performance of CRPs is also reviewed on a regular basis.

Infrastructure development

The project simultaneously worked on improving production and marketing functions. To ensure round-the-year agriculture, irrigation support structures were established. Water conservation models such as land levelling, five per cent tanks, seepage tanks, check dams were created. One thousand crates were provided for packaging. Sorting and grading centres as well as cold storage centres were established. Farmers have been encouraged to understand their needs and place their demands before the *gram sabha*. As a strategy to help farmers access and derive benefit from the various government schemes, *Kisan Melas* (Farmers' Fairs) were organized; government officials visited these *melas*, to and get an understanding of APCs. Annual APC workshops with different stakeholders were also organized.

Collective effort

Collectivization in all the components was required because Gumla has small and marginal farmers. The areas for collectivization were in input management, production, infrastructure development and marketing.

CRITICAL STEPS FOLLOWED TO MAKE THE APC SUCCESSFUL

Planning and review meetings with the farmers

At the beginning of each cropping season, that is, *kharif*, *rabi* and summer, a planning and review meeting is held with the farmers.

The components of this meeting are:

- ◆ Reviewing the last season's performance, drawbacks and successes
- ◆ Setting systems for input arrangement, monitoring and marketing
- ◆ Discussing crucial interventions
- ◆ Assessing the learning from the last session.
- ◆ Finalizing the action plan such as what to do, when to do and how to do

Calendar planning

In order to ensure standardization in the production process, a calendar of commonly agreed activities is prepared by the vegetable growers.

Table 2: Calendar of Activities for Vegetable Growers

Mid-April to Mid-May	Planning meeting for <i>kharif</i>
End-May	Money collection and input arrangement for <i>kharif</i> by the SHG
1 st June	1st phase nursery for tomato and chilli
15 th June	2nd phase nursery for tomato and chilli
1 st July	Transplantation
1 st July to 1 st August	Review meeting for <i>kharif</i> and planning meeting for <i>rabi</i>
End-August to 1 st September	Marketing of tomato and chilli
1 st September	Money collection and input arrangement for <i>rabi</i> by the SHG
10 th September	Nursery for cauliflower and cabbage
1 st October	Transplantation of cauliflower and cabbage
End-October to 1 st November	Transplantation of green pea

Mid-April to Mid-May	Planning meeting for <i>kharif</i>
1 st November to mid-November	Review meeting for <i>rabi</i> and planning meeting for summer
End-November	Money collection and input arrangement for summer by the SHG
1 st December	Poly-tube nursery for cucumber and bitter gourd.
End-December to 1 st January	Marketing of cauliflower and cabbage
Mid-January	Transplantation of summer crops
End-January	Marketing of green pea
Mid-March to 1 st April	Marketing of summer crops

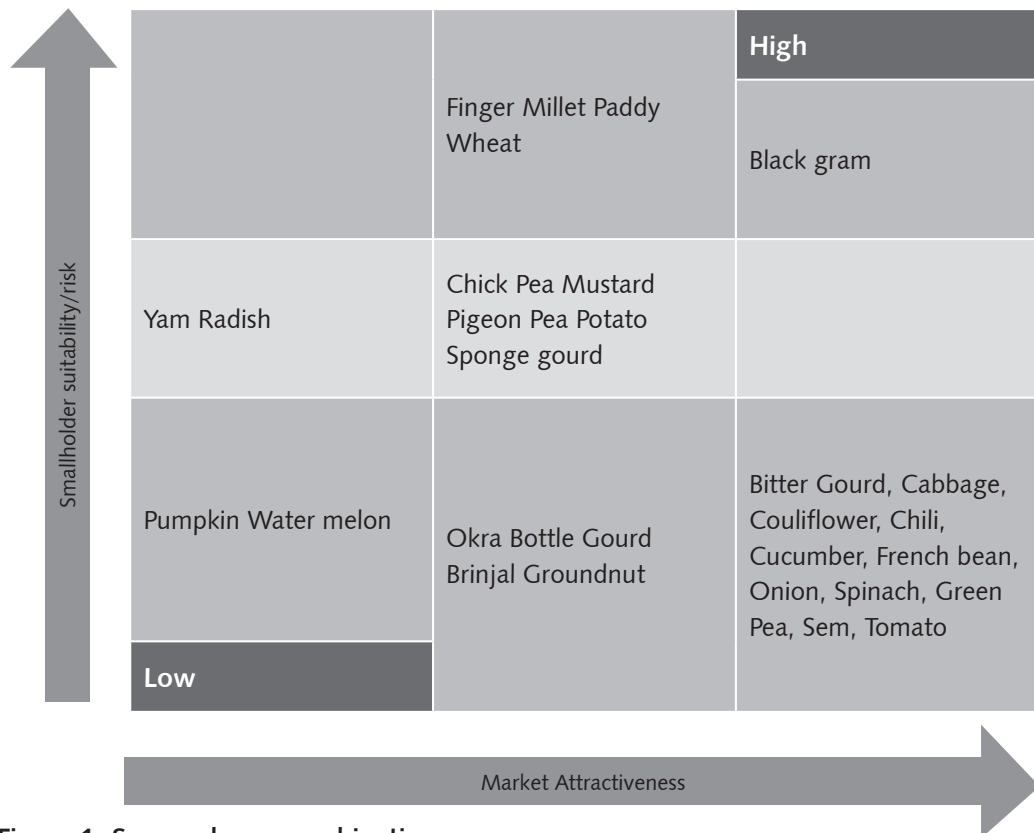


Figure 1: Seasonal crop combination

The seasonal crop matrix clearly indicates that there is no vegetable that is highly market attractive and is suitable for small-holders. The analysis of the suitability of crops indicates that to get market demand, small-holders need to take a calculated risk. To mitigate the risk, farmers are encouraged to grow more than one crop, in which the raising of seedlings is done in two separate cycles. For example, in kharif season, farmers grow tomato and chilli together. If one crop fails, the other helps in minimizing the loss. Here, the two crops are of different types (species). If, therefore, it rains heavily, the tomato yield may be low; however, this will be compensated by the higher yield of chilli.

Selection of variety

The selection of the variety of vegetables is crucial to manoeuvre the normal cropping time. Through experimentation, discussions with farmers, interactions with the input suppliers and consulting experts, the varieties were identified. With convergence support from the various schemes, crops of diverse varieties were tested in different farm conditions. Trials with varieties of cauliflower in the rabi season have equipped farmers with the understanding of eight different varieties of cauliflower.

Collective nursery with net house

Community nurseries, measuring 1,500 sq ft with a capacity to accommodate 30 nursery beds, often shaded by nets canopying beds of dimension 9 by 4 ft, were constructed at the hamlet level. Farmers have arrived at innovative solutions by using local material such as bamboo and mosquito nets to keep the cost low. Community seedlings are grown on raised beds in a common nursery on a fixed date. The responsibility of preparing and

nurturing the beds lies with the concerned individual. On an average, each farmer grows vegetables on 15–20 decimals of land. For a group of 30 farmers, the cost of one such structure comes to approximately Rs 100 per farmer.

The setting up of collective nurseries under a net house has many advantages. It develops a feeling of unity and empathy among farmers, and also promotes peer learning. A collective nursery helps in the promotion of standard PoPs and in pest management. For example, the viral attack on tomatoes, through the white fly, has been controlled to a great extent. The nursery is also protected from cattle and birds, and heavy rainfall. The temperature maintained in the nursery is conducive for germination, considerably improving the germination percentage and seedling quality. Because the date of sowing of seeds is the same for all farmers, the produce is ready at around the same time, thereby helping collective marketing. CRPs find this easier to monitor because all the nurseries are in the same place.

Review of CRPs

Initially, PRADAN provided the handholding and mentoring support to the farmers. From the third year (2012–13) *kharif* season onwards, the review and payment of CRPs are being carried out by the community itself. In this system, the SHG or the farmers' club reviews the performance of a CRP and gives him/her payment as per performance. A performance sheet is prepared with a rate chart for each of the activities. Farmers collect an amount for the CRP's payment (for example, Rs 80 for tomato) and based on the performance assessment of the CRP, payment to the CRP is made.

Marketing System

When there is large-scale production of a particular crop at particular time, a glut is created in the local market thus leading to undercutting of prices. To avoid this, linkages with the regional market are crucial. In order to establish a market system, value chain analyses of selected crops were conducted and, on this basis, linkages with the traders of the regional markets were established. The services of the local youth were requisitioned, to establish these linkages. Commission agents from regional markets were taken around and shown the APC areas, and farmers from the APC were sent to the local *mandis* and regional markets. Aggregation of the produce was done at the village level, and direct marketing in the regional market was also done.

In the initial year of APC promotion, the middlemen directly took the produce from the village to the *mandi* (market). The middleman kept a margin of Rs 3–5 per kg of produce. They came only when the market would fetch a better return and when the selling of the produce was easy. The behaviour of the middlemen with the producers was often derogatory. The middlemen often trapped the farmers by creating a credit balance and then forced the indebted farmers to sell the produce to clear their previous dues. They also exploited the farmers by manipulating the weight.

From the second year onwards, a few young, business-oriented villagers were identified and groomed as entrepreneurs. After rigorous training and adequate exposure to markets, these entrepreneurs were involved in vegetable trading. A commission of Rs 0.50 per kg of produce sold was provided to the

To assess whether the crop selection and variety selection is suitable for the area is also one of PRADAN's responsibilities, as is arranging the exposure visits for the farmers, the CRPs and the entrepreneurs to production areas and markets.

community entrepreneur, who earned around Rs 15,000 per vegetable season.

There were some challenges, however, during this process. The entrepreneur had no risk as the commission was fixed; hence, he exhibited low concern about the selling price. Also, because the area for the entrepreneur was pre-fixed, sporadic incidents of monopoly were reported.

From the learning of the last two years, the concept of area demarcation for an entrepreneur was abolished and the commission was fixed as Rs 7.00 per kg of produce. A common rate chart was also prepared and distributed to the farmers. This helped the farmers understand the relation between the *mandi* price and the farm gate price.

ROLE OF PRADAN

The role of PRADAN is to identify new areas, carry out the concept seeding and to conduct the village- or hamlet-level planning. The role is also to provide training to the farmers, the CRPs and the entrepreneurs. PRADAN is also responsible for the development and continuous up-gradation of POPs, building linkages of the community with the bank, government departments and suppliers. PRADAN also acts as the intermediary with the external stakeholder, conducts the market study, carries out the value chain analysis and sets up the system for marketing, reviews and monitors the programme, provides a forum to the farmers for cross-learning, helps the community in asset creation, prepares process facilitation for entrepreneur development, finalizes the norms of cultivation and trading, manages crises and provides supportive supervision.

INNOVATION AND LEARNING IN APC

There has been a lot of innovation in the APC. A common nursery with a low-cost net house has been constructed and a compost pit has been formed in the vegetable plot. An entrepreneur model for output marketing has been established; input arrangement through informal collectives has been completed and a critical volume of production for marketing has been achieved. Inter-cropping of short-duration vegetables has been promoted, along with long-duration vegetables. Poly tube nurseries for creepers have been initiated and market-driven, off-season vegetable cultivation has also been started. Inorganic fertilizer has been replaced with glyricidia.

Farmers have been taken on exposure visits at three critical stages of crop production as a strategy for scaling up production. A training module for promoting vegetable production with small farmers has been developed. Critical steps have been taken for enhancing the capacity of small farmers and also the crop combination of low-risk crop with high-risk vegetables.

IMPACT OF APC

The average income of a family has increased by Rs 25,000 to 30,000 per annum because of APC. Considering the potential of the APC, a family can earn Rs 50,000 per annum from 15 decimals of land. Changes and transformation can be observed in families and even at the

village level. Because they are part of the APC, farmers have been relieved of the burden of marketing their produce. The youth of the villages are very enthused by the establishment of the APC because it has provided the people with a means of dignified engagement in agri-business. The formation of the APC has also checked seasonal migration. Because output and input is a group-managed activity, even the most beleaguered family of a single woman or a physically challenged person can meaningfully participate in the APC. A hamlet of 30 farmers can easily earn Rs 7–10 lakhs per annum from the market. Collectivization at all levels is helping them in asset creation and credit linkage as a result of which some marginal farmers are now emerging as big farmers. The overall development of the APC areas is being noticed by the block and district administrations. Knowledge and skill-building, both in production and marketing, are visible. Gumla district is now known as the vegetable production cluster in the regional markets of Ranchi, Ambikapur and Rourkela.

LOOKING AHEAD

There is need to establish a more stable marketing system, with a focus on summer crops, following the area saturation model. This model also needs to be expanded to other areas. The next step could also be to move towards natural farming by reducing the use of inorganic inputs.