

Clusters and networks as enablers of product and process innovation

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Abstract

One of the strategies adopted in the Philippines to facilitate a more consistent supply of good quality vegetables from smallholder farmers is the clustering approach, whereby a small group or cluster of smallholder farmers is organized to deliver a pre-determined amount of produce to a focal customer (CRS-Philippines, 2007). Developed from the CIAT Territorial Approach, the CRS Eight Step Clustering Approach for Agro-enterprise Development employs a participatory action learning process, where the cluster members proactively plan their production to meet the specific quality and delivery requirements of their focal customer. The clustering approach is a strategy which allows smallholder farmers to access higher value chains. Evidence is provided to demonstrate how several of the clusters facilitated have utilised the skills and knowledge acquired in servicing their focal customer to develop new products for new markets, to adopt alternative low cost systems of production to reduce their reliance on external inputs, to reduce postharvest losses and product deterioration through improved packaging, to improve access to low cost community-based loans and to take advantage of local and national government grants that provide production inputs and support the development of community-based infrastructure projects.

The marketing system for vegetables

Like most developing countries, agricultural produce in the Philippines is traditionally sold through the spot market where both the farmers and the traders attempt to maximize their revenue. In the vegetable industry, smallholder farmers trading independently are seldom able to influence the price, especially in times of surplus. As the traders are in a better position to determine the price, most vegetable farmers are price takers and have therefore little choice other than to let their produce go at the price given by the trader as they have already harvested and seldom have any opportunity to store it until prices improve. Consequently, the majority of fresh vegetables in the Philippines are traded through the traditional supply chain (Murray-Prior et al., 2004), where market intermediaries are the dominant players reaping most of the benefits from the value created across the chain (Digal et al., 2006).

Increasingly, food retailing and processing is becoming more internationalized, causing significant changes in the market that impact on smallholder farmers. However, smallholder farmers have difficulty supplying the more sophisticated demand of the modern chains. Smallholder farmers may be excluded from agribusiness development because they are not equipped to handle the demands of the increasingly sophisticated market. They need to organize to meet the growing demands of institutional and modern markets (Vorley et al., 2007).

In Mindanao, the Philippines, 80% of farmers earn PhP 3000 per month and have only 2 to 3 years education. The lack of capital and knowledge prohibit them from tapping into the demand for higher value products.

This paper discusses how the clustering strategy used in Mindanao, specifically the provinces of Bukidnon, South Cotabato, Compostella Valley and the vegetable production areas of Davao City; provide an enabling environment for smallholder farmers to serve higher value markets and to take concrete actions to improve their production and marketing system.

Clustering approach to agro-enterprise development

Developed from the CIAT Territorial Approach, the Catholic Relief Services in the Philippines have formulated an Eight Step Clustering Approach for Agro-enterprise Development for Small Farmers. A participatory action learning process is employed, whereby the cluster members proactively plan their production to meet the specific quality and delivery requirements of their focal customer. The first five steps are preparatory activities that emphasize the need for the farmers to learn new skills, access new information and adopt new innovative approaches to identify and to respond to market opportunities. The two subsequent steps require the cluster to undertake test marketing, and where it is successful, to scale-up their activities. The final step of cluster strengthening requires the cluster members to develop new skills, new values and to identify alternative methods for organising the cluster (CRS-Philippines, 2007).

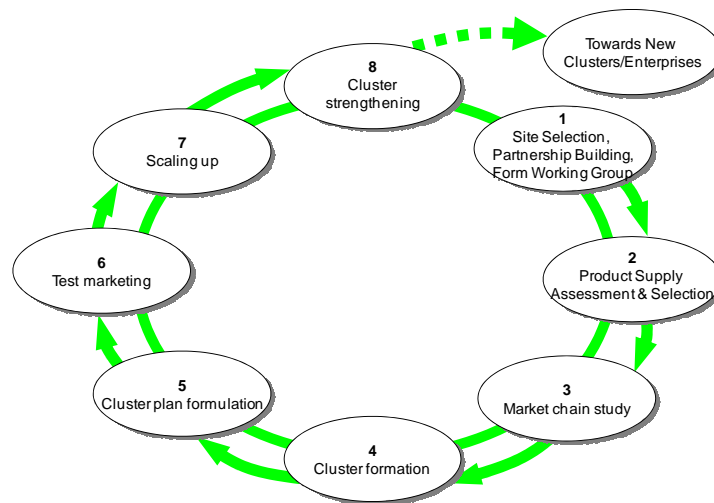


FIG. 1: THE CLUSTERING APPROACH TO AGROENTERPRISE DEVELOPMENT

In an action research project running from 2008 to 2012, involving the University of the Philippines Mindanao, UP Strategic Research Foundation, Philippines and Curtin University, Western Australia, the clustering approach briefly described above was used. Through a participatory learning process, vegetable farmers from Bukidnon, South Cotabato and Davao City were trained and facilitated using the eight steps. Thirty clusters were formed involving 293 farmers.

TABLE 1: NUMBER OF CLUSTERS

	Farmers	Clusters
Bukidnon	63	7
South Cotabato	135	9
Davao City	144	12
Campostella Valley	14	2
TOTAL	293	30

During the clustering process, the farmers underwent training on understanding their market which provided them the opportunity to visit buyers and interview retailers. They gained the firsthand experience of doing simple market research and mapping their chains. Based on the information they gathered and analysed, they decide as a group which markets they want to serve and which products to offer. They had training on record keeping, facilitation of meetings, production techniques and clusterenterprise plan formulation.

The clusterenterprise plan is a simple business plan which contains information about their desired market, planting calendar, commitment of each cluster member in terms of volume and type of vegetableto plant for the cluster market, the tasks and responsibilities of each member, the policies and procedures of the cluster and the working capital needs and sources. This type of planning opens the understanding of the farmers that they can plan what they plant and schedule the harvest such that they harvest regularly. They also get to supply additional markets while continuing to supply their traditional spot market buyers.

Data for this paper were gathered from farmers during their cluster meetings, interviews with key informants from trip reports of project personnel, and bi-monthly project reports per research area.

Emerging product and process innovations

The 8-step clustering approach to agro-enterprise development empowers cluster farmers to act as one. This new environment gives them access to higher value institutional markets which they are otherwise unable to supply as individuals and the enabling environment to venture into varied ways of improving themselves.

Develop new products for new markets

In order to lessen the farmers' risks, existing products are selected for the initial attempts for cluster marketing. This allows the cluster members to get their feet wet in working with each other and tests their commitment to the cluster enterprise plan without having to learn how to produce new types of vegetables.After the cluster has adjusted to working with each other, new products can be attempted.

In Bukidnon Province, where 7 clusters were facilitated, one cluster was committed to supply a food processor with sweet pepper. The food processor was a new market for this cluster, but they were familiar with the production of sweet pepper. When the demand of the food processor expanded, another cluster which did not previously plant sweet pepper started planting the crop in order to ensure a regular supply for the food processor. For this second cluster, this is a venture into a new product for a new market. In the same province, another cluster was formed composed of corn farmers, who began planting tropical vegetables like squash, eggplant, sweet pepper and bitter gourd, in response to the demands of a vegetable consolidator. For the third cluster, they went into planting several new products for a new market.

For the clusters in South Cotabato, 2 clusters were planting sweet pepper to supply a food processor. They had to shift to a different variety of sweet pepper because of the food processor's specifications. The new variety had a better qualityfruit anda longer shelf life. Before clusters were formed, farmers planted whatever seeds were available locally. Because of clustering and their knowledge of the market requirement, farmers shifted to *Cayenne Premium* variety. With Cayenne Premium, farmers can sell their mature green fruit to the local markets andtheir mature red fruit to the processor at a significantly higher price.

Most of the clusters discussed above were to supply a food processor in Davao City. However, the clusters experienced some problems with the payment arrangements of the accredited supplier of the food processor. This accredited supplier was to act as a conduit between the clusters and the food processor. Compounding this, the food processor stopped buying sweet pepper because its demand for sweet pepper was bundled with carrots, garlic and onions. Since the accredited supplier could not find enough suppliers for the other commodities, the food processor stopped buying sweet pepper. Farmers were then left with thousands of hills of sweet pepper and no institutional market. It was in this seemingly difficult problem that clustering proved to be an advantage. The cluster farmers put their heads together and sought for other markets for their sweet pepper. They found a wholesaler in the largest wet market in Davao City who was willing to buy the sweet pepper.

Adopt alternative low cost system of production to reduce reliance on external inputs

The clustering approach begins with the identification of partners which may be other NGOs or local government units. In all of the project areas, development oriented foundations trained cluster farmers to make concoctions derived from different fruits and plants and other local products as an alternative to conventional fertilizers. Some planted marigolds as an insect repellent for fruit fly, or used extracts of tubli (*Derris elliptica* Benth.), which is a poisonous vine, as an insecticide. These natural farming practices were introduced to them by their municipal agriculture offices and some non-government organization like the Landcare Foundation of the Philippines Inc (LFPI).

Some farmers also attended seminars about natural farming and shared it to their neighbouring farmers. As a result, farmers began using fermented fruit juice (FFJ), fermented plant juice (FPJ), indigenous micro-organisms (IMO), chicken dung and vermi-compost as part of their crop nutrient management protocols. According to the farmers, these products were as effective as conventional fertilizers, but the ingredients were found mostly in their immediate locality and more importantly, cost practically nothing. In contrast, a litre of liquid-based fertilizers cost PhP 35-80 a litre while PhP 1.63-6.25 per kg for solid-based fertilisers (Real et al., 2010).

In one instance, a vegetable marketing cluster in Maragusan, Campostella Valley discovered that the marketing skills they had learned were equally useful in enabling them to develop a market for agricultural inputs. As a large corporation, with a certified organic banana plantation required a regular supply of organic inputs. Rather than to grow vegetables, the group diverted their activities towards the production of FFJ and FPJ.

Improved postharvest practices

In almost all the clusters in the three areas of Bukidnon, South Cotabato and Davao, product handling has been improved. Previous harvesting and transportation practices exposed the vegetables to bruising and mishandling. Vegetables were normally packed into sacks and often dropped onto the ground, sat upon and/or stepped upon. Most of the clusters no longer use sacks, but now use plastic crates to minimize bruising. Buyers also prefer that the vegetables they buy be delivered in crates rather than sacks.

In the past, farmers would often sell their fresh vegetables without grading. While they managed to sell everything that was harvestable, the prices were correspondingly lower. Sorting (grading) is a new procedure for most cluster farmers. Some buyers want a specific quality grade and the farmers have learned to sort and classify their vegetables based on the customers' specifications. As a result, the farmers receive a different price for different product grade, providing perhaps for the first time, an incentive for producing better quality produce.

With the opening of new markets, there were also changes in terms of packaging, transportation, and sorting practices in Ned, South Cotabato. Before clustering, farmers packed their sweet pepper in sacks and sold them directly to the local market in Isulan. The products were transported (by skylab) to Isulan which is 70-90 km from their area. This resulted in much physical damage to the crops like bruises and cracks. Farmers estimated losses of 5 to 10 kg from transportation. With the requirements of the market to produce better quality sweet pepper, farmers utilized cartons to protect the fruit from bruising. Before the cluster was introduced, individual farmers were not able to sell their sweet pepper because of high cost of transportation. With clustering, even small volume can be included because products are now consolidated.

Improved access to low-cost community-based loans

When the farmers were not organized into clusters, many of them depended on traders to finance their production inputs. They had no option but to sell their produce to the trader who financed them, sometimes for lower prices. In the province of South Cotabato, the cluster members formed a partnership with ICTUS (Integrated Cooperative Toward Unified Services), a member-owned cooperative that provides saving and lending services, including input financing. The cluster obtained an input financing loan for its members. In order to get a loan, the cluster members had to first become a member of the cooperative bank and attend a pre-membership seminar. A membership fee and initial savings also had to be deposited totalling Php 1,700 per farmer. Of the 18 cluster members, four could afford this initial cost, and the remainder could find half the amount – with LFPI (Landcare Foundation of the Philippines) contributing some funds to meet the short fall that was repaid at a later date. A loan was released to the 18 members of the cluster for PHP10, 000 each in the form of inputs. Members could get cash for a maximum of 25 per cent of this amount. The Ned clusters were able to pay their dues after earning income from sweet pepper farming. Some of the farmers were able to access 2nd loan from ICTUS.

Another cooperative bank provided production loans to some Bukidnon cluster farmers in order to start up the production of sweet pepper. A development foundation provided financial assistance to some bitter gourd clusters, for the purchase of production inputs such as seeds, fertilizers and pesticides.

Improved access to local and national government grants

Individual farmers cannot access any assistance nor financing because the assistance cannot be monitored nor the results guaranteed. As members of clusters, however, they can get themselves registered as an association or a people's organization. As such, they have a chance to benefit from assistance. Bukidnon, clusters were provided 6 rainshelters by the Department of Agriculture, each one costing Php150,000. The farmers provided labour as their counterpart.

Clusters in Davao City received assistance from the City Agriculturist Office of Davao in the form of production inputs like seeds and organic fertilizers. They were also given plastic crates and seedling trays.

For South Cotabato, one of the Municipal Agriculture Offices (MAO) provided material support like a shredding machine and seedlings for the cluster in their area. Most of the local government units assisted through technical support, training and assistance for monitoring the clusters. Some clusters were supported by other foundations through trainings and seedlings.

Conclusion

Clustering is a form of collaborative marketing group that has provided a way for smallholder farmers to access new and modern markets. It does not have the membership costs associated with being a cooperative nor the attached bureaucracy of a registered association. But it provides the smallholder farmers are ideal starting point to move toward working with other smallholder farmers to gain a competitive advantage. In the process of reaching the goal of better market access, smallholder farmers were able to learn new ways of producing vegetables with lower input costs, acquire skills in leadership and self-governance, conduct meetings, negotiate with buyers, make and implement their cluster rules. They have possible access to financing and development assistance and more importantly, they have a chance to be included in the development of modern chains.

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