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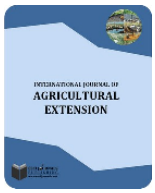

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CAPACITY BUILDING THROUGH EXTENSION EDUCATION

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A B S T R A C T

Capacity building of famers in general and small farmers in particular is imperative for commercial farming. The US-AID funded Balochistan Agriculture Project (BAP) has organized small producers into groups called Farmer Marketing Collectives (FMC) in order to create economies of scale and improve their bargaining power vis-a-vis traders. Capacity building is an integral part of the design and is meant to promote adoption of best practices that ultimately increase revenue and reduce costs. This is achieved through the prominent farmer field school approach by extending its scope beyond production to cover post-harvest management and marketing as well. BAP has established 683 community organizations (40% women) as its partners in the participatory development while for commercialization, 32 FMCs have been set up with members drawn from these community organizations. FMCs are mandated with the efficient disposal of members' produce. Effective capacity building has paid dividends in the form of incremental sales ranging from 12 to 47%. Paper will describe the capacity building and its financial gains to the farmers.

Keywords: Capacity Building, Extension Education, BAP

BACKGROUND INTRODUCTION

Farmers are always looking for necessary information and contacts that allow them to increase their earnings through better marketing. This involves helping them to:

- select profitable crops and improve production techniques;
- improve sales and achieve better prices;
- reduce costs and losses.

Helping farmers to make their own decisions is a more difficult and slower process but, in the long run, it will be more successful than trying to tell farmers what to do. When groups of farmers take on "ownership" of their plans they are more enthusiastic, show more determination to overcome problems and take greater pride if their plan proves successful. They are much more able to overcome problems in the future and to actively seek solutions for themselves. This can be achieved through adequate capacity building in weak areas.

Working with farmers, the main marketing extension task should be to provide them with the necessary information and contacts to allow them to increase their earnings through better marketing. This involves helping them to:

- Select profitable crops and improve production techniques
- Improve sales and achieve better prices
- Reduce costs and losses

In order to reducing costs and losses, farmers need to be aware of:

- Typical marketing costs (e.g. for transport and packaging) and work with farmers to reduce those costs, such as by encouraging them to share transport or buy inputs in bulk.
- Good post-harvest advice can help improve quality and reduce wastage – both factors affect profit.

Typical marketing problems encountered by the small farmers and their possible solutions are presented in Table 1.

BALOCHISTAN AGRICULTURE PROJECT

Balochistan is the largest but least developed province of Pakistan. Poverty is reportedly high. Over 3/4th of population lives in rural areas and directly subsists on

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agriculture including livestock. Agriculture productivity is low due to poor production technologies, water scarcity and inefficient use, over-grazed and degraded rangelands, weak research and extension services, high post-harvest losses and underdeveloped value chains. Poor rural households are mostly food deficit and devote 80 percent of household expenditure to food items. Continuing increases in food prices have compounded the problem. Never-the-less, there is considerable scope to increase household incomes by raising agricultural productivity.

The United States Assistance to Agriculture in the Balochistan Border Areas (USABBA) began in January, 2009 as a follow up of 4-year pilot project implemented from 2005 to 2008, with focus on food security/poverty alleviation. Two more districts were added taking total to five districts. Encouraged by the Project's performance especially its contribution towards attaining food security and improving socio-economic conditions of small farmers, three more districts were added in 2012 thus extending coverage to eight districts under Balochistan Agriculture Project (BAP), with greater emphasis on capacity building, technological innovations, increased availability and efficient use of water, improved marketing and post-harvest management and value chains development.

The Project's intended outputs, *inter alia,* include "small local agri-business enterprises established and market linkages strengthened for target poor communities to increase sales of their surplus produce and improve competitiveness and sustainability of their value chains. In order to achieve it, the Project has organized 32 Farmers Marketing Collective (FMC) comprising of 10 to 15 members drawn from 683 community organizations (40% women)for efficient marketing of members' produce.

Table 1: Marketing problems and possible solutions at the farm level.

Problems	Possible Solutions
Lack of market-oriented production (type and quality of product, timing of supply, etc)	Better planning of production and assessing of market requirements with the help of improved market information services and market research
Inputs unavailable at required time	Assistance in obtaining appropriate varieties of seeds, chemicals, fertilizers and planting materials
Insufficient produce preparation for marketing, poor quality of produce	Improved harvesting, sorting, grading, processing, packaging & storage through better extension advice and provision of relevant materials e.g. sprays, boxes (demonstrated at farm level)
Insufficient quantities and variable qualities by individual farmers do not attract viable marketing services	Improved assembly, group marketing to supply trader or supply markets direct. Improved handling and harvesting
Inadequate marketing infrastructure (roads, market centres, etc)	Improved feeder roads and rural markets through promotion of self-help, better storage and processing facilities

FARMERS MARKETING COLLECTIVE

Farmers Marketing Collective (FMC) is an organization owned and operated by a group of farmers producing similar commodities who join together in partnership to gain the advantages of the economies of scale and to gain more control in marketing their products. FMC may be formally established business organizations or an informal association that may contribute varying amounts of capital for successful operation and management of the shared enterprise. It is distinguished from other businesses by three concepts or principles, same as for an agricultural cooperative, as follows:

a. The user-owner principle: Persons who own and finance the FMC are those that use it.
b. The user-control principle: Control of the FMC is by those who use it.
c. The user-benefits principle: Benefits of the FMC are distributed to its users on the basis of their use.

The rationale behind setting up an FMC is to:

a. bulking supply to gain efficiencies of scale in transportation and market penetration;
b. increase prices received for products;
c. increase bargaining power for purchased inputs and price received for products;
d. reduce costs of marketing and agricultural inputs by purchasing collectively;
e. access new markets otherwise inaccessible;
f. gain access to knowledge and professional

expertise of others and;

g. make the markets for products more secure by having consistent supply and selling in volume.

FMCS CAPACITY BUILDING

Farmers in general and small farmers in particular are always weak in marketing. Advice available from the Government run agricultural extension services is generally production-focused. Therefore, capacity building of the FMCs in marketing and post-harvest practices was imperative to enable them to sell their produce profitably.

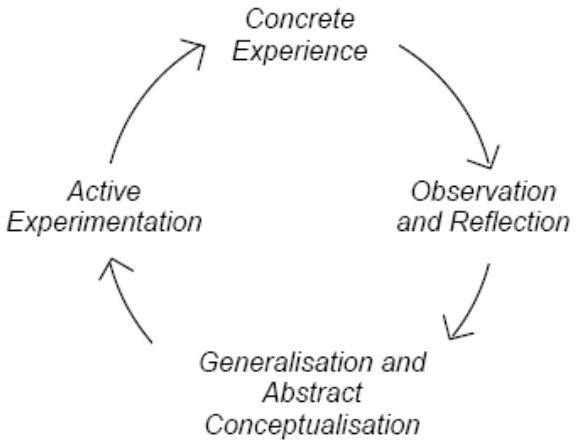
The FMCs capacity building was done using different extension education techniques as follows:

- Theoretical training sessions
- Market exposure visits
- Market development visits
- Pre-season marketing missions
- Field demonstrations
- Supervised best practices marketing trials

Pre-season marketing mission are critical to successful business. Farmers use their skills learnt through trainings and market exposure and development visits in ascertainingmarket preferences for crop varieties, grading&packaging standards, shelf life, delivery (transport), prices pattern and marketing costs and identification of trading partners. The information collected through pre-season marketing missions is used to design field demonstrations and supervised marketing trials to demonstrate the financial benefits of best practices. The post-harvest management entailing harvesting & field handling, grading, packaging and transport emerged as an area where improvements can produce quick results. Therefore, the Project plans to expand the scope of production based Farmer Field Schools to cover post-harvest practices as well.

WHAT IS A FARMER FIELD SCHOOL?

The Farmer Field School (FFS) is a participatory approach. The educational philosophy of the FFS rests on the foundations of non-formal adult education, and reflects the four elements of 'experiential learning cycle:



Operationally, FFSs are typically organized around a season-long series of weekly or fortnightly meetings focusing on problems identification and then design and carry out post-harvest best practices. The experiential learning approach of FFS provides participating farmers with a deeper understanding of analytic and problem-solving skills, which helps them to evaluate the importance and applicability of their existing and innovative practices. In order to implement such knowledge-intensive and location-specific approaches, farmers require intensive training, so they can understand (as opposed to just participate in activities which help others understand), why some practices are better than others and acquire skills to adapt them as necessary to their own specific conditions. These understandings and skills are usually transferable between field activities, and can be passed on through traditional knowledge pathways. The formation of cohesive farmer groups during these collective learning activities and their exposure to economic analysis often increases the negotiating power of these producers with traders or suppliers (e.g. harvesting aids, cartons, etc), and leads to an increased awareness of rights and establishment of farmer action networks like FMC.

FARMER FIELD SCHOOL ON POST-HARVEST MANAGEMENT

The purpose of FSS on post-harvest management is to encourage FMC members adopt best practices and

collectively market their produce in order to enhance sales and incomes. As mentioned earlier, the rationale behind setting up an FMC is to (a) provide farmers with the opportunity to adopt best practices and market their produce collectively through a member owned organization and (b) offer adequate volume of good-quality produce, members should adopt best post-harvest practices. The farmer field school can contribute to a better understanding of the role and functioning of the Farmer Marketing Collective to prepare its members to take part in the decision making process.

The expected results will be as follows:

- Members obtain greater understanding of the post-harvest and marketing constraints/issues and understand the purpose of the best practices to address them effectively.
- Members are able to offer good-quality produce to high price markets (super stores) and bulk buyers.
- Members know the role of their Farmer Marketing Collective in the supply chain and the services they can expect from their organization.
- Members know their own responsibility as a member and understand why they have to pay membership fee and participate in the democratic decision making process/structure.

The FFS approach makes use of group dynamic and energizer exercises with group formation based on the existing structure of FMC.

The relevant topics, constraints and farmer knowledge-based needs are presented in the following Matrix which can be modified and adjusted according to crops specific requirements:

Table 2: Relevant Topics, Constraints and Farmers Knowledge-based Needs Matrix.

Topics	Constraints	What farmers need to know
Harvesting	Fruit with varying maturity	Use of harvest maturity indices – subjective & objective
	Poor harvesting practices	Timings of harvesting
		Harvesting aids
		Harvesting technique
Grading	Size grading without precision	Grading parameters
		Use of grading template
		Size and weight grading
Packaging	Wooden boxes	Cardboard cartons
	Poor presentation	Labeled & trade marked
	Produce damage	Liner, for instance, packing trays for apples
Transport	High cost	Group transport
	Produce losses	Damage caused by poor practices – large truck, curved bed, overloading, exposure to sun/rain, bad stowage, rough loading & unloading, fast driving on bumpy roads.
		Load-divider
		Travel during cool hours
		Protection against sun/rain – tarpaulin
		Care during loading & unloading
		No overloading
Collective Marketing	Exploitation by traders	Negotiate with strength through improve bargaining power – FMC
	Price fluctuations	Supplying high price end markets at agreed prices
	Limited markets or lack of market linkages	Market diversification
	Low prices	Promotion – branding
Responsibilities of FMC members	Some members do not attend FFS regularly	The FFS is a service to FMC members to increase their sales and have better income

	Members often do not pay their dues	The services that FMC provides to its members cost money
	Some COs were not represented at the Annual General Meeting	When you are not present, you cannot object to decisions and cannot make suggestions for change
	Farmers are often indebted and thus obliged to sell their produce to traders	Without produce there is no FMC
		FMC can help in improving cash flows over time and thus help reduce borrowings by members
		External support for advance (BAP)
		The FMC does not have an interest to support farmers if they sell direct to traders

Farmers are imparted theoretical training explaining disadvantages of poor and advantages of good post-harvest practices followed by discovery exercises to improve their understanding on the subject working across the harvest season as illustrated through Figure 2, specific to apples:

FFS Activities/Apple	Appropriate Timings (Months)				
	July	August	September	October	November
Katja					
Harvest maturity determination					
Harvesting					
Grading					
Packing					
Transport					
Tor Kulu					
Harvest maturity determination					
Harvesting					
Grading					
Packing					
Transport					
Shin Kulu					
Harvest maturity determination					
Harvesting					
Grading					
Packing					
Transport					

Note: Timings will vary according to growing conditions and will have to be adjusted accordingly.

Figure 2: Calendar of Activities for FFS on Apples.

The curriculum includes post-harvest practices across the value chain from harvest to delivery into the wholesale market namely harvesting and field handling, grading, packing and transport. These are briefly discussed below:

Harvesting & Field Handling: Harvesting is the start of the post-harvest process that determines the quality of the produce to be supplied into the market. Getting any of the harvesting steps wrong can lead to poor quality produce thereby adversely impacting its market acceptance and the resultant price. Several factors account for the poor harvest quality of a produce. These include harvesting unripe and overripe produce, lack of use of harvesting aids, harvesting produce at the wrong time of the day and with incorrect harvesting technique. Harvesting premature produce early in the season is prompted by high market prices while late harvesting may be practiced due to lack of knowledge about the limited shelf life and poor storability of produce.

The discovery exercise examines current and improved

practices and their impact on produce quality and post-harvest losses. Its learning objective is to improve understanding of the maturation stages of produce (for instance, apple) and its impact on quality and shelf life.

Grading: Many factors contribute towards product presentation and its sale value. Grading is one of the important factors. For instance, large and colorful apples are preferred choice for those who can pay for it. Grading is also carried out to remove diseased and blemished produce for improving market acceptance and for long-term storage (for instance, apples).Top-quality produce can be selected for transport to distant markets. Produce can be separated according to degree of maturity, ripeness, color and size. Produce can also be separated according to buyer's preferences and grade specifications.

The discovery exercise on grading studies the impact of grading on presentation and prices and leads to improving understanding of the value added by grading.

Packaging: Packaging is an important factor in improving product presentation and protecting it during handling and transport. Good packaging is also an important tool for promotion through appropriate labeling. Framers mostly use wooden boxes. However, use of cardboard cartons has added value and resulted into net incremental benefits. Poor practices like over and under filling of packages, using cheap cardboard boxes, rough handling, etc tend to cause damage to the produce and consequently results into low sales.

Discovery exercise involves studying impact of packaging on presentation and post-harvest losses and leads to improved understanding of good packing and its impact on produce losses.

Transport: Transport is a big and often the most important factor in the marketing of fresh produce. If products are not available when and where customers wish to buy them, then fewer sales will take place. It is necessary to ensure that the transport and distribution system will enable products to reach customers on time and in the correct condition as economically as possible. Fresh produce may be loaded and unloaded numerous times before reaching its final destination.

A number of transport modes and means are used for transferring produce from the farm to market; road transport is most common. Small (Mazda), medium (Bedford) and large (Hino) trucks are used. However, poor practices like overloading, wrong stowing, closed vehicles without ventilation, non-reefer vehicles, careless loading and unloading, exposure to sun, etc cause damage to the produce and consequently result into low sales.

Discovery learning exercise looks at transportation cost and impact of poor transport practices on produce losses and how to control them.

FINANCIAL IMPACT OF CAPACITY BUILDING

The comparative per unit net sales of FMC and Non FMC farmers for selected agricultural commodities is presented in Table 3:

Table 3: Comparison of FMC v/s Non FMC Sales per Unit.

Commodity	FMC v/s Non FMC	Net Sales per Unit	Comparison
Quetta District			
Apple	FMC	360	+ 34.3%
	Non FMC	268	
Apricot	FMC	425	+ 11.8%
	Non FMC	380	
Grapes	FMC	540	+ 35.0%
	Non FMC	400	
Tomato	FMC	486	+47.3%
	Non FMC	330	
Onion	FMC	845	+ 26.1%
	Non FMC	670	
KillaSaifullah District			
Apple	FMC	548	+ 48.9%
	Non FMC	368	
Apricot	FMC	300	+ 22.4%
	Non FMC	245	
Carrot	FMC	600	+ 22.0%
	Non FMC	490	

Chili	FMC	3255	+ 10.7%
	Non FMC	2940	
Loralai District			
Chili	FMC	4500	+ 13.9%
	Non FMC	3950	
Melons	FMC	88	+ 33.3%
	Non FMC	66	
Onion	FMC	2172	+ 7.2%
	Non FMC	2026	
Carrot	FMC	1176	+ 23.5%
	Non FMC	952	
Mastung District			
Apricot	FMC	437	+ 23.4%
	Non FMC	354	
Grape	FMC	440	+ 16.1%
	Non FMC	379	
Onion	FMC	927	+ 15.7 %
	Non FMC	801	
Dried Mulberry	FMC	7634	+ 17.2%
	Non FMC	6511	

Information in Table 3 shows extra sales ranging from 7.2 to 48.9% in case of FMC farmers. The higher sales attributed to improved prices and reduced costs due to consistent quality and aggregated volumes, respectively. The pre-season 'Walking the Chain' missions revealed that improvement in post-harvest practices will directly result into enhanced sales. Accordingly, different FMCs conducted marketing trials on improved packaging including returnable plastic crates (tomatoes, melons & apples), cardboard cartons (apples, apricots & melons), and net sacks (onion). The financial results revealed enhancement in sales ranging from 16.65% to 39.50% (Table 4):

Table 4: Financial Impact of Best Practices Marketing Trials.

S.#	District/FMC	Target Market	Best Practices	Price Appreciation
District Mastung				
1	Apple	Karachi	Cardboard Cartons & Mazda Truck	22.65%
2	Apple	Quetta	Returnable Plastic Crates	29.98%
3	Water Melon	Quetta	Returnable Plastic Crates	16.96%
District Quetta				
4	Tomato	Karachi	Returnable Plastic Crates	39.50%
District Loralai				
5	Melon	Multan	Cardboard Cartons & Pick-up	20.50%
6	Onion	Multan	Net Sacks	38.53%
7	Carrots	Multan	Polypropylene Sacks & Mazda Truck	15.65%

CONCLUSIONS

Small farmers need to organize into groups in order to gain the advantages of the economies of scale and to gain more control on marketing of their produce. They also need adequate capacity building to cash market opportunities. BAP organized Farmer Marketing Collectives and build their in doing successful business using different extension education methods. As a result, farmers generated economies of scale leading to increased prices and reduced costs. This combined with application of improved marketing and post-harvest management skills yielded extra sales ranging from 7.2 to 48.9%.Similarly, extension education on adoption of best post-harvest practices, such as, cartons, returnable

plastic crates, net sacks and small truck (Mazda) exhibited net price gains ranging from 15.6 to 39.5%. The lesson for the small farmer is the critical role of extension education and adoption of best practices in reducing costs and improving farm revenue.

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