

## **An Analysis of the Effectiveness of Agricultural Extension Services: The Role of Public and Private Sectors in Balochistan**

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### **Abstract**

*The role of both the public and private sectors in the context of agricultural extension services needs to be analyzed referring to their effectiveness in extension work and their relative importance in changing the attitude of the farmers to adopt new technologies and improved practices in agriculture of the province. The role of change actors mainly has to be seen not in all but few dimensional changes such as; switching from an old quality/variety of an input or operation to the new one, the length of time span of the change adoption and the role of the change actor in introducing a new technology and/or improved practice. The findings coming at surface in the result of the research analyses indicate that unlike the extension workers of the provincial agriculture department, no visible organized formal institutional cadre of extension workers exists in the private sector in the province. The informal change agents in the private sector; elders, shopkeepers, fellow farmers, progressive farmers, under no planned strategy are playing an important role.*

**Keywords:** Agricultural extension services, public sector, private sector.

### **Introduction**

Agricultural technologies and techniques are constantly changing and farmers need to be made aware of and know how to use agricultural innovations for the exploitation of inherent yield potentials. Agricultural extension is a mode by which the latest information is communicated to the farming community. The effective extension services can help in the adoption of new agricultural technologies which can leads to higher crop yields and more household incomes (Khan et al., 2006). In Pakistan the agricultural extension services can help to meet the food needs of increasing population. The purpose of the agricultural extension services are to support farmers in the good decision making regarding adoption of new agricultural technologies and also regarding adoption of improved management practices (Subedi and Garforth, 1996). In addition the agricultural extension services can help in reducing poverty levels and ensure household food security especially among small and resource poor farmers.

Worldwide the public sector plays a dominant role in the provision of agricultural extension and services (Axinn and Thorat, 1972; Lees, 1990; Swanson, Bentz and Sofranko, 1997). According to a worldwide survey conducted by the FAO in 1988–9, about 81% of extension work around the world is carried out through a ministry or department of agriculture (Umali and Schwartz, 1994; Swanson, Farner and Bahal, 1990). Mostly farmers are dissatisfied with the technical competencies and services of public sector extension personnel. Critics of public extension claim that its services need to be reoriented, redirected and revitalized (Rivera and Cary, 1997). The inclusion of the private sector to ensure competition is gaining credence as one solution, especially with regard to agricultural input-supply firms.

It is pertinent to clarify that the private sector, being mostly as non-formal in nature, has not been in match with the public sector in quality of inputs introduced. Other than the technical and specialized private sector sources (recognized agrochemical firms), the informal sector sources have been introducing the non-advanced rather a one step back (lagged) improved technology and /or practice. The National Commission on Pakistan's Report (Government of Pakistan 1988) keeping in view the minimum role of private sector recommends that "the traditional role of the private corporate sector in providing material agricultural inputs and services needs to be strengthened and expanded to cover newly emerging needs such as specialized cultivation operations, spraying, and harvesting and to provide total package services rather than single inputs. It is argued that public sector agriculture extension is characterized by poorly motivated staff, a preponderance of non-extension duties, inadequate operational funds, lack of relevant technology, top down planning, centralized management, and a general absence of accountability (Antholt 1994, Baxter et al 1984) but the private sector extension services are targeted at big farmers and are primarily targeted by a profit maximization motive (Rashid Bajwa with no date). The analyses conducted here in the study do not take into consideration the quality comparison in strict sense. It rather takes into account the prevailing technology that is widely used. The past researchers have mostly found that agricultural extension services were not quite adequate to educate the farmers effectively i.e. Rogers 1987; Prinsley et al., 1994. A study revealed that three fourth of the Asian farmers have no contact with the agricultural extension services (Maalouf et al., 1991). A number of reasons can be advocated for the poor agricultural extension services like few financial resource, lack of trained staff, inadequate planning etc. (Antholt, 1994). Mostly public extension services have consistently failed to deal with the site- specific needs and problems of the farmers (Ahmad, 1999). The same is true in the case of Pakistan (Ahmad et al., 2000; Sofranko et al., 1988). In case of Pakistan and also to a greater extent in Balochistan, the agriculture management model is quite similar to other developing countries. The Ministry of Food, Agriculture and Livestock (MINFAL) through its provincial departments carries out most of the agricultural extension (Umali and Schwatz 1994; Swanson, Farner and Bahal 1990). Therefore, there has been a felt need to transfer technology, disseminate knowledge about new technologies and improved practices in agriculture where the role of extension has been fully realized over the time. But how far this role has been played, who has played and to which extent, where the deficiencies are and what needs to be done. Thus, these questions raised highlight the need of knowing the status of approaching the farmers for the transfer of new technologies and improved practices.

### ***Selection of Sample***

The study was conducted in five districts of Balochistan namely; Khuzdar, Lasbella, Naseerabad, Qilla-Saifullah and Quetta. 60 farmers from each of the five districts were selected at random for interview and discussion. The whole analysis of this study has been based on the responses of the farmers from the five districts.

### ***Collection of Primary Data***

The decision about the collection of data for the study was arrived at by keeping in view the difficulty of the non-availability of any support data<sup>2</sup>. The lack of supporting information and material necessitated to resort to the first hand information through primary data. The required information was collected at two levels that laid the basis of primary data. (a) The information collected from farmers where 300 farmers selected at random from five districts constituted the main component of the study. For that purpose, a questionnaire was structured that was used to obtain all the required information. The questionnaire addressed all the issues pertaining to the indicators responsible for assessment of the level of the two competitors in delivery of services to the farmers introducing new techniques and technologies (b) In addition to the information collected from farmers through questionnaire, information was also collected from the staff of agriculture posted at districts and Quetta (the provincial capital).

### ***Secondary Sources of Data***

As already mentioned, major emphasis of the study has been laid down on primary data however, where necessary information from secondary sources has also been used in support of the primary data. The sources of secondary data are mainly from agriculture department; Directorate of Agriculture Extension, Agriculture Research Institute and unpublished record and documents. The objective of the current paper is to study the impact of agricultural extension services on adoption of new agricultural technologies and improved practices in agriculture of the province.

## **Result & Discussions**

### **1 Appropriate Use of Fertilizer**

- The role played by different public and private sector change agents regarding extension activities under fertilizer is different from other interventions and is almost similar to that of pesticides use. The fertilizer supply has been stopped from the side of the public sector. The supply is totally from the private sector and motivation for use is from the sellers' side who are mostly the shopkeepers and the farmers using the fertilizer.
- The public sector extension workers and offices play a supplementary role, which is not that effective. The evidence is that farmers are using the urea and DAP in general which are not the recommended varieties. The role of the public sector extension workers is not a major role rather it is supplementary to that of private sector.

### **2 Using Certified Quality Seed**

- In case of new seed varieties, rather quality certified seed, comparing the role of extension workers of the provincial agriculture department with that of non-formal extension workers of the private sectors, it is apparent from the data of field survey that the role of public sector is not impressive. The knowledge about CQ seed has been disseminated by different actors; extension workers of agriculture department, progressive farmers, elders and fellow farmers. In regard with the seeds used both in Rabi & Kharif seasons, on average, the public sector extension workers have contributed to approach 1/3 farmers at the provincial level.
- In Rabi season, EWs have succeeded to persuade around 30% farmers while, that of private sector close to 70% (a bit higher than 2/3). There were found to be extreme cases too, where farmers have been relying almost completely on the mercy of private sector (94% in Khuzdar.). Likewise, in Kharif season, the role of private sectors has again been dominant by approaching 67% farmers where only 23% by extension workers of the public sector. As per detail, the role of the elders has been on the top, convincing 32% farmers to accept the change of using the certified quality seed of the crops. The effectiveness of the fellow farmers, progressive farmers and rest of the sources have been to the tune of 18%, 11% and 16% respectively.
- Besides the introduction of CQ seeds, supply of such seed and linking the farmers to new and improved variety, is an important agriculture extension intervention. In other words, an activity of dissemination of knowledge about seed supply centres that provide CQ seed to the farmers as well as taking step for multiplication of the evolved seed is another valuable extension intervention. The analyses based on Survey Data 2006 indicate that in case of seed supply, the role of private sector (mostly non-formal & non-organized) is much dominant and ahead of the public sector extension workers. Major seed suppliers are the different types of farmers in private sector from where, on the average, 88% farmers procure seed and in comparison, EWs of the provincial agriculture department have supplied CQ seed to 12% farmers. This indicates that EWs of the public sector have left 88% farmers on the mercy of unorganized private sector<sup>1</sup>.
- In Rabi season, the contribution of the private shops in supplying seeds to farmers is around 62% occupying the position of the topmost seed supplier<sup>2</sup>. In comparison to the Rabi season just mentioned, in Kharif season, the role of the private shops as seed supplier is even more in favour and visible in the context of private sector<sup>3</sup> in the province supplying seed to 77% cultivators.

### **3 Appropriate Use of Pesticides**

- Before discussing the role of different players in the field of extension, the knowledge related to pesticides use is of immense importance. The overall position of the province represented by the farmers own perception of the five districts indicates that 70% farmers use pesticides regularly, 19% occasionally and 11% do not use at all. Among the user farmers, 51% farmers at the provincial level think that they are using pesticides appropriately in terms of the required quantity with required number of sprays. The role of extension needs to

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<sup>1</sup> The unorganized private sector means no registered firm or entity specialized and dealing in the business of input supply.

<sup>2</sup> The overall average of the 62% contribution towards seeds supply has been raised largely by the extremely high percentage of 94% of Khuzdar district where the farmers fulfil their need of seeds from private shops.

<sup>3</sup> The private shops usually, with some exceptions, provide tradition rather than new improved quality seeds at the provincial level.

be seen in the context of the 30% farmers who either use pesticides occasionally or do not use at all plus 49% farmers who use pesticides in-inappropriately.

- The role of extension workers is almost similar to that of fertilizer where supply is controlled by private sector and both private and public sector do motivation task. The public sector extension workers help the farmers to utilize pesticides of proper quality, with proper interval and at the right time. Again, it supports the private sector in handling the situation

#### **4 Use of Tractor**

- As regards with the use of machinery in agriculture exemplified by the use of tractor (other than thresher), as a whole, in all the districts, preference for cultivation through traditional means is the most important reason of non-use of tractor, which pin points the in-effective role of extension workers in the province. The policy makers and planners need to ponder upon the negligence on the part of the provincial agriculture department through its extension workers and to probe that instead of mentioning other limitations, on the average, 50% farmers are un-prepared for the tractor use due unscientific reason of preference for traditional cultivational mode to tractor.
- Among the respondent farmers, the use of tractors is quite high and 92% farmers of them are using tractors on their fields whereas, the rest are using the traditional tillage sources such as bullocks, donkeys, camels etc. The role of informal private sector has been dominant in motivating the farmers; however, the change actors differ from district to district. The informal sector which includes the elders, fellow farmers and progressive farmers has succeeded in persuading on average 83% farmers towards the use of tractors, while the share of extension workers have approached on average, only 17% farmers convincing them to use tractors on their fields.

#### **5 Use of Thresher**

- Next to use of tractor, adoption of the use of thresher by the farmers has been taken as another example of extension intervention to assess the behaviour of farmers towards the machine use in agriculture and to assess the level of efforts undertaken by the extension workers. The use of thresher by the farmers, on the average, is 40 percent only at the provincial level. The comparative role of the public and private sectors can be viewed with the help of the survey information.
- The role of extension workers of the public sector has been noted as 13 percent, while, that of private sector 87 percent. Within the private sector, the farmers who have benefited the highest from their motivation is the source of 'learning from the experiences of other farmers' that has played the most crucial role, revealed by the fact that 63 percent farmers have benefited from this unorganized source of information about the thresher use. The next higher source proved to be the 'elders' who have guided 14 percent farmers to adopt the activity.
- The change agents have to play a role to raise the 40 percent use of thresher to at least 75 percent, otherwise, the adoption would be considered unreasonable.

#### **6 Nursery Raising Operation**

- Keeping in view the present status of 62% who have adopted nursery raising operation, the role of the change actors has been of importance. Among the different change actors who have played a vital role in promoting nursery raising among the farmers of the area, public sector extension workers have approached 19% farmers and have convinced them without failure and the other private sector change agents with success have approached the rest 81% farmers. The role of the elders has been more significant because 45% farmers have acknowledged the convincing success of them.
- Some 97% farmers have asked for assistance either in form of supply of plants at lower rates and have complained about the non availability of standard quality plants or need guidance for proper management to have more productive results or have asked to provide or be linked to micro finance packages. This invites the attention of the agriculture department through extension workers.

#### **7 Practicing Transplantation**

- The results of the studies reveal that 2/3 of the farmers have been exercising transplantation activity on their fields and around 1/3 are refraining from the activity due to various reasons. The role of the public and private sectors need to be seen in this context.

- Similar to nursery raising, the public sector extension workers have played a role of motivating successfully some 19% farmers, while, the rest 81% farmers have been persuaded for adoption of the operation by the private sector. Among the private sector motivators, the elders are on the top that have motivated around 43% farmers to go for this activity. The fellow farmers and the progressive farmers are the next has been around 10% respectively.

### **8 Adoption of Crop Rotation**

- The overall situation of crop rotation is not pleasing as only 18% farmers have opted for the crop rotation in the study area. In Naseerabad and Quetta districts the adoption of the technology is not too low as in other districts, being 30% and 44% respectively while, in other districts the situation is miserable. Among the farmers who have adopted the practice, approximately, 74% farmers practice the activity on regular basis and 26% on occasional.
- The effectiveness of the public and private sectors can be assessed by the contact of their extension workers/motivators to the farmers to change their attitude towards the activity of crop rotation. On the average, extension workers of the public sector have succeeded in approaching around 35 percent farmers and the private sector's contribution has been around 65 percent. Among the private sources of knowledge dissemination, again the role of elders is prominent and on high side in influencing the farmers to adopt this technique for retaining soil fertility, followed by self-adoption through parental guidance and progressive farmers.

### **9 Identification of main Pests & Diseases**

- Controlling the damaging pests and diseases that destroys the crops of farmers is a cumbersome process, which can be eased by at least knowing the basics of the menace of main pests and diseases. The survey results indicate that based on the farmers perception, on average, 71% farmers have the knowledge about the main pests and diseases.
- The role of the extension workers is somewhat more visible in case of helping the farmers identifying the main pests and diseases. As per 40% farmers, the extension workers of the agriculture department have given awareness them about the main pests and diseases that usually affect their crops, while, among elders with 30%, progressive farmers and fellow farmers, each with 15% outreach to the farmers. Those farmers knowing since long have been on advantage.

### **10 Operate Kitchen Gardening**

- Kitchen gardening operation is important in order to provide quality fresh vegetables to make up the nutrition deficiency of the family. In the study area, 31% farmers go for the practice of KG in the province. This indicates that the there are extension workers behind this success who have brought the number to almost 1/3 of the farmers to go for the activity.
- The role of the extension workers of the public sector to persuade farmers regarding is not that significant, indicated by the fact that they have succeeded to persuade only around 15% farmers while, the role of the private sector has been 85%.

### **11 Information about Inputs Supply Centres**

- The farmers are always constrained to have knowledge and access to the quality inputs. In order to fulfil that purpose, farmers need to be guided and linkage with supply centres of quality inputs. Thus, task has to be accomplished by the extension workers. On the average, 69% farmers have endorsed that guidance, though not sufficient & effective has been provided, while the rest have refused any assistance in this regard.
- The role of the private sectors has been around 88% and that the public sector extension workers have been around 12%. Within the private sector, the fellow farmers have succeeded in supplying the required information to 37% farmers (the biggest source of linkage), the role of the elders has been around 20%, while as a second biggest source, and self-search has benefited 27% farmers.

### **12 Update the Cropping pattern**

- The cropping pattern, more or less has changed in all districts and each district has its own history of change in cropping pattern. On the average, around 81% farmers have shown satisfaction on the new CP adopted and the rest are not happy with the new changed situation.

- Around 36% farmers have endorsed the role of the extension workers (public & private) in updating and adjusting the cropping pattern into new one in order to have higher yields. The share of the public sector has been around 50% while, the private sector contribution has also been around 50%. Under its direct approach, through its senior staff, AD has succeeded in motivating 22% farmers, the elders based on their experience have succeeded in motivating 24% farmers for change in CP. In comparison, the extension workers have changed the attitude of 27% farmers towards changing the cropping pattern.

### **13 Imparting Need Based Training**

- The need-based training activities are very important for the farmers to upgrade their skills and apply those skills in their field. In districts such as Khuzdar and Lasbella, the farmers have negated any type of training while, 7% farmers of the three (Naseerabad, Qilla Saifullah & Quetta) out of five sampled districts have mentioned about availing the training facility.
- Only 4% of the farmers have mentioned about training availed from the agriculture department. In Naseerabad, the training was imparted through PFCADP, while in Quetta; the training facility has been availed by farmers due to being in close proximity to provincial capital and more concentration of training in the district. The district of Qilla Saifullah has been highly focussed by projects due to small distance of Quetta.

### **14 Guidance in Organising Farmer Meetings & Field days**

- On the average, very small number of around 2%, farmers were found to be members of formal groups, have quoted about farmers' group meetings, called Farmers Meeting Also the same number of 2% have experienced the Field Days in their village or nearby villages.
- The perception of the farmers who have been members of the organizations is quite strange, who are of the opinion that these meetings are being organized by community organizations (view point of 43% farmers), organized by agriculture department (viewpoint of 43% farmers) and organized by extension workers (viewpoint of 14% farmers).

### **15 Awareness about Gender Development**

- Around 37% of the farmers have participated at least, in a training or workshop related to gender sensitization at their village level or otherwise. Interestingly, 50% of the farmers who have availed this opportunity belong to Naseerabad district who were benefited through PFCADP.
- Some 56% training events for the farmers' awareness about gender development have been organized by the NGOs in the province. The role of the extension workers involved has been 12%, which, was found to be confined to assist NGOs and donors in their work.

### **16 Exposure to farmers**

- In the study area, 32% farmers who have been on exposure trips to different places to visit model models where the farmers have grown their crops mainly through adoption of new technologies and improved practices under the supervision of extension workers of the public sector. The interaction there with progressive farmers has benefited them at large.
- How they got access to different farms located in all the provinces? The question needs to be responded. 91% exposure tours mainly, were arranged by the farmers themselves (91%), where the role of the public sector extension workers has been minimal except the district of Naseerabad where 13% farmers were exposed to the model farm under some project (PFCADP). In the overall position of the study area, the exposure under the supervision of extension workers of public sectors is only 3% of those who have experienced exposure to standard model farms.

### **17 Proper Tree Spacing Operation**

- Among the farmers interviewed, 12% are of the opinion that they have changed their old practice of tree spacing into the recommendations of the scientists, while the rest believe that there is no need of any change.
- Among the adopter farmers, 82% farmers ascertain that the change in spacing practice has been mainly due to fellow farmers. The progressive farmers have 11% contribution in knowledge about this technology transfer. The NGOs have influenced 7% farmers regarding the tree/pit spacing as per requirement according to latest knowledge.

### **18 Supply of Quality Plants**

- Among those who have responded to the query of supply source, 10% farmers use their own raised plants, its cutting and/or seedlings. The rest of the farmers benefit either managing from progressive farmers, private shops or directly from the research nurseries of the agriculture department. Around 7% farmers avail these required plants from progressive farmers, 15% from private shops and around 8% directly from the nurseries of the government offices at provincial or district level. The rest 60% are those who claim to be deprived from obtaining the plants at all.
- Other than the supply source of the fruit plants, it also essential to assess who have been helping the farmers to be linked to the reliable supply source. Again, the fellow farmers have succeeded in supplying information to 37% farmers proving to be the biggest source of linkage. The role of the elders has been 20%, while as a second biggest source; self-search has benefited 27% farmers. The role of extension workers has been around 12%.

### **19 Appropriate & Timely Pruning**

- Pruning is a very important operation that causes the strength and makes the trees highly productive. Due to lack of knowledge and lack of skill to prune the trees are responsible for ignoring pruning completely or done rarely. In the survey area it was found that 20% farmers hardly go for pruning both appropriately and in appropriately ways.
- The guidance for pruning has mainly been provided by the fellow farmers who first initiated the activity at the village or area level. Extension workers have also played the role in terms of persuading 13% farmers among those who have adopted the pruning practice at their level. Different other actors including the elders, shopkeepers/inputs sellers, strangers, farmer guests from other areas etc have contributed to convince 26% farmers among the practitioners of the activities.

### **20 Introducing Spray Calibration**

- Some 20% of the farmers have admitted that they go for spraying their orchards which doesn't include the number who has not responded to the question. Among the farmers who have been practicing, a significant number was found to be quite erratic. Around 83% of the practitioner farmers have been spraying their orchards 4 times per season, while, 7% are the framers spray their orchards more than 4 times per season.
- Different sources have been guiding he farmers not only for adoption of the practice but also guiding them in their way. Mainly, the fellow farmers and extension workers have mainly provided the guidance to farmers about spray calibration. The fellow farmers have disseminated knowledge to 46% farmers (irrespective of the lack of proper knowledge) and extension workers who have the proper have provided guidance to 18% farmers. The rest 36% practitioner farmers have been guided by others.

### **21 Proper Picking & Packing**

- Among the responded farmers, around 12% were found to be those who are continuing with traditional mode of picking as well as packing, however, 15% farmers claim that they follow the scientific mode of picking the product from the trees and undertake the market acceptable mode of packing which is responsible for higher prices of their products compared to farmers with traditional farmers. The rest were with mixed response and could not respond where do they fall.
- Here also the role of fellow farmers is dominant who have transferred their knowledge to 65% farmers. The knowledge of the fellow farmers is hardly upto the mark but how to resolve this dilemma of improper knowledge of fellow farmers which the farmers consider appropriate? This is a question which needs to be answered yet. The share of the extension workers in transferring knowledge about proper picking and packing is approximately 11%. The rest of the gap has been filled up by different other sources. Interesting point is that around 29% farmers under the category of traditional farmers continuing with traditional mode of picking and packing are ready to change their attitude in this regard.

## 22 Marketing

- Among the farmers who have opted to respond, 14% have availed the opportunity to be trained in marketing and claim that they know the marketing techniques to sell their products at reasonable price. The training they sought, the farmers can be divided into two groups; those with formal training and those with informal training.
- The informal training imparted by the fellow farmers has been availed by 44% farmers, while the formal training has been availed by 5% farmers. However, some informal guidance provided to 51% farmers in marketing has been provided by others (different sources). Surprisingly, majority of the farmers feel no deficiency in marketing and wish no guidance except 4% farmers who were found keen to avail an opportunity of training in marketing.

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