

Innovative Haricot Beans (*Phaseolus vulgaris*) Seed System for Smallholder Farmers – Experiences from Dale Woreda (district), Sidama Zone, Southern Ethiopia.

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In spite of the growing demand for haricot beans both for the domestic and export market shortage of high quality seed in the required quantity has inhibited very many farmers in Dale benefiting from the opportunity. The public sector, the major source of improved beans seed, could not meet the ever increasing demand for haricot beans seed by smallholder farmers. Farmers in southern region do not keep seed stock until the next season and farmer to farmer seed supply is far from satisfactory in availing improved seeds due to vulnerability of haricot beans seed to storage pests which farmers to a larger extent do not have the resources and means to apply protection measures and lack of supply of basic seeds. The IPMS project designed to test an alternative and innovative seed system where various actors including farmers groups, extension service providers, financial institution, farmers' cooperative partnered together with local research institution (Awassa Research Centre) and international research organizations (CIAT and IPMS/ILRI) to avail quality packaged seed in affordable quantity for smallholder farmers. In the scheme seed grower farmers were identified and provided with basic seed from research and entered contractual agreement to sell the seed to local cooperative that bulk up and sell in packages to farmers through the local cooperative shop and vendors in local markets. IPMS, research and the extension service cater for the capacity needs and IPMS through the Rural Finance Fund Administration provided the loan required. This scheme started in 2008 working with 47 seed growers which now have reached 150 and this year alone is able to bulk up 4.3 tones of semi-certified seed in (10,320 packets of 250, 500 gm and 1 kg) that will be ready for the market. The scheme will demonstrate a lesson in an alternative and innovative seed supply system both to partners and government policy makers with possibility of adopting for scaling out and up in the country.

## **Background**

In 2004, the Improving Productivity and Marketing Success (IPMS) of Ethiopian Farmers Project was initiated by Ethiopia's Federal Ministry of Agriculture and International Livestock Research Institute with finances from the Canadian International Development Agency (CIDA). Ten pilot learning weredas (PLWs) were selected in four major regions (Amhara, Tigray, Oromia and SNNPR).

Following the Government of Ethiopia's rural development and food security strategy, the IPMS project aims at contributing to market-oriented agricultural development as a means for achieving improved and sustainable livelihood for the rural population. The project's long term objective is to strengthen the effectiveness of government's effort in transforming agriculture production and productivity and rural development in Ethiopia.

IPMS employ's innovation system approach (ISA) as the guiding principle in its research and development activities. This entails bringing together the various public and private actors in the agricultural sector including producers, researchers, extension, education, agribusiness and service providers such as input and credit institutions. The objective is to increase access and use to knowledge from multiple resources in order to increase production/productivity, which in turn can improve the livelihood of the farmers.

Dale Woreda (hereafter the district), which was one of the 10 selected IPMS PLWs, is located some 320km South of Addis Ababa, the national capital of Ethiopia. Dale has a total population of 222,000 people of which > 85% is agrarian. The average household has 6 – 10 people. According to the recent population count there are 185,000 men headed and 37,000 women headed families (District Office of Agriculture and Rural Development, (OoARD)). It is also found at 6.6-6.8<sup>0</sup> N and 38.3-36- 38.5<sup>0</sup> E in today's Southern Nations, Nationalities and People's Regional State (SNNPRS). It has an altitudinal range of 1600-2400 meter above sea level. Mean annual rainfall is 1200mm with two cropping seasons. The short rainy season is from March – April 'Belg' and the t long rainy season is from June – September

*Meher.* The small rainy season is mainly used to grow maize under sown with beans and for transplanting coffee (*Coffea Arabica*) seedlings. It is also used for land preparation for the big rainy season where coffee and "enset" (*Ensete ventricosum*) and fruit trees plantings are carried out. In addition, crops like teff (*Eragrostis tef*) and haricot bean are sown during this season. The long rains help permanent crops like coffee and fruit trees to withstand effects of the long dry season. However, in the last few years, the rains have shown high degree of irregularity and poor reliability, in terms of onset and distribution, affecting crop growth and the type of crop to plant.

**What was done?**

To develop a market oriented agricultural development program, a participatory planning process was initiated in 2005 with the most important value chain stake holders, including farmers, District administrators, staff from the Office of agriculture and rural development (OoARD), rural finance administration, research staff, cooperatives and traders. Participatory tools were used including, a final stakeholder workshop to agree on priority marketable commodities by farming system and potential value chain interventions for each commodity (IPMS 2005).

According to the diagnostic survey, in Dale two distinct farming systems were identified i.e. garden coffee/ livestock; and cereal/haricot bean/livestock system. The priority marketable commodities selected by the stakeholders for both farming systems included haricot beans (*Phaseolus vulgaris*), which is grown for food as well as cash/income generation. Average land holding is between 0.25-0.5 ha in the garden coffee/livestock systems, while it is between 0.5-1.5 ha in the predominantly cereal/haricot bean/livestock system. Currently the District has 36 kebeles<sup>1</sup> each with an estimated area of 800 ha. These kebeles have one government employed manager as well as elected representatives headed by a chairman and several committees. Among the major bottleneck for the development of the commodity identified were the emerging market demand and the lack of improved seeds of marketable quality.

In 2005, a team that consisted of the International Center for Tropical Agriculture (CIAT) (leader in beans research) IPMS (facilitator) and Southern Agricultural Research Institute (SARI) represented by Awassa Agricultural Research Center (ARC), and a Federal Research Center, Melkasa Agricultural Research Centers (as sources of knowledge, information and technology), carried out assessments that were mainly geared to understand the production and marketing prospect of beans for Ethiopia in general and in the small holders of the Southern region in particular. OoARD subject matter specialists, farmers and traders were consulted to understand the market chain and assess the opportunity for haricot beans development as a marketable commodity for small holder farmers in Dale (Rubiago, 2005). The major findings of the rapid assessment were<sup>2</sup>:

- Compared to white varieties, production cost of the red beans is relatively lower while fetching better price in the local market. In addition, red beans are well integrated in to the local diet.
- There is an indication of the market preference for the red beans in the Southern Ethiopia mainly to supply Northern Kenya's market. However, there is also an opportunity for the red beans to enter the world market as the beans export market in Ethiopia expands.
- The national research system is developing and releasing wide ranges of high yielding and disease resistant varieties of beans giving farmers opportunity to grow crops with wide opportunity for local and export market.
- The private sector has responded favorably to the government policy and new beans storage and processing facilities are established such as Agricultural Commodity Supply (ACOS) that showed interest in processing and exporting the red beans as well.
- As long as the Ethiopian small holder farmers are growing crop at a lower cost, they will be competitive to countries in the Far East and Latin America due to geographical

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<sup>1</sup> The smallest administrative unit

<sup>2</sup> A more formal study conducted in 2006 and published in 2008 confirmed most of these findings (Shaun Ferris, Eli Kaganzi, 2008)

location of the country that lowers the transport cost to major markets in Europe and the Middle East.

In 2006 a program was designed to start introducing some of the varieties which were identified in the study.

The only red bean variety grown in the district was Red Wollaita which was released more than 25 years ago. The shortage of improved seed was so critical that in 2004 only 1.43% of beans growers in SNNPRS used improved seeds. Therefore, new varieties were introduced to assess their performance on farmers' plots and farmer training centers (FTCs). In the 2006 cropping season, four small red, dark red and mottled haricot bean varieties were introduced. Consecutive field days were carried out where hundreds of men and women farmers took part. Following this, joint evaluations were carried out in which participating farmers identified the various positive attributes, shortcomings and prioritized the beans for different purposes.

In 2007 some additional on-farm variety testing/seed and multiplication continued. During this year, the stakeholders also started discussing the seed supply system. Seeds for important crops such as haricot beans come through the Ethiopian Seed Enterprise (ESE), and distribution is effected through OoARD, as part of the regular extension program. Awassa and Melkasa Agricultural Research Centers are the source of basic seed for multiplication by ESE and/or farmers. They provide new seeds as grant to the OoARD but to be used as revolving seed. These research centers are supported by CIAT in acquiring new germplasm and breeding work in the country. SARI has been testing and releasing high yielding and drought tolerant varieties. However, due to lack of linkage and limited seed production capacity, it was unable to reach the wider farming community and meet their seed demand (Asfaw 2007). Apart from the limited amount of seed, there was clear shortage of varieties to enable farmers to choose from (Alemayehu et al 2009). Moreover, farmers in this region do not keep seed stock until the next season and farmer-farmer seed supply is far from satisfactory. This is because of vulnerability of haricot beans seed to storage pests as farmers lack the resources and means to apply pesticides against these pests.

Among the recommendations given by the stakeholders to produce high quality seed at affordable price was to involve individual farmers and farmer groups in seed production. Linking these farmers with effective seed distribution system was essential to enhance haricot bean production for both domestic and export market (Asfaw 2007, JC 2005). IPMS was instrumental in following and implementing this work with the OoARD.

In 2008 the OoARD identified some 47 farmers in 7 Kebeles for seed production. These are the pioneers who volunteered to be involved in the business by dedicating their land (a quarter of a hectare) and labor for seed production purposes. The farmers were given orientation and skill hands on training jointly by OoARD and research staff. These farmers were identified by DAs who are working at the grass root level. Following this, the OoARD also selected Weynenata Multipurpose Cooperative to handle the bean seed marketing. The office selected the cooperative due to its past records because of its commitment and reliable leadership to serve its members. Discussions were carried out with the leadership and upon agreement; a project proposal was developed for a loan from the IPMS innovative credit fund. The loan was needed to meet the cash short fall in the cooperative to buy and stock

seed from farmers. Some Birr 76000<sup>3</sup> was eventually released to buy 10000 kg of beans at the first stage.

Farmers entered the seed business agreeing to sell the seed to the cooperative at 15% above the market price for the red haricot beans grain at the time of sale. They are encouraged to sell their seed to the cooperative, however, whatever is left from in-kind repayment and sell to the cooperative; farmers have the right to dispose to other buyers. Farmers who suffered loss due to heavy or shortage of rains and insect attack are exempted from repayment.

In 2009, the packaging and marketing of seeds was addressed. Previously, the seed that came through the OoARD were in bulks of 12 kg that discouraged many smallholder farmers. The new approach is that seeds are packed in smaller quantity of 200, 500 and 1000gm in transparent plastic packets with labels describing the variety, purity, germination, seed rate, quality of seed and information on where to go for advice. At the end of July 2009, some 4380 kg of seeds were packed and prepared for sale. The first round plastic bags and sealing machine were lent by Tropical Legume (TL 2) research project and CIAT. This could be argued and considered as an acceptable incentive for developing the new market which has reasonable chance of becoming sustainable in trying to serve the poor and reach many poor farmers (Khan 2006)

### **3. Results up to date**

#### 3.1 Variety selection and performance

The variety testing/selection by involving farmers and traders in 2006 showed great preference for the red mottled bean (Ibado, locally known logomame), the small red variety, Nasser, and a dark red variety, Dimtu.

Assessment of the 2007 variety testing was carried out in two sites where 4 types of red kidney beans (Ibado, Nasir, and Dimtu & Omo 95) were distributed. The haricot beans were evaluated by 54 farmers (22 women, 32 men) at Soyama and Dehub Mesenkela kebeles; and Gane FTC. A total of 6 DAs and 5 district staff took part along with the Research and Development Officer/ Assistant (RDO/RDA) from IPMS. The crops were evaluated for their physical characteristics (grain size and color), agronomical characteristics (response to water stress and water logging) as well as yield and food quality. According to farmers' evaluation, Nasir and Ibado are highly preferred for their color, seed shape, size as well as their food quality. While Nasir, Dimtu and Omo 95 were tolerant to relatively high rain and water logging Ibado performed poorly and hence yield was low. Dimtu was not preferred for a traditional food preparation because of discoloration during boiling. Ibado is compatible with maize due to its climbing nature and hence was highly preferred for inter cropping. Regarding marketability, IPMS along with the OoARD conducted a small assessment on marketability of red kidney beans, which showed that marketability was highly sought by traders. The limiting factors were only the amount and quantity produced and cleanliness of the grain.

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<sup>3</sup> 1 USD is equivalent to 12.78 Ethiopian Birr

The variety Nasser has the potential to produce 2000-2500 kg seed/ha and reach maturity at 90 days, while Dimtu and DRK could produce 2000-2100 kg seed per ha and reach maturity 75-90 days.

However, productivity in 2008 was not as high as expected that is 7.6 q<sup>4</sup>/ha below the average for DRK and 16 qt/ha for Nasser a better result with individual farmers was reported. This was mainly due to shortage of fertilizer in the district. Fitsum et. al.( 2009) reported that in other areas where fertilizer was provided on credit and farmers offer a down payment of 25% of the production/ha was much impressive (though they did not indicate by how much).

### 3.2 Alternative seed input supply system

A total of 10 qt of improved seeds was provided to 47 farmers in 2008. Of these in the end, 7qt was returned to the OoARD by 23 farmers, who had successfully multiplied the seed. The other 3 quintals was not returned because of crop failure (A variety called Kranscope was distributed to 7 farmers in Soyama and 2 in Debub Kege kebeles but failed to yield due to heavy rain in November 2008).

Generally At the end of the cropping season 39 farmers produced a total of 8331 kg seed of which 685 kg (8.2%) returned back as revolving seed to oARD, 886 kg (11.6%) was sold and eaten by hhs, 83 kg (1%) exchanged and given out as gift (sampled as food), 820 kg (9.8%) preserved as seed by farmers them selves, 5442 kg sold as seed (including the seed sold to the cooperative that is 4380kg) that is 65.3% of the total and the remaining 162 kg (2%) was exchanged as seed and made gift to other farmers. Of the total produced, however, 169 kg (2%) was not accounted or farmers were unable to recall utilization. Data collected by oARD and IPMS)

Table 1: Seed sold by out growers to Weynenata cooperative by kebele and variety

| Kebele               | No of farmers | Amount of seed collected (Kg) |       |     |       |       |
|----------------------|---------------|-------------------------------|-------|-----|-------|-------|
|                      |               | Nassir                        | Dimtu | DRK | Ibado | total |
| D. Kege <sup>5</sup> | 11            | 2216                          | 0     | 0   | 0     | 2216  |
| D. Mesenkela         | 5             | 343                           | 994   | 0   | 0     | 1337  |
| Gane                 | 2             | 0                             | 0     | 208 |       | 208   |
| Chume                | 2             | 0                             | 0     | 67  | 0     | 67    |
| Weyne nata           | 1             | 0                             | 0     | 51  | 0     | 51    |
| Hida Kality          | 1             | 283                           | 0     | 35  | 0     | 318   |
| Shoye                | 1             | 0                             | 0     | 0   | 183   | 183   |
| Soyama               | 7             | Crop failed due to heavy rain |       |     |       |       |

<sup>4</sup>Two other farmers lost their crop in this PA

|       |    |      |     |     |     |      |
|-------|----|------|-----|-----|-----|------|
| Total | 30 | 2842 | 994 | 361 | 183 | 4380 |
|-------|----|------|-----|-----|-----|------|

**Seed packaging:** The fact that the seeds were packed in small quantities and transparent containers made it affordable and easy for farmers to see the quality. In addition, these seeds also had high purity and germination levels. This is believed to encourage smallholder farmers to try new varieties and hence involve many farmers in seed and grain production. Data regarding number of buyers and amount sold was not included because sale was not complete for the season due to the current drought and delayed rain that hindered very many farmers from buying seed as expected in August and September.

Table 2: Summary of beans seed in different packs

| Type of beans          | Seed in Kg | Packets (gm) |      |      |
|------------------------|------------|--------------|------|------|
|                        |            | 200          | 500  | 1000 |
| DRK                    | 421        | 0            | 502  | 170  |
| Dimtu                  | 1209.2     | 116          | 752  | 810  |
| Nasser                 | 2748       | 240          | 1440 | 1980 |
| Total                  | 4378.2     | 356          | 2694 | 2960 |
| Total packets in units | 6010       |              |      |      |

NB: The difference in amount of seed that is bough in table 1 and beans packed in table two was due to seed cleaning that reduce the amount of Nasser, and seed gift received from Melkassa research centre in the case of Dimtu and DRK

### 3.3 Roles and responsibility of actors

| Actor                          | Responsibility  |
|--------------------------------|---|
| Farmer                         | <ul style="list-style-type: none"> <li>• Allocate 0.25 ha land for seed production</li> <li>• Produce quality seed</li> <li>• Participate in seed standardization and price setting</li> <li>• Agree to sell seed to the cooperative</li> </ul>   |
| District office of agriculture | <ul style="list-style-type: none"> <li>• Identify/target farmers</li> <li>• Train farmers</li> <li>• Facilitate seed distribution</li> <li>• Jointly follow up and monitor fields</li> <li>• Technical support to farmers</li> <li>• Participate seed quality and standardization</li> <li>• Monitor in seed packaging and facilitate seed promotion</li> </ul> |

|                        |  |
|------------------------|--|
|                        | <ul style="list-style-type: none"> <li>•</li> </ul>  |
| Awassa research center | <ul style="list-style-type: none"> <li>• Provide basic seed for multiplication</li> <li>• Technical backstopping for oARD</li> <li>• Organize planning meetings</li> <li>• Assist in designing seed packaging and production of promotional materials</li> <li>• Test seed germination and other quality testes (cetify seed quality)</li> </ul> |
| CIAT                   | <ul style="list-style-type: none"> <li>• Support national research by facilitating germ plasm exchange</li> <li>• Capacity building through transfer of knowledge and technical know how</li> <li>• Under take specialized studies</li> </ul>  |
| IPMS                   | <ul style="list-style-type: none"> <li>• Facilitate commodity development and marketing intervention</li> <li>• Play catalytic role bringing partners to work together</li> <li>• Facilitate knowledge sharing and skill transfer</li> <li>• Avail fund where money could not be solicited from financial institutions.</li> </ul>               |

#### **4. Analysis of the case – including challenges and lessons learned**

##### **4.1 Selection/performance of varieties**

Market orientation has brought about a new direction in the selection of varieties. Involvement of traders together with the traditional actors (farmers, research and extension) is the key to success. As market demand will change continuous involvement of all actors is required.

##### **4.2 Development of an alternative seed input supply system**

In principle, the seed production technology is very easily and quickly adopted by farmers due to demonstration of performance of the new variety and their impressive result as crop and compatibility with the local diet. It is not clear however if a farmer to farmer and/or a cooperative buying and selling of seeds can make a significant contribution to the supply of seeds for haricot bean varieties required by the market. Our experience however demonstrated that this initial farmer-based seed multiplication involves many stakeholders and is one of the many effective ways of increasing availability of improved haricot bean seed. As a matter of fact 5442 kg of the total that is 65% of the crop is retrieved as seed in 6010 packets demonstrates the possible contribution supporting production of marketable quality crop for the coming season. This was made possible due to linking of research the source of basic seed with extension and farmers seed producers. Making the link operational for the future will be number one priority for sustainability of system.

The packed seeds have clear information describing the type/variety name, germination test result (Awassa research certify germination and purity), seed amount required/ha and the



amount in the pack. Source of seed and certifying agencies are clearly indicated on the label. This is not new finding but has never been used in small packets of seed for farmers before.

#### **4.3 Partnership roles and responsibilities**

Building linkages in multi-actors partnership is time consuming and challenging. The strength of linkage and depth of partnership depends on the commitment and will of individuals and organizations. One great challenge has been building up common understanding between partners and delivering their end of bargain on time. This is more difficult when partners have multiple priorities and could not be held accountable for their commitment. This is particularly true with the public sector stakeholder that has technical capacity and grass root reach but over stretched with multiple priorities. However, IPMS believes that this partnership makes the extension service more efficient and effective and should be strengthened. As a catalyst, the project continuous its communication and awareness creation with clear understanding on the roles and responsibilities among the different stakeholders.

Linkages and partnership in this sort of development require trust and dedication. The effectiveness of the system depends upon the commitment and dedicated effort of all partners. The effectiveness of the system depends upon the commitment and dedication of each partner playing its role as agreed upon during the process. So far, linking farmers and extension with research has been effective due to the dedicated effort of IPMS on one side and SARI and CIAT on the other. This was also possible due to the favorable policy environment of government that encourages research institution support extension efforts.

So far the lead role has been played by IPMS and the research and to some extent the district office of agriculture. Khan (2006) has vividly put it that the leaders of the process could be sucked in to the roll of market players unless otherwise limit them selves to facilitation in identifying and exploring market opportunities, capacity building of clients and linking them with the market to stand as a business enterprise.

In our case the above roles are not yet fully materialized since we are at early ages of developing the business enterprise and the critical roll of facilitation not yet fully understood.,

Another important aspect is the attitude of the partners as shaped by 'environment'. Both farmers, OoARD and research staff are conditioned by the Food Security programs which operate in Dale Woreda by both government and NGOs. This results in a lack of business sense, and a dependency on free and/or subsidized inputs (including bean seeds). Free handouts and subsidies have roles in food insecure areas but clearly may have an under developing effect in the long term as they could not help to develop business service development (Khan 2006). Given the fact that food security programs were in operation while new commercially oriented systems were developed may have led to some partners not being all that committed. Involvement of NGOs in this effort to create a more business oriented environment may be necessary.

The cooperative handling the seed sale business had been selected by OoARD without prior consultation or announcement to other cooperatives who may have been interested to run the business. In addition, the cooperative had no previous experience in running input shop and has not been properly organized and primed to handle the business. This has been

particularly challenging during selling packed seeds. They lack experience and need support to implement marketing strategies such as running market on seed fairs and group sells for farmers which was run by the OoARD and facilitated by IPMS. The other best alternative could have been linkage with local private vendors who are large in number and run their business providing valuable service at every corner of the district. This link could have helped the cooperative to sell its product throughout the district with out opening its shop in every market. The group purchase facilitated by extension service has hidden costs covered. Therefore, the facilitators need to recognize this and capacitate the cooperative to run the seed enterprise as a business as well as relieve the extension service from input delivery. The public extension service quite a lot of time and needs to be spared for doing other activities like knowledge brokering.

## **5. Good/best practices and lessons learned and recommendation**

- The seed system for Dale was designed to test an alternative beans seed system involving multiple actors (including farmers groups, extension service providers, financial institution farmers' cooperative play together with local research institution (Awassa Research Centre) and international research organizations (CIAT & IPMS/ILRI)) to produce or multiply seed so that many more farmers benefit as grain growers. The new experience of involving all these actors and linking research and extension with seed producer farmers had been effective in producing high quality seed in relatively large amount at a reasonable price.
- On the other hand organizing the alternative beans seed system need to be established on strong sense of business enterprise development and identifying and agreeing on the roles and responsibilities of partners and through time linking the farmers and cooperative to run the business with little support from facilitators which in our case have not been achieved yet.
- In addition to the above, in market oriented agricultural development, prior to decision making on product development and technology promotion one need to take in to consideration the opinion of the traders along the chain at all major marketing nodes is very important.
- In the absence of the private sector bringing in primary cooperative in to the new link demonstrates an alternative and effective means of availing quality seed to thousands of farmers. Involving the cooperative had enabled large quantity of seed to be stored safely for the next season which under the small holder condition is impossible to contemplate due to pests.
- Packaging and labeling of seed had been an important value addition and traceability that build confidence of buyers. Seed has been graded during purchase and further processing in terms of cleaning, fumigating and storing had been carried out by the cooperative under the supervision of district office of agriculture. The packed seeds have clear information describing the type/variety name, germination test result (germination and purity test was conducted by Awassa research centre), amount

required/ha and the amount in the pack. Source of seed and certifying agencies are clearly indicated on the label. This is not new finding but has never been used in small packets of seed for farmers before. With information clearly indicated, farmers bought the seed with little or no hesitation.

- The link created through this process mainly the research-extension farmers' link has been effective in delivering the **basic seed** that is the basis for production of quality semi-certified seed at a reasonable cost. *This system, however, will be sustainable if partners – mainly the extension and research colleagues – continue the commitment to work together with farmers and institutionalize the partnership on clear objective. The seed business will only be sustainable if it is run on a serious business relationship or linkage that bring in satisfactory remuneration to farmers and profit for the cooperative.*

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## References

- A. Asfaw. 2007. Farmers-Based Seed Production: Experience of Southern Agricultural Research Institute in Ethiopia. *Seed Info no 32. ICARDA, Aleppo, Syria pp71-20.*
- A.Asfaw, B. Degu, B.Dagne, B. Haile, J. C. Rubyogo, K. Yilma & Y. Sahel. 2005. Rapid assessment of beans seed system of Dale & Alaba woreda
- A.Asfaw. A. Tenaye & E. Gete. 2008. Seed Relief Intervention & Resilience of Local Seed System under stress: the case of Humbo Woreda in Southern Ethiopia. *Seed Info no 34. ICARDA, Aleppo, Syria pp12-18.*
- CSA 2004. Agricultural Sample Survey 2003/4. Report on farm management practices. Private peasant holding, Meher season. Statistical Bulletin no 35, Addis Ababa.
- D. G. Kahan. Business Service Support of Farm Enterprise Development: a review of relevant experiences. Agricultural Management, Marketing and Financial Service (AGSF) Agricultural Support System Division. Food and Agriculture Organization of the United Nations. Rome, 2006
- J C. Rubyogo: Report on Rapid Assessment of beans seed system in IPMS Learning Sites of Dale and Alaba, 2005.

