

Annex 1 assessment of knowledge gaps and capturing/synthesizing of knowledge in the PLWs

The following knowledge gaps were identified by the project staff/partners in the ePLWs

Atsbi PLW:

- Need for additional knowledge inputs were perceived in extension methods, market information gathering and dissemination, and application of commodity value chain concepts to extension.

Bure PLW:

Commodity specific knowledge gaps were reported in the following areas:

Bread wheat

- Availability of alternative bread wheat varieties.
- Proper application and selection of accessories on weed control sprays
- Lack of adequate recognition of the effect on bread quality when bread wheat is trashed on the ground with oxen.
- Long term impact of crop residue removal on nutrient recycling dynamics.

Faba bean

- Availability of improved faba bean varieties
- Appreciation of varieties preferred for export market.
- Lack of analytical skills to determine least cost options for fertilizer application – especially between inorganic fertilizer for faba bean production and bio-fertilizer alternatives.
- Lack of awareness about export market preference for large bean-size varieties.

Tropical fruit crops (Avocado, Banana and Papaya)

- Lack of analytical skills to determine best land use. For example production of high value fruit crops instead of cereal crops.
- Lack of awareness about advantages of using vegetatively propagated planting material to produce predictable fruit quality and yield. This lack of awareness often results in farmers planting coffee and fruit crops on their irrigable lands using seed of often unknown quality as planting material.
- Lack of awareness about tree management practices such as pruning, sucker management, fertilization and irrigation resulting in significantly reduced productivity.

Fattening (cattle and sheep)

- Lack of awareness about proper backyard forage development scheme.
- Lack of awareness about urea treatment of crop residues to improve nutritional value.

Apiculture

- Sole utilization of migrating bee colonies caught in the forest area to increase bee colonies since farmers have limited knowledge on queen rearing and colony splitting.

Dairy

- Lack of awareness on the impact of proper dairy cow housing and using urea treated crop residue as feed on milk productivity.

Coffee

- Limited knowledge about coffee diseases and pests management. For example coffee stem wilt disease
- Limited skills in seed production and preparation process.

Dale PLW:

Haricot beans, Soya beans, and Pineapple

- Limited knowledge about appropriate agronomic practices including pest control & disease prevention and/or management and post harvest handling of the crops which hinders the improvement of both quality and quantity of production.

Goma PLW:

- Limited knowledge about improved apiculture development management skills such as queen rearing, harvesting, extracting, etc.

Alamata PLW:

- Beekeeping resource underutilized because of lack of properly trained experts in the Woreda that can educate farmers and DA on better bee keeping methods.
- Lack of knowledge on proper handling or management of invasive weeds (Prosopis and Parthenium) which severely hinder commodity development.
- Lack of adequate knowledge on milk collection and handling as well as proper marketing skills used to result on hygienic problem and easily spoilt milk as farmers try to sell milk left over from their household consumption to hotels in the area.

Miesso

- No practical exposure on large scale development of the production and processing of Sesame.
- Limited knowledge and skills on screening or getting access to less shattering Sesame varieties and on ways of procuring such materials and varieties.
- Lack of information on how to separate seeds of superior quality from those of inferior ones
- Lack of practical experiences on small scale and yet sustainable poultry production system
- Lack of appropriate skills in negotiation among successive stages of producers and traders beginning in local farmers and traders all the way to enterprises dealing at international levels.
- Lack of proper awareness of methods for targeting meet animal production according to market needs in quality and type of meet (body part) needed
- Lack of awareness of the intricacies as well as potential opportunities of organic meat and milk production from the pastoralist system of animal production.
- Lack of awareness (by officials and the community) of the success stories of paravet activities both in terms of their complementarities in veterinary service delivery system and financial viability in pastoral areas of Africa, Asia and Europe
- Lack of comprehensive skills and knowledge on aspects of information tracking and processing

- Absence of any knowledge-based approach in dealing with business people or lack of moral responsibility by the business people to the efforts of the marginalized farmers and pastoralists
 - Lack of pertinent researched and professionally prepared assessment on the financial/credit performances of various small-scale financial institutions such as microfinance, credit and saving service providers, cooperative banks and NGO disbursed small scale credit/grant services
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Project staff and partners in the PLWs also captured/synthesized knowledge – some in relation to identified knowledge gaps, other fresh knowledge which may be used in the design of interventions.

Bure PLW:

- To alleviate potential risks of mono-cropping IPMS introduced six improved bread wheat varieties and demonstrated to wheat growers by planting these in three farmers' fields. According to evaluations made at booting stage, two new varieties were selected by farmers and experts as suitable for the area.
- To alleviate the problem of proper and safe utilization pesticides, the project prepared training for DAs, farmers, sprayer owners and agro-chemical traders on proper handling and use of agro-chemicals. Photos indicating improper handling and application of agro-chemicals taken at Bure PLW are given below.
- Identification and promotion of a locally modified plough tool that is pulled by only one ox instead of the two oxen plough tool that has been used traditionally has helped farmers to be more efficient and reduces cost of oxen for farmers.
- Identification and promotion of a locally modified plough tool with three digging prongs instead of the traditional two digging prong increases the efficiency of land preparation.
- To update the staff of OoARD with available wheat production technologies a document prepared by wheat researchers from ARARI is made available in the Woreda Knowledge Center in both hardcopy and softcopy versions.
- IPMS project summarized the last five years market prices of bread wheat and faba beans in Bure markets. Trend analysis of bread wheat market price and typical months for lowest and highest market prices were shared with local farmers.
- To update the staff of OoARD with available faba bean production technologies a document prepared by faba bean researchers from ARARI is placed in the Woreda Knowledge Center in both hardcopy and softcopy version. This document will also be distributed to selected FTC together with the computers purchased for the FTCs.
- IPMS project facilitated the formation of farmer groups for fruit tree multiplication and organized training on grafting techniques to farmers and development agents. To assist in this activity the project collected fruit tree propagation manuals prepared in Amharic by Forest, Fruit and Fodder for Farm Families Project. Copies of this manual are kept in the Woreda Knowledge Center as reference material for the staff of OoARD.

- Training materials on dairy cow feed preparation, dairy cow management and milk handling and processing is prepared and a copy was given to BureDamot dairy cooperative. In addition both hardcopy and softcopy version of the training materials are kept in the WKC.
- Leaflet on dairy cow management and milk handling and processing is under preparation.
- Market price of milk and milk products are collected weekly and posted on the notice board every Monday.
- Books and manuals on beekeeping were downloaded from different websites and kept in the WKC to be used as reference materials for OoARD staff.
- The project assists in the collection and distribution of honey market prices in the area every week.
- Training materials are prepared and distributed to cattle fattening farmers group. In addition leaflets are under preparation.

Atsbi PLW

- Knowledge on forage development under irrigation, bottomlands and degraded sloppy lands and farmlands was shared during field days and in-situ discussions
- Several new (to the area) forage varieties were introduced and demonstrated in local FTCs.
- Woreda OoARD with the support of IPMS developed a proposal to collect better market information within the Woreda's four market places.
- Tigray Agricultural Marketing Promotion Agency (TAMPA) will also collect market information from four nearby market places and weekly exchange of market information between OoARD and TAMPA has been proposed to make broader and deeper market information available to potential users.

Alamata PLW

- An expert from Alamata OoARD and later on seven farmers from the Woreda were sent to Atsbi PLW to get practical experience on bee keeping. Out of the seven farmers two of them started operation using modern beehives and kept three bee colonies. In October 2006 these farmers harvested encouraging volume of honey and became very good extension agents in their PAs. From June to August 2007 about 54 farmers owned about 67 bee colonies and production is expected to increase in October 2007 harvest.
- IPMS and OoARD provided training on milk handling and collection to 20 founding members of a dairy cooperative organized by IPMS and OoARD.

Goma PLW

- Best practice processes and knowledge in mobilizing the community for improved coffee drying intervention were noted. By putting these processes in action, various improved approaches and practices are expected to immerge at the completion of the intervention cycle. Achievements so far include the realization that improved coffee sun-drying practice intervention demands the involvement of important public and non-public offices functional in the Woreda and which have influence on improved coffee sun-drying intervention. Goma IPMS office

identified Goma woreda Office of Agriculture (OoARD), Oromia Credit and Saving Share Company (OCSSCo) Goma branch, Women's Affairs Office and cooperatives, traders, input suppliers, and other organizations to be dominant role players. Even though these institutions were functioning in the Woreda with more or less similar objectives they had never worked together and IPMS Goma office organized a meeting to discuss possible ways of working together to synergize their efforts. This particular meeting was the first of its kind in Goma Woreda to bring these offices together over common issues and it brought to light many misunderstandings, wrong and destructive concepts among the offices, and highlighted gaps to be bridged to bring these offices together. After a thorough discussion, consensus was achieved between role players to work jointly.

- Discussion was made with a voluntary apiculture shop owner in developing business plan to be delivered to OCSSCo Goma branch to facilitate financing and this has resulted in credit being released for the purchase the apiculture-related inventory with potential benefit for bee keepers.
- A one-day workshop was held to share the knowledge gained in improved coffee sun-drying intervention. All technical staff involved in the process were shown the pros and cons of the intervention and devised strategies to monitor the next stage of the intervention, which is monitoring quality while farmers are drying coffee on raised bed. The participants decided to have the same review meeting after a month which will coincide with at least one round of drying.

Miesso

- Introduced/promoted innovative feed resource management and use such as extensive cultivation of 'Sweet Sorghum' or 'Ala' or 'Abdellota' variety and sweet potato cultivation with the intention of addressing both the human and livestock feed requirement.
- Promoted extensive practice of one year long dual purpose cattle fattening practices/plowing and fattening targeted operation by farmers.
- Promoted use of supplement livestock feeds such as grain flour, sugar, early maturing grains to those animals targeted for market.
- Pastoralists and Agro-pastoralists deliberate effort of 'setting aside grazing lands as enclosure to serve them as fodder bank to their animals in the critical dry season.
- Integration of 'rural area grain mill operation' with small ruminant fattening.
- Extensive use of traditional herbal medicines to manage various ill health on animals, human and crops/ already reported to IPMS/.
- Use of shade and feeding troughs as improvement strategy of livestock productivity.
- Proper identification of 'Milk and Meat type' goats. Milk type goats are called 'MAYO' and Meat type goats are called 'BAKKU'
- Communities' efforts of maintaining best 'type' of male animal – especially Billy goat or buck as breeding strategy.
- Deliberate effort in supplementing minerals source feeds to livestock either by supplementing table salt or taking to the place where there are natural deposits of 'Mineral Licks'

- Own initiated 'Women Milk Marketing Group' to promote to their animals the marketing of fluid milk. This practice enhances livestock productivity, saves time in marketing milk, strengthens social ties, and forges mutual support mechanisms among themselves.
- Encouraged the growing market responsiveness of farmers and pastoralists in the livestock sector through flexible but information-based action. For example the buying/selling of different sized (small, medium, large) camels according to the demand. Goat or camel buying and selling in response to market demand. Switching between buying or selling business among various cattle types. For example young male animals September to October, Heifers in June and July and plowing oxen in February and March and also fattened oxen in December to January and April.
- Training of the pastoralists and agro pastoralists as Para-vets has promoted efficient veterinary service delivery system to those who are always marginalized and not properly served by the public service delivering organizations.
- MUM supplements to lactating cows have been effective – technically, financially and socially.
- Seasonal fluid milk supply balance and price trend at Meisso market.
- Proper timing / December to April /of sorghum stover and maize stalks urea treatments and its overwhelming benefits in improving livestock productivity.
- Impacts of MUB supplement in milk yield increment, weight gain, and enhancing conception rate on cows and nanny goats.
- Peak time in the demands of concentrates and MUB supplements are well established
- Established facts on the periods in which most calving of cattle occurs
- Development of local level seed supply system particularly to 'Local Sesame Variety'
- Some PA's are known to be very specialized in Sesame production
- Export type haricot beans like Awash-1 and Awash melkasa have been seen to perform good under farmers condition as high as 16 quintals /ha
- Growing trends of backyard hot pepper cultivation as an income sources to the households.
- Farmers can afford to do their best in the horticultural input supply system / mango and avocado root stock and grafted seedling, Papaya seedlings, guava, onion seed, local hot pepper seed and seedlings/so long as properly facilitated and enabled to seat on the driving seat.
- Onion Farmers who use irrigation and sticks to the periods from August to February could get the peak marketing season and benefit a lot.
- Onion seed production is made possible when the process starts from early October and matches with the coldest season /October and November / of the year.
- Some innovative farmers who grows local hot pepper on plots less than 50 m² could make over ETB 3000 by producing about 200kg dry pepper. The sale of green hot pepper itself could fetch as high as ETB 20 per week consistently for over 6 months time. As a result, women take prime step toward their financial

empowerment and this way they benefited by fulfilling various minor but challenging day to day HH level expenses.

- The private input supply system like water pump hires /100-130 per watering regime/ to irrigation users enhanced farmers capacity to boost their production and enables HH to better cope in their day to day life challenges. In short Water pump hire in the rural areas of Meisso witnessed the effectiveness of private input supply system as an alternative agricultural service providing channels.
- One Model farmer who have planted 120 papaya fruit plants in his small plot /through his own innovative initiatives/ has managed to produce 30 fruits per plant and all in all about 3600 papaya fruits and generated around ETB 7200 per 120 papaya fruit plants.
- One innovative farmer has been producing 2-4 kg of Carrot seed/having a monetary equivalent value of 480- 960 birr/ by setting aside some of the carrot plants intact. This idea emanated from his repeated failure on carrot cultivation by using shop purchased carrot seed.
- Several farmers are producing local onion bulb ranging between 5- 47 quintals per their plot in recent times using rain fed water resource alone.
- One innovative farmer has managed to produce about 123 Pumpkin Fruits from 5 plants spread in less than 15 m² of spare land. Each pumpkin could fetch over 10 birr and this way he is in a position to obtain 1230 birr by disposing these cheap looking local vegetable resources. He has already probed the market by selling 35 pumpkins for ETB 350 at Meisso Local market.
- Use of donkeys as a draft animals/plowing animals/
- Planting over 100 to 500 Castor bean plant in their backyard as source of household incomes.
- Soil bund establishment in their farm yard to stabilize the soil and retain moisture
- Growing trends of 'Manure application in their farm plots as a recipe to raise the productivity of their farmlands.
- Pond construction by own initiative to use the water many purpose- horticulture development, keep production through out the year and sale water and generate income.
- Effective utilization of small amount of funds owned by some farmer groups. It is like this - 52 farmers formed cooperative to do cattle marketing business but they have managed to pool ETB 8000 only. So they came up with an innovative idea- that is letting members use the cash turn by turn and borrowed ETB 8000 to the first 8 members each ETB 1000 to use it for 3 consecutive months provided that they pay ETB 25 per month as an interest premium and at the end of the 3 months the Cooperative has accrued ETB 600/75birrx8/. It continued this way for 19 months and as a result all 52 members /and 4 more members reached to use the cash for the second time/have made use of the cash to do their own business and built up their own assets in the form of 1-2 cattle, the cooperative's capital rose to ETB 13025/an increase by63%/, members become more experienced, experienced, developed self esteem and empowered themselves in just 19 months of their establishment/ September 2007/. Now business is on hot line with more skill and confidence and escorting all at a time.

- Some youth livestock market groups/with 16 members/ have managed to perform to their top caliber and regenerated ETB 1500 initial business capital /person to ETB 7000-10000 birr in about 1 year time as their net profit/ April 2006 to March 2007/.