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Current Status of Agricultural Extension Services for Market Oriented Agricultural Development in Ethiopia: Results from A Household Baseline Survey

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Abstract

In Ethiopia, the public extension service has a key role in the introduction and promotion of value chain development interventions to transform the rural sector. The Livestock and Irrigation Value Chains for Ethiopian Smallholders (LIVES) project conducted a household baseline survey to assess the current status of the public extension service from a market oriented development perspective. A total of 2502 (2025 male- and 477 female-headed households), randomly selected from LIVES intervention peasant associations (PAs), were interviewed. Data were analysed using descriptive analysis. The survey results show that, while extension services in Ethiopia have recently focused on the production of high value commodities, advice, training and linkage facilitation support on market information, storage, processing and marketing of value chain commodities is not generally strong. The use of innovative extension service delivery methods and tools for market oriented agricultural development has not yet been widely used in Ethiopia.

Key words: market oriented extension, value chain development

Introduction

Extension programs in Ethiopia have traditionally focused on the promotion of production technologies and agricultural inputs as the driving force for increasing agricultural production and productivity, with inadequate attention to market support services (Kassa, 2002; Spielman *et al.*, 2011; Gebrehiwot *et al.*, 2012). Since the focus has been on food security and natural resource management, agricultural extension packages have been production-oriented with less focus on postharvest management and output processing and marketing systems. Input supply and output marketing systems have not been well developed. There have been limited private input suppliers who provide customized inputs and services to meet the diverse needs of producers to engage in market oriented agricultural development. The human and organizational capacity of producer groups to facilitate input and output marketing systems has also been limited.

A value chain approach to agricultural development looks at how market opportunities can be developed and linked with producers (Woodhill *et al.*, 2011). Market oriented agricultural development requires diverse services and plurality of service providers at all levels. Examples of marketing and supply chain services are documented, though not widespread, as the capacity at the local level to bring these examples to scale is limited. Market orientation needs more service providers with capacities to match local producer initiatives and market opportunities and to access support services (Woodhill *et al.*, 2011).

The Livestock and Irrigation Value Chains for Ethiopian Smallholders (LIVES) project aims to support the Government of Ethiopia in transforming the smallholder agricultural sector. As agriculture is becoming more market oriented, demand for services is changing. The public extension service has a key role to play in the commercialization of the smallholder sector. Development agents need a range of technical and facilitation skills to provide services to producers, who need not only production advice but also a range of information and knowledge support, such as input supply, post-harvest practices, output processing and market linkages.

The LIVES project conducted a household baseline survey to assess the current status of the public extension service from a value chain perspective in support of market oriented agricultural development. The assessment was made by asking producers to evaluate the quality of the services provided by development agents for a range of value chain commodities focusing on three key functions of extension: information and knowledge provision, training, and linkage facilitation support.

The paper is aimed at:

- Evaluating if the delivery of extension services to producers differs by specific commodities and value chain components,
- Assessing the pattern of access to and utilization of extension services by male- and female-headed households, and
- Reviewing the difficulties that male and female producers face in accessing extension services on production and marketing of specific commodities.

Methodology

The paper is based on a household baseline survey conducted in 10 zones and 31 districts of Amhara, Oromia, Tigray and SNNP regions for the 2012/13 production season. The survey employed a structured questionnaire with pre-coded questions. A total of 2502 (2025 male- and 477 female-headed households), selected using stratified random sampling method from the LIVES intervention *kebeles*, were interviewed. Results are based on descriptive analysis of the survey data.

Results and Discussion

Access to Information and Knowledge on Production of Specific Commodities

We find that extension service delivery differs between the production of food crops and high value commodities. Due to previous focus on food security objectives, the number of producers who received information and knowledge is much higher for field crops and livestock production. However, the percentage of producers who received production advice is higher for horticultural crops and apiculture, indicating a shift of focus on high value commodities. As Table 1 shows, while 79% of the field

crops producers and an average 67% of the livestock producers received production information and knowledge, about twice the number of vegetable producers, about four times of the number of fruit producers, and about three times of the number of apiculture producers received information and knowledge on production of the respective commodities.

The results show that, because of the push to expand high value commodity production, the extension service is reaching out too much more potential producers than those who currently produce horticultural crops and apiculture. This is consistent with the efforts of the Government to expand high value commodity production to promote market-oriented agricultural development.

Access to Information and Knowledge on Input Supply Systems

We find that the pattern of information and knowledge provision on input supply system is consistent with that of the production of specific commodities. Although the number of producers who received knowledge and information on input supply is higher for field crops and livestock production, a higher percentage of horticultural crops and apiculture producers received knowledge and information on input supply system. Table 2 shows that about twice of the apiculture producers and three times of the horticultural crops producers received information and knowledge on input supply system. The table also shows that 75% of the field crops producers and an average 61% of the livestock producers received information and knowledge support on input supply system.

The results show that the public extension service is pushing on the production of horticultural crops and apiculture. More number of horticultural crops and apiculture producers received information and knowledge on input supply system than are the actual producers of these commodities.

Access to Market Information on Specific Commodities

Access to market information is key for market oriented agricultural development. Producers need to expand their understanding of markets and market opportunities if they are to achieve market success.

We find that only smaller number of producers have received market information as compared to production and input supply systems on the specific commodities. Table 3 shows that 59% of the field crops producers and about twice of the vegetable and apiculture producers, and three times of the fruit producers received market information. The table also shows that an average 50% of the livestock commodity producers received market information.

The results show that access to advice on market information is crucial for producers. It seems that development agents provided production and input supply advice before having producers decided what to produce based on market demands. Producers should know what the market demands to make decisions on what to produce and what agricultural inputs to use rather than relying on markets to absorb what they produce.

Access to Information and Knowledge by Gender of Household Head on Production of Specific Commodities

Access to production advice on specific commodities did not significantly differ by gender of household heads. Development agents contacted both male- and female-headed households. Although the number of male- and female-headed households who received production advice is much higher for field crops production, the percentage of male and female-headed households who received production advice is higher for horticultural crops and apiculture. As Table 4 shows, about twice of the male and female-headed households who produce vegetables, about four times and six times of male and female-headed households who produce fruits respectively, and about three times and seven times of male and female-headed households who produce apiculture respectively received production advice. The result shows that the proportion of female-headed households who received production advice on fruit and apiculture production is higher than that of male-headed households, indicating that female-headed households are increasingly engaged in the production of high value commodities.

Table 4 also shows that although the percentage of female-headed households who received production advice on large and small ruminants is higher, more number of female-headed households received production advice on poultry and dairy production. This indicates that poultry and dairy seem to be women-friendly commodities to participate in markets. Development agents can link women groups with support structures and networks to build their social capital and business confidence to participate in markets.

Access to Information and Knowledge on Irrigation Use

The public extension service gives attention to the production of high value commodities. Irrigation is pursued as a key means to promoting market oriented agriculture development. As Table 5 shows, while the number of horticultural crops producers is small, about twice of the vegetable producers and three times of the fruit producers received information and knowledge on irrigation use.

The attention given to high value commodities is evidenced in the number of development agents deployed. Additional development agents are posted in areas with good irrigation potential to assist producers and irrigator groups with management of irrigation systems. Efforts are also made to increase the generalist and specialist knowledge and skills of development agents to improve irrigation extension service delivery.

Timeliness of Information and Knowledge Support on Specific Commodities

Producers seem to be satisfied with the timeliness of the information and knowledge support provided on specific commodities. Table 6 shows that on average 70% of the producers who received information and knowledge on specific commodities reported the timeliness of the advice provided as good.

Access to Training on Production of Specific Commodities

As agriculture commercializes, producers need specialized advice on production management, post-harvest management, and processing and marketing systems to earn better incomes from market participation. The skills of producers and the decisions they make about their farming operations are crucial for market-oriented agricultural development. Training is necessary for producers and their farm families to improve their production and marketing management skills.

Table 7 shows that the number of producers who received training on fruits and apiculture is higher than the actual producers of these commodities. About the same number of the vegetable producers received training. The result shows that fruit and apiculture training seem to target potential producers who are not currently producing these commodities. As mentioned earlier, this is due to the push of the extension service on production of high value commodities. To introduce improved fruit and apiculture production practices, study tours and coaching may be helpful for producers to gain some level of experience before training programs are implemented.

Only 27%, 31%, 29% and 35% of the producers of dairy, large ruminants, small ruminants and poultry, respectively, received training for the specific commodities, indicating the crop bias of the extension service. Given the role of the livestock sector in market oriented agricultural development, it is important that the extension service gives better attention to training on livestock production and marketing.

Access to Training on Storage of Specific Commodities

Although the number of field crops producers who received storage training is higher than those of horticultural crops and apiculture, the percentage of horticultural crops and apiculture producers who received storage training is higher (Table 8). While

only 26% of the field crops producers have received training on storage of field crops, 90%, 70% and 41% of fruit, apiculture and vegetable producers have received training on storage of these commodities respectively.

Despite the field crop bias of the extension service, it is interesting to note that horticultural crops and apiculture received attention for training on storage issues. The result shows the focus given to irrigated agriculture and apiculture in the transformation of the smallholder sector.

Access to Training on Processing of Specific Commodities

Training of producers on value addition processing of commodities is important to earn better incomes from market opportunities. Table 9 shows that 88%, 78% and 43% of fruit, apiculture and vegetable producers received training on processing of these commodities respectively. Only 20% and 15% of poultry and dairy producers received training on processing of these commodities respectively. The result shows the focus given to processing of irrigated commodity products, probably due to the perishability nature of the commodities. Given the role of the livestock sector in the commercialization of the smallholder sector, it is important to give attention to training of producers in value addition processing of livestock products.

Access to Training on Output Marketing of Specific Commodities

In Ethiopia, irrigation and livestock play key role to promote market oriented agricultural development. Irrigation has a key role in diversifying cropping patterns and promoting a shift to the production of high value commodities. However, as agriculture diversifies and commercializes, the current market system will face challenges to accommodate trends in irrigation and livestock development.

As Table 10 shows output marketing seems to be a challenge in the production of irrigated and livestock commodities. Even for field crops, only 22% of the producers received training on output marketing. Even though 90% of the fruit producers received training on output marketing, the number of actual producers who received training on output marketing is very small. The result implies that output marketing will definitely be a challenge in the expansion of horticultural crops. Only 41% of the vegetable producers have received training on output marketing.

Table 10 also shows that output marketing is a challenge for livestock commodities. Only 22%, 18%, 16% and 13% of the small ruminant, poultry, large ruminant, and dairy producers have received output marketing respectively. On average 17% of the livestock producers received training on output marketing of livestock commodities.

Application of Training on Production of Specific Commodities

We find that training application on the production of livestock commodities is lower than that of horticultural and field crops production. Table 11 shows that 81% of the field crop producers who received training indicated that they have applied the skills and knowledge gained. Averagely 59% of the horticultural crops producers indicated that they have applied the trained skills and knowledge. Only an average 34% of the livestock producers indicated that they have applied the skills and knowledge gained. This may be due to the experience of producers with crop commodities as compared to livestock commodities. Training on improved livestock commodities may require technologies and inputs for demonstration and practical purposes. It may also require technical support, access to technologies and credit services, and market incentives for producers to apply trained knowledge and skills.

Access to Training on Irrigation Use

Training on irrigation use seems to be getting attention in the public extension service. Table 12 shows that 75% of the vegetable producers and about twice of the fruit producers received training on irrigation use. The result is consistent with the focus given to irrigated agriculture in the Growth and Transformation Plan (GTP) of the Government of Ethiopia. The GTP gives emphasis to the production of high value crop commodities by taking into account the situation of specific geographic areas, market availability, and infrastructure development. Training is crucial to develop on-farm irrigation water and crop management capacity of producers and irrigator groups.

Access to Linkage Facilitation Support

Market oriented agricultural development requires facilitating linkages of producers with input supply systems, credit services, and processing and output marketing systems (Shepherd, 2007). Development agents have a key role to play in facilitating linkages between producer groups and input supply systems, credit services and processing and marketing actors (Gebremedhin, Hoekstra and Tegegne, 2006).

We find that the linkage facilitation function of the extension service is generally weak. Table 13 shows that only 47%, 33% and 28% of the fruit, field crop and vegetable producers received linkage facilitation support on input supply system respectively. Only 9% of the apiculture producers reported having received input supply linkage facilitation support. Below 5% of the livestock producers received linkage facilitation support on input supply system.

Tables 14, 15 and 16 show the same pattern of linkage facilitation support on credit and output processing and marketing services. Fruits, field crops and vegetables tend to receive attention in the facilitation of linkages between producers and credit services and output processing and marketing systems. Below 5% of the livestock producers received linkage facilitation support on credit services and processing and marketing systems.

The results show that the linkage facilitation function of the public extension service is not very strong, probably due to the production technology bias of the extension service. It is important that the public extension service expands its functions to include market linkage facilitation through producer collective action. Collective action by producers can be very helpful where high value commodity production is involved to facilitate linkages with input supply and processing and marketing systems. It is efficient for the extension service to work with organized producers to facilitate linkages with public and private input supply, credit and output processing and marketing systems (Degnet and Mekbib, 2013). Improving the ability of producers to acquire and use market information is an important part of establishing good linkages.

Linkage Facilitation Support on Repair and Maintenance of Irrigation Equipment

While irrigation has a key role in the diversification of cropping patterns and promotion of market oriented agricultural development, there are also challenges for producers to benefit from irrigated agriculture. As Table 17 shows, producers have limited linkages with repair and maintenance service providers for irrigation equipment. This may be due to the fact that not many public and private irrigated agriculture input and service providers currently exist. The current input and service supply system is also weak to support irrigated commodity producers, implying the need for development of local service markets for the supply and repair of irrigation equipment. Adequate and affordable supply of seedlings and planting materials is required to increase the productive capacity of horticulture producers.

Usefulness of Linkage Facilitation Support on Specific Commodities

Although the linkage facilitation role of development agents is weak, producers who received linkage facilitation support seem to be satisfied with the usefulness of the support provided on the specific commodities. As Table 18 shows 75% of the fruit and apiculture producers, 72% of the poultry producers, and 71% of the dairy producers evaluated the linkage facilitation support provided as good. Whereas only 46% of the small ruminant producers evaluated the linkage facilitation support provided as good.

Linkage facilitation can involve a whole range of activities (Shepherd, 2007). It is important that development agents focus on development of long-term business relationships between producer groups, input supply and output marketing systems rather than providing support for ad hoc sales. The key role for development agents is to develop the organizational and management capacity of producer groups so that they link with large scale input supply, processing, and marketing actors.

Conclusion and Recommendations

Extension service delivery differs by production of food crops and high value commodities. Although high number of field crops and livestock producers received production advice, due to previous focus on food security objectives, the percentage of producers who received production advice on horticultural crops and apiculture is much higher, indicating the shift of focus on production of high value commodities. The extension service gives attention to irrigated agriculture and apiculture as a means to promoting market-oriented agricultural development, which is a reflection of government policy direction.

As agriculture diversifies and commercializes, output marketing seems to be a challenge for horticultural crops and livestock commodities. Smaller number of producers received market information as compared to production and input supply systems on the specific commodities. This may suggest that development agents provided production and input supply advice before having producers decided what to produce based on market demands.

Access to extension service does not significantly differ by the gender of the household head. Development agents contacted both male- and female-headed households. The survey result shows that horticultural crops, apiculture, poultry and dairy seem to be women-friendly commodities to participate in markets. Couples training and household coaching can be used to increase the knowledge, skills and confidence of women in male-headed households to actively engage in the production and marketing of high value commodities.

Fruit and apiculture training seems to target potential producers who are not currently producing these commodities. This can influence training application. Training alone cannot be effective in expanding production of high value commodities. It has to be complemented with study tours, demonstrations, coaching, and linkage facilitation activities. Study tours and mentoring can be effective to support producers who introduce new planting materials and management practices. Once producers have some level of knowledge and skills with newly introduced materials through demonstration and mentoring support, training can be used to transmit specialized knowledge and skills.

Given the role of the livestock sector in market oriented agriculture development, it is important that the extension service gives better attention to training on livestock commodities.

Although the linkage facilitation function of the extension service is weak, producers seem to be satisfied with the linkage support provided. It is important that the extension service expands its functions to include market linkage facilitation through producer collective action.

Farmer training for market oriented agricultural development requires specialized knowledge and facilitation skills of development agents and differentiated training offerings to meet market requirements of farm production and marketing systems. Market oriented farmer training content differs from production oriented training. This requires a change of orientation and management of training activities regarding training content, training approach, and training transfer strategies.

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Appendices: Tables**Table 1:** Percent of producers contacted on production of specific commodities

| Commodity | Number of producers who produce the commodity | Number of producers who received information and knowledge | Percent of producers who received information and knowledge |
|------------------|---|--|---|
| Field crops | 2381 | 1871 | 79 |
| Vegetables | 660 | 1248 | 189 |
| Fruits | 255 | 995 | 390 |
| Dairy | 1845 | 1131 | 61 |
| Cattle fattening | 1725 | 1109 | 64 |
| Small ruminant | 1325 | 897 | 68 |
| Apiculture | 340 | 967 | 284 |
| Poultry | 1468 | 1078 | 73 |

Table 2: Percent of producers who received inputs advice on specific commodities

| Commodity | Number of producers who produce the commodity | Number of producers who received inputs advice | Percent of producers who received inputs advice |
|------------------|---|--|---|
| Field crops | 2381 | 1777 | 75 |
| Vegetables | 660 | 1132 | 172 |
| Fruits | 255 | 933 | 366 |
| Dairy | 1845 | 1021 | 55 |
| Cattle fattening | 1725 | 1007 | 58 |
| Small ruminant | 1325 | 828 | 62 |
| Apiculture | 340 | 877 | 258 |
| Poultry | 1468 | 984 | 67 |

Table 3: Percent of producers who received market information on specific commodities

| Commodity | Number of producers who produce the | Number of producers who received market | Percent of producers who received market information |
|------------------|-------------------------------------|---|--|
| Field crops | 2381 | 1404 | 59 |
| Vegetables | 660 | 959 | 145 |
| Fruits | 255 | 803 | 315 |
| Dairy | 1845 | 851 | 46 |
| Cattle fattening | 1725 | 853 | 49 |
| Small ruminant | 1325 | 742 | 56 |
| Apiculture | 340 | 768 | 226 |
| Poultry | 1468 | 867 | 59 |

Table 4: Percent of male- and female-headed households contacted on production of specific commodities

| Commodity | Number of male- and female-headed households who produce the commodity | Number of male- and female-headed households contacted | Percent of male- and female-headed households contacted |
|------------------|--|--|---|
| Field crops | MHH = 1936 | MHH = 1599 | 83 |
| | FHH = 445 | FHH = 272 | 61 |
| Vegetables | MHH = 578 | MHH = 1071 | 185 |
| | FHH = 82 | FHH = 177 | 126 |
| Fruits | MHH = 233 | MHH = 844 | 362 |
| | FHH = 22 | FHH = 151 | 686 |
| Dairy | MHH = 1590 | MHH = 961 | 60 |
| | FHH = 255 | FHH = 170 | 67 |
| Cattle fattening | MHH = 1531 | MHH = 950 | 62 |
| | FHH = 194 | FHH = 159 | 82 |
| Small ruminant | MHH = 1118 | MHH = 751 | 67 |
| | FHH = 207 | FHH = 146 | 71 |
| Apiculture | MHH = 319 | MHH = 828 | 260 |
| | FHH = 21 | FHH = 139 | 662 |
| Poultry | MHH = 1188 | MHH = 890 | 75 |
| | FHH = 280 | FHH = 188 | 67 |

Table 5: Percent of producers who received information and knowledge on irrigation use

| Commodity | Number of producers who produce the commodity | Number of producers who received extension advice on irrigation use | Percent of producers who received extension advice on irrigation use |
|------------|---|---|--|
| Vegetables | 660 | 960 | 145 |
| Fruits | 255 | 830 | 369 |

Table 6: Percent of producers who evaluated timelines of information and knowledge provided on specific commodities as poor or good

| Commodity | Timeliness of information and knowledge provided | Number of producers who evaluated timeliness of information and knowledge provided as poor or good | Percent of producers who evaluated timeliness of information and knowledge provided as poor or good |
|------------------|--|--|---|
| Field crops | Poor | 491 | 26 |
| | Good | 1425 | 74 |
| Vegetables | Poor | 379 | 29 |
| | Good | 935 | 71 |
| Fruits | Poor | 294 | 28 |
| | Good | 750 | 72 |
| Dairy | Poor | 398 | 34 |
| | Good | 789 | 66 |
| Cattle fattening | Poor | 360 | 31 |
| | Good | 803 | 69 |
| Small ruminant | Poor | 289 | 31 |
| | Good | 607 | 69 |
| Apiculture | Poor | 336 | 33 |
| | Good | 685 | 67 |
| Poultry | Poor | 330 | 29 |

| | | | |
|--|------|-----|----|
| | Good | 805 | 71 |
|--|------|-----|----|

Table 7: Percent of producers who received training on production of specific commodities

| Commodity | Number of producers who produce the commodity | Number of producers who received training | Percent of producers who received training |
|------------------|---|---|--|
| Field crops | 2381 | 1180 | 50 |
| Vegetables | 660 | 630 | 95 |
| Fruits | 255 | 439 | 172 |
| Dairy | 1845 | 490 | 27 |
| Cattle fattening | 1725 | 532 | 31 |
| Small ruminant | 1325 | 389 | 29 |
| Apiculture | 340 | 443 | 130 |
| Poultry | 1468 | 509 | 35 |

Table 8: Percent of producers who received training on storage of specific commodities

| Commodity | Number of producers who produce the commodity | Number of producers who received training on storage of commodities | Percent of producers who received training on storage of commodities |
|-------------|---|---|--|
| Field crops | 2381 | 611 | 26 |
| Vegetables | 660 | 274 | 41 |
| Fruits | 255 | 233 | 91 |
| Apiculture | 340 | 238 | 70 |

Table 9: Percent of producers who received training on processing of specific commodities

| Commodity | Number of producers who produce the commodity | Number of producers who received training on processing of commodities | Percent of producers who received training on processing of commodities |
|------------|---|--|---|
| Vegetables | 660 | 284 | 43 |
| Fruits | 255 | 224 | 88 |
| Dairy | 1845 | 281 | 15 |
| Apiculture | 340 | 266 | 78 |
| Poultry | 1468 | 299 | 20 |

Table 10: Percent of producers who received training on output marketing of specific commodities

| Commodity | Number of producers who produce the commodity | Number of producers who received training on output marketing of commodities | Percent of producers who received training on output marketing of commodities |
|------------------|---|--|---|
| Field crops | 2381 | 527 | 22 |
| Vegetables | 660 | 273 | 41 |
| Fruits | 255 | 230 | 90 |
| Dairy | 1845 | 249 | 13 |
| Cattle fattening | 1725 | 282 | 16 |
| Small ruminant | 1325 | 285 | 22 |
| Poultry | 1468 | 266 | 18 |

Table 11: Percent of producers who applied training on production of specific commodities

| Commodity | Number of producers who received training | Number of producers who applied training | Percent of producers who applied training |
|------------------|---|--|---|
| Field crops | 1180 | Yes = 950 | 81 |
| | | No = 230 | 19 |
| Vegetables | 630 | Yes = 285 | 45 |
| | | No = 345 | 55 |
| Fruits | 439 | Yes = 189 | 43 |
| | | No = 250 | 57 |
| Dairy | 490 | Yes = 161 | 33 |
| | | No = 329 | 67 |
| Cattle fattening | 532 | Yes = 152 | 29 |
| | | No = 380 | 71 |
| Small ruminant | 389 | Yes = 128 | 33 |
| | | No = 261 | 67 |
| Apiculture | 443 | Yes = 248 | 56 |
| | | No = 195 | 44 |
| Poultry | 509 | Yes = 172 | 34 |
| | | No = 337 | 66 |

Table 12: Percent of producers who received training on irrigation use

| Commodity | Number of producers who produce the commodity | Number of producers who received training on irrigation use | Percent of producers who received training |
|------------|---|---|--|
| Vegetables | 660 | 493 | 75 |
| Fruits | 225 | 369 | 164 |

Table 13: Percent of producers who received linkage facilitation support on input supply system

| Commodity | Number of producers who produce the commodity | Number of producers who received input supply linkage facilitation support | Percent of producers who received input supply linkage facilitation support |
|------------------|---|--|---|
| Field crops | 2381 | 787 | 33 |
| Vegetables | 660 | 182 | 28 |
| Fruits | 255 | 121 | 47 |
| Dairy | 1845 | 57 | 3 |
| Cattle fattening | 1725 | 41 | 2 |
| Small ruminant | 1325 | 30 | 2 |
| Apiculture | 340 | 31 | 9 |
| Poultry | 1468 | 38 | 2 |

Table 14: Percent of producers who received linkage facilitation support on credit services

| Commodity | Number of producers who produce the commodity | Number of producers who received credit linkage facilitation support | Percent of producers who received linkage facilitation support on credit services |
|------------------|---|--|---|
| Field crops | 2381 | 474 | 20 |
| Vegetables | 660 | 122 | 18 |
| Fruits | 255 | 76 | 30 |
| Dairy | 1845 | 31 | 2 |
| Cattle fattening | 1725 | 31 | 2 |
| Small ruminant | 1325 | 19 | 1 |
| Apiculture | 340 | 22 | 6 |
| Poultry | 1468 | 17 | 1 |

Table 15: Percent of producers who received linkage facilitation support on processing of specific commodities

| Commodity | Number of producers who produce the commodity | Number of producers who received processing linkage support | Percent of producers who received processing linkage support |
|------------------|---|---|--|
| Field crops | 2381 | 441 | 19 |
| Vegetables | 660 | 117 | 18 |
| Fruits | 255 | 77 | 30 |
| Dairy | 1845 | 37 | 2 |
| Cattle fattening | 1725 | 33 | 2 |
| Small ruminant | 1325 | 19 | 1 |
| Apiculture | 340 | 22 | 6 |
| Poultry | 1468 | 29 | 2 |

Table 16: Percent of producers who received linkage facilitation support on output marketing of specific commodities

| Commodity | Number of producers who produce the commodity | Number of producers who received output marketing linkage support | Percent of producers who received output marketing linkage support |
|------------------|---|---|--|
| Field crops | 2381 | 438 | 18 |
| Vegetables | 660 | 122 | 18 |
| Fruits | 255 | 77 | 30 |
| Dairy | 1845 | 34 | 2 |
| Cattle fattening | 1725 | 35 | 2 |
| Small ruminant | 1325 | 19 | 1 |
| Apiculture | 340 | 22 | 6 |
| Poultry | 1468 | 31 | 2 |

Table 17. Percent of producers who received linkage facilitation support on repair and maintenance of irrigation equipment

| Commodity | Number of producers who produce the commodity | Number of producers who received linkage support on repair of irrigation equipment | Percent of producers who received linkage support on repair of irrigation equipment |
|------------|---|--|---|
| Vegetables | 660 | 103 | 16 |
| Fruits | 255 | 69 | 27 |

Table 18: Percent of producers who evaluated usefulness of linkage facilitation support

| Commodity | Usefulness of linkage facilitation support | Number of producers who evaluated usefulness of linkage facilitation support as poor or good | Percent of producers who evaluated usefulness of linkage facilitation support as poor or good |
|------------------|--|--|---|
| Field crops | Poor | 251 | 31 |
| | Good | 551 | 69 |
| Vegetables | Poor | 60 | 32 |
| | Good | 129 | 68 |
| Fruits | Poor | 32 | 25 |
| | Good | 96 | 75 |
| Dairy | Poor | 19 | 29 |
| | Good | 47 | 71 |
| Cattle fattening | Poor | 17 | 34 |
| | Good | 33 | 66 |
| Small ruminant | Poor | 21 | 54 |
| | Good | 18 | 46 |
| Apiculture | Poor | 11 | 25 |
| | Good | 33 | 75 |
| Poultry | Poor | 15 | 28 |
| | Good | 38 | 72 |