Without mechanization no transformation

Executive summary

The sesame zone in NW Ethiopia is very suitable for mechanisation. Due to labour shortages and high costs of labour, farmers have a high interest in mechanisation. Based on years of testing, tailored recommendations for the mechanisation of different categories of farms are available (see overview supporting this brief). The Government of Ethiopia allows tax-free purchase of machineries for farmers, cooperatives and unions, which is conducive for the mechanisation of the sector (field preparation, row planting, cultivating and harvesting), which can importantly contribute to yield improvement and production cost price reduction. Mechanizing the sesame sector in NW Ethiopia, potentially up to more than 500,000 hectares, may lead to highly increased production, representing millions of US dollars. To scale mechanisation, lease financing and machinery rental services are most important. The 'recommendations for action' make up an action plan for sesame sector mechanisation.

Recommendations for action

- Support innovation centres for continuous technology development, testing, selection and promotion of machineries and implements like ploughs, planters, cultivators, harvesters and ripper binders, that are durable, efficient, easy to operate and maintain;
- Encourage and implement lease financing for the sesame sector and cooperatives, with active role and dedicated sesame sector mechanisation lease financing budgets of DBE, Walya and Kaza.
- Vision 2025: facilitate hundreds of mechanisation cases.
- Suggested plan for 2020: Support ten cooperatives eligible for lease financing to exploit the tax exemption privilege and acquire a mechanisation package (tractor, row planter and trailer). Accompany the process for tax-free purchase (own contribution, business planning, lease financing and tax exemption request, issuance of certificate for implements); ten cases require 25 million ETB.
- Ensure optimal and efficient utilization of machineries: agreements between farmers/farmers' organizations and machinery suppliers: training of operators, technical support and after sales service provision;
- Create conducive working environments for qualified and equipped private enterprises, cooperatives and organised youth groups to engage in providing agricultural machinery rental service to farmers. Develop a viable business models and train these providers on efficient service provision, business and client management;
- Periodically revise economic policies, including loan products and interest rates; legal and regulatory frameworks

Problem statement

Sesame production is mainly based on human labour, except ploughing. Sowing is mainly done by broadcasting. Currently, wage rates are escalating because of labour shortages. Because of improved timeliness and quality of farm operations, mechanization is essential for increasing crop productivity and for the reduction of production costs. Row planting is an essential part of the recommended practices for improving sesame yields and quality.

Mechanisation uptake is limited due to several reasons:
(1) limited knowledge on how mechanization contributes to productivity improvement; (2) skill limitations in operating and maintaining machineries; (3) lack of loan facilities for different farmer groups and absence of lease financing mechanism; (4) underdeveloped machinery supply chain, with limitations of after sales services and spare parts; (5) under-used potential of machinery rental services.

Experiences and lessons learned

For field preparation, row planting and other operations. For field operations, there are options for large, medium and small farmers. Getting access to appropriate tractors is the key challenge. Several seeding machines addressing small, medium and commercial farmers were tested for efficient sesame seed sowing. These included animal drawn (3-5 rows), tractor mounted (4-14 rows) or chest held (3-5 rows); and ranged from simple local made to pneumatic precision planters and seed drillers (5-11 rows). Due to poor performance of local made animal drawn planters, small-scale mechanized row planting remains a major challenge for extension and an opportunity for manufacturers. There are increasingly options for mechanising weeding and harvesting. Adaptations and further testing are however required.

Machinery requires skilled labour to operate and maintain. Many tractor mechanization programmes have failed in the past due to severe lack of skilled labour to maintain and run them efficiently and therefore shortening the life of tractors and equipment. The lack of repair and replacement facilities especially in the remote rural areas is another hindrance in efficient small farm mechanization.

Opportunities

- Mechanizing the sesame sector in NW Ethiopia (potentially up to more than 500,000ha may lead to highly increased production, representing millions of US dollars.
- The sesame zone in NW Ethiopia is very suitable for mechanisation. Due to labour shortages and high costs of labour, farmers have a high interest in mechanisation.
- The tax-exemption for agricultural machineries has relieved financial barriers for mechanising the sector.
- Mechanisation can relieve farmers from dependency on animal power and human labour at critical periods during the agricultural season (planting, weeding and harvesting);
- Seeding and fertilizer application can be done at the same time, reducing costs and increasing efficiency;
- Improved timeliness of field activities contribute can improve soil, water, pest and weed management, thereby increasing crop productivity and improving farmer livelihoods;
- Mechanisation can contribute to professional job creation (labourers, machinery operators, workshops providing maintenance service, rental service providers, …)