

SCOPE & PROSPECT OF OIL SEEDS AND COARSE CEREALS CULTIVATION IN **MI ZORAM**

*with Special Emphasis to Emerging
Market Opportunities, Value Addition
and Supply Chain Management*

Food and Agribusiness
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EXECUTIVE SUMMARY

TITLE OF THE STUDY

SCOPE & PROSPECTS OF OIL SEEDS & COARSE CEREALS CULTIVATION IN MIZORAM WITH SPECIAL EMPHASIS TO EMERGING MARKET OPPORTUNITIES, VALUE ADDITION & SUPPLY CHAIN MANAGEMENT

Agriculture remains critical to Mizoram's economy with majority of Mizoram's population directly or indirectly engaged in it. The subsistence oriented Jhum or shifting cultivation has traditionally dominated agriculture in the state, especially in the high uplands. However, strong policy thrust and continuous efforts by the Government of Mizoram have successfully brought the area under Jhum down to less than 10% of the gross cropped area (Economic Survey of Mizoram, 2019-20). Mizoram is a food deficient state and is heavily dependent on external supplies. Increasing per capita income and growing food demand from a burgeoning population has caused immense pressure on its already limited cultivable land. Therefore, the need of the hour is to design and implement sustainable agricultural ecosystems, which benefit farmers without undermining biological diversity, ecological fragility and food security. With the aim of achieving self-sufficiency, boosting livelihoods and enhancing trading opportunities, the present study focuses on the scope to promote cultivation and value addition of three key crop categories in Mizoram based on market demand - oilseeds, oil palm and coarse cereals.

The objective of this report is to frame recommendations for boosting cultivation, trade and value addition of oilseeds and coarse cereals in Mizoram. This involves preparing a detailed action plan for the overhauling of the existing supply chain management system with a more focused, strategic and sustainable supply chain management system for oil seeds and coarse cereals sector in Mizoram targeting the regional, national and international markets. Guided by the broader principles of food security, nutritional security and ecological balance, the report expounds on a comprehensive, environmentally sustainable strategy and provides recommendations for area expansion, value addition and the necessary infrastructure required to strengthen the supply chain of focus crops.

The study employed a dual methodology of primary research backed by comprehensive research from secondary literature sources. The focus crops shortlisted for detailed research in the study include maize, oil palm, mustard & rapeseed, soybean, sesame and millets. The primary research in the study involved carrying out a field survey of 883+ stakeholders including 790+ farmers across 18 blocks and 67 villages in five districts of Mizoram as identified by the Directorate of Agriculture, Government of Mizoram. The districts included Aizawl, Mamit, Kolasib, Lawngtlai and Serchhip. Other stakeholders included transporters, processors, traders, wholesalers, retailers, Directorate of Agriculture, District Agriculture Officers, ATMA officials, Department of Commerce, scientists, academicians and industry associations. This report has analyzed each shortlisted crop in detail assimilating research conducted during the primary survey, further backed by secondary research to arrive at a proposed end-to-end supply chain hypothesis for each of the focus crop.

The **first chapter** of this report provides a comprehensive overview of agriculture in Mizoram. The second chapter delves into the production scenario, supply chain of oilseeds, oil palm and coarse cereals in Mizoram. It details the findings of the field survey of 883+ stakeholders across the supply chain of oilseeds, palm and coarse cereals in five districts of Mizoram. The third chapter delves into demand analysis for each of the focus crop categories. The fourth chapter provides recommendations to boost cultivation, value addition and trade of focus crops. The fifth

chapter provides an overview of key environmental impact and mitigation analysis for each shortlisted crop in the proposed supply chain. The sixth chapter gives perspective on implications of the study and provides a list of investible projects arising out of the recommendations in this report. Annexures 1-3 provide a global, national and regional perspective on oil palm, oilseeds and maize respectively. Annexure 4 provides an overview of India's trade with Myanmar and Bangladesh. Annexure 5 provides an overview of the legal and policy framework in Mizoram for setting up agri trade related infrastructure. Annexure 6 provides the survey sample and a list of all districts, block and villages surveyed.

The **first chapter** provides an overview of Mizoram's topography & agro climate, demographics, land utilization, strategic location connectivity – and finally its agriculture and livestock sector. It also addresses important matters including food consumption, marketing, food security and food safety. An arduous terrain and difficult topography limits the scope of cultivable area in Mizoram. Climate change is also reflected in the decrease in precipitation and increase in temperatures noticed in the state over the last two decades. Rainfall, while otherwise adequate, is concentrated in the summer months (Kharif season). The Rabi season is dry and there is little recourse to irrigation facilities. Lower productivity Jhum lands are mainly located on hill slopes, surrounded by dense vegetal cover. In flood plains and valley fills, higher productivity, permanent agriculture in the form of wet rice cultivation (WRC) is increasingly being practiced. These rice fallow areas display potential for growing maize, rapeseed and vegetables. There is a slow but steady increase in area under permanent agriculture that offers higher crop yields and overall system efficiency.

The **second chapter** details the supply chain scenario of oilseeds and coarse cereals in Mizoram. It presents the nuances involved in production of crops, detailing the costs of production and the challenges across the value chain. Lack of availability of seeds, a higher seed rate than recommended, absence of seed treatment or treatment by smoke/sun drying, lack of organic manures & fertilizer, manual weeding and low awareness on best practices including on IPM and INM are the major reasons for poor productivity in all coarse cereals and oilseeds. Further, there is negligible market surplus or scope for aggregation; equally, there is presently limited infrastructure for storage or processing which discourages farmers to produce. The absence of agri link roads and overall poor road connectivity presents the biggest challenge to marketing of produce.

In Mizoram, soybean is well suited as a food crop and has untapped potential for its use as nutritional soymilk and tofu paneer. Rapeseed should be adopted for its use as oil for human consumption & for feed given the heavy local meat consumption and livestock needs. Sesame also has high oil content and its de-oiled cake is potent for its use in animal feed. Both sesame & perilla should also be promoted as export-oriented, high value organic food or oil crops for pharmaceutical, food and industrial use. The consecutive harvest of soybean, mustard and sesame offers a unique opportunity for building a sustainable and feasible supply chain for oil and feed. Maize remains critical for its use in livestock feed as well as in human diets, with the sweet corn market presenting an excellent opportunity in urban areas. Maize also has scope for processing into grits which can be used for food and feed purposes. Palm cultivation is suffering because of low remuneration and lack of road connectivity; it requires policy support, remunerative pricing for revival and area expansion as well as logistics support. Farmers and other stakeholders in unison claimed visibility of processing infrastructure, better logistics and market offtake will together encourage farmers to grow and expand area under cultivation of focus crops.

The **third chapter** summarizes the demand envisaged for oilseeds and coarse cereals within Mizoram, across the north eastern region of India as well as in neighbouring Bangladesh and Myanmar.

- The household food demand in Mizoram for soybean in 2021 is estimated at 2400 MT while the demand in 2031 is estimated at ~2900 MT based on 10-year projected population growth at 2% CAGR⁹. An additional minimum 500 MT demand can be generated if soymilk is incorporated into ICDS scheme and given to children at Anganwadi centres (AWC). Sesame is used in traditional cuisine in multiple ways including as chutneys or for tempering. The 2021 household food demand for sesame is estimated at 800 MT while 2031 demand is estimated at ~1000 MT based on 10-year projected population growth at 2% CAGR. Scientists at KVKs have also suggested scope for oil extraction from sesame.
- The study estimates total edible oil demand in Mizoram at ~16,000 MT in 2021, rising to ~19,500 MT in 2031. It may be feasible to target 20% self-sufficiency in oil production over the next five to ten years by virtue of growing rapeseed varieties across wet rice cultivation. A 40% oil recovery (up to 47% oil content in select varieties grown) would imply raw material production of at least 8,000 MT of rapeseed will be required in 2021 and 9,800 MT of rapeseed will be required in 2031. The oilmeal byproducts will go into feed purposes.
- In terms of meat production and consumption by Mizo population, oilcake demand for scientific feeding of animals is calculated at ~24,500 MT in 2021 and ~27,000 MT in 2031. This oilcake demand can mainly be fulfilled by mustard & rapeseed and to a lesser extent by sesame and soybean. The demand of maize for feed purposes is calculated at ~64,000 MT in 2021 and ~70,000 MT in 2031. Additionally, 2021 food demand for maize is estimated at ~6500 MT while 2031 demand is estimated at ~8000 MT based on 10-year projected population growth at 2% CAGR.

There is increasing appreciation for Mizoram to become the gateway of India to the fast-developing Association of Southeast Asian Nations (ASEAN) region. This is predicated on the long border and historical trade relations Mizoram shares with Bangladesh and Myanmar. Under the Act East policy, multiple infrastructure projects are being undertaken including the well-known Kaladan Multimodal Transit Transport. These projects will not only connect Mizoram to India's neighbouring countries but also enhance domestic connectivity between North East region (NER) and the rest of India. Transiting through Bangladesh ports, for example, can significantly shorten the distance between Aizawl and Kolkata. The study assessed the scope for exports to address the demand in neighbouring Myanmar and Bangladesh for oilseeds and coarse cereals but these were deemed as ad-hoc opportunistic trade opportunities.

The **fourth chapter** elaborates on crop wise and overall general recommendations required to boost oilseeds and coarse cereals in the state. The state of Mizoram is dependent on food products from other parts of India to fulfil its domestic needs. Its own production remains low and insufficient to meet its current demand. Without a radical change in growth of agricultural productivity and expansion of irrigable area under cultivation, the state will continue to remain dependent on other states for its food security.