



Value chain development needs for fruit and berries in Mongolia

INTRODUCTION¹

Fruit and berries are essential plants that contain a wide variety of vitamins and biologically active ingredients used in health, food, and beauty products. Producing fruit and berries requires years of vigorous work, finance, experience, and skills and is usually developed with consistent and long-term government support. Domestic production of fruits and vegetable accounts for only 5 percent of current Mongolia's consumption demands, and the remaining 95 percent are imported. For almost 50 percent of the imported fruits, they are predominantly apples, pears, peaches, plums, oranges, and grapes. Additionally, it is estimated that a total of 215,841 tons of harvest consisting of sea buckthorn (102,781 tons), gooseberries (61,669 tons), and other types of fruits and berries (51,391 tons) are needed. By the end of 2022, a little over 3,000 tons of fruit harvested domestically, of which 970 tons are from Western region and it was 3.7 percent of entire needs of fruit and berries for the region based on the numbers of reference population.

Within the implementation of UNDP SCALA² project, a systems-level assessment (SLA)³ of the country “to identify fruit and berry tree seed varieties with higher adaptive potential to natural and regional conditions based on climate risk and suitability analysis” as part of the “Billion Trees National Movement Initiative” carried out for implementation of transformative climate action in land-use and agriculture sector in line with Mongolia's NDC (Nationally Determined Contribution).

The Western region of Mongolia (Khovd, Uvs, Govi-Altai, Zavkhan and Bayan-Ulgii provinces) has a wide range of resources of natural and planted fruits, particularly, sea buckthorn. Moreover, it has developed significantly more localization, cultivation, and gathering of different varieties of fruits and formerly established industrial infrastructure such as fully equipped winemaking plant in Biger soum of Gobi-Altai province before 1990s compared to other regions of Mongolia. Hence, it was selected for as a main study area for the SLA to conduct a value chain analysis for climate resistant berries and fruit in the Western region of Mongolia.

¹ This policy brief is developed using the analysis on “Identify fruit and berry tree seed varieties with higher adaptive potential to climate risk and suitability” conducted by the School of Agroecology, Mongolian School of Life Sciences (MULS) in 2023.

² The Support Programme on Scaling Up Climate Ambition on Land Use and Agriculture through Nationally Determined Contributions and National Adaptation Plan (SCALA)

³ Systems level assessments aim to define, identify and appraise climate risks and solutions from a social, ecological, economic, and political lens across diverse administrative boundaries and geographical limits, to prioritize entry points for interventions that contribute to multiple goals (e.g.,

Rationales for western regional berries and fruit cultivation

A. Local berry and fruit demand

According to the estimation on fruits and berries demand of western region of Mongolia (Table 1), the total 7,183 tons of fruit is needed by 2040 of which 3,426 tons are sea buckthorn, 2,049 tons of currants, and 1,708 tons of other fruits. By 2050, the demand is projected to rise to 12,326 tons based on the annual physiological needs of the reference population from 2022 to 2050.

Table 1 – Fruits and berries requirements of the western region of Mongolia growth (2022-2050) by tons

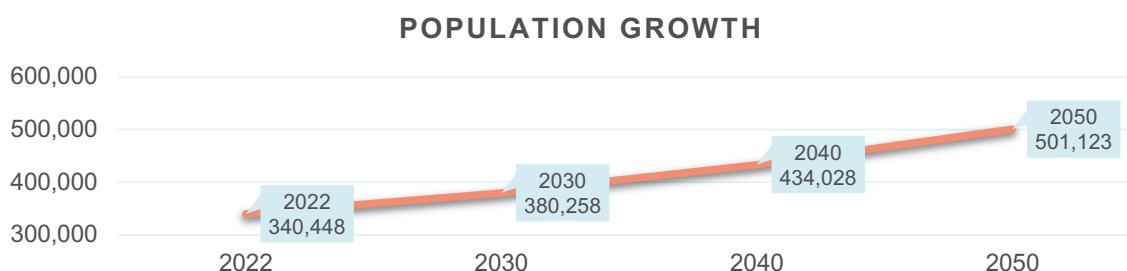
TYPES	NEEDS (TONS)		GROWTH (TONS)	NEEDS (TONS)		GROWTH (TONS)	NEEDS (TONS)		GROWTH (TONS)
	2022	2030		2022	2040		2022	2050	
SEA BUCKTHORN	12,416	13,879	1,463	12,416	15,842	3,426	12,416	18,291	5,875
CURRANTS	7,456	8,328	872	7,456	9,505	2,049	7,456	10,975	3,519
OTHERS	6,213	6,940	727	6,213	7,921	1,708	6,213	9,145	2,932
TOTAL	26,085	29,147	3,062	26,085	33,268	7,183	26,085	3,8411	12,326

Source: SLA, 2023

In the Western region, the fruit and berries cultivated areas were basically established on natural grassland. This means it is vital to consider the environmental and climate variables in fruit and berries cultivated areas with irrigation system. Overall, the nature of the western region of Mongolia is the most suitable to plant fruits and berries, particularly, sea buckthorn, compared to other regions of Mongolia as the average annual air temperature in the entire study area ranges from -5.20C to 4.40C, longer seasonal range for warmer weather, and the amount of precipitation varies from 55 mm to 268 mm.

To calculate the demands, the population growth projection of Western region is calculated in terms of the reference population⁴ (Graphic 1).

Graphic 1 – Population growth projection in western region of Mongolia, by thousands



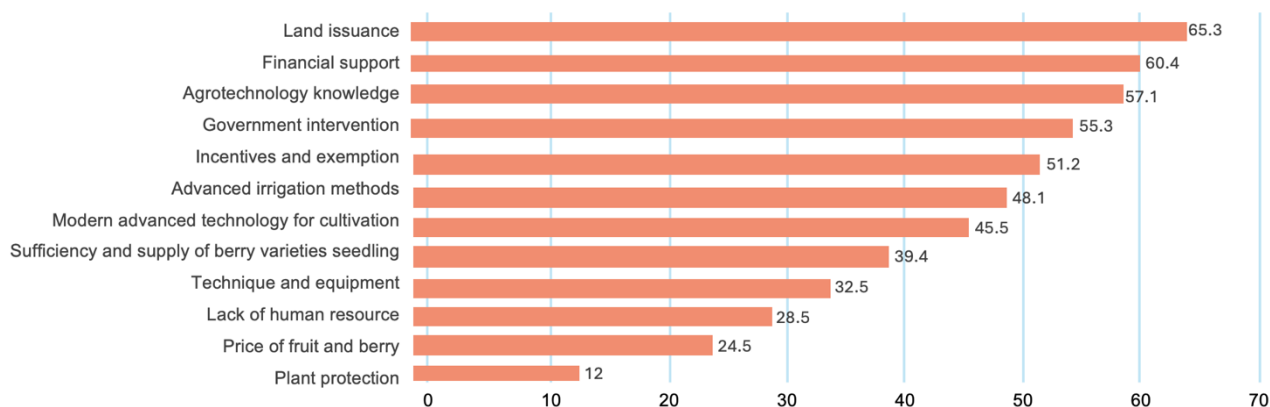
Aside from growing population in the region, unfortunately, most of working age population prefer to working in mining at Khushuut coal mine in Khovd province than agricultural farming due to differences on wage. It causes a lack of workforce in fruit and berry growing field adding problems besides not having enough professional agronomists in the region. Therefore, to meet the above mentioned demands up to year of 2050, in line with population growth, there are needs for improving professional knowledge and practices on how to upgrade fruit and berries' cultivation, localization and harvesting suitable for the Western region, and improve public awareness on long-term efficiency of the agro farming.

⁴ Based on 2022 end-of-year population data by National Statistics Committee of Mongolia

B. Missing Local Value Chain

Local berry growers are unable to expand their production and sales as they are affected by many institutional factors such as complex and impractical investment regulations, lack of incentives and inaccessible bank loans due to high criteria, complicated administrative and documentation as well as collateral evidence. In most cases, micro-and small farms tend to dominate the berry markets in the Western region. Followings are most common barriers for berry growers to expand their cultivation and develop local value chain (Graphic 2).

Graphic 2 - Common barriers for berry growers in the western region, by percentages



Source: SLA, 2023

Currently, only low interest rate or discounted credit lines are used as financial supports for berry and fruit companies, but they are not accessible to households and small enterprises or individual berry growers as they do not have collateral and proper knowledge to prepare the documentation requested by banks. So that, the local berry and fruit value chain has not been able to upgrade.

Existing national initiatives and programmes

Along with the "Vision-2050" long-term development policy of the Government of Mongolia, three pillar national campaigns "Food Supply and Security", "One Billion Trees" and "Healthy Mongolian" initiated by the President of Mongolia are being implemented throughout Mongolia to develop agricultural production and sales networks.⁵

The Government of Mongolia implemented the national programs "Sea Buckthorn" (2010-2016) and "National Program of Fruits and Berries" (2018-2022) which was aimed "... to increase the variety and production of fruits and berries, increase the cultivation of sea buckthorn to 10,000 hectares, and the cultivation of other types of fruits to 2,000 hectares, to provide the population with ecologically clean and nutritious fruits and vegetables, to reduce imports, and to improve the competitiveness of exports to increase income".⁶

As a result of these two national programmes, medicinal plants, fruits and berries, vegetables, and fodder plants are grown in the ecologically net soil in the unique climate of Mongolia which provides a high potential for export and a high demand for these crops.⁷ For the Western region, the fruit station in Bulgan sum of Khovd province was firstly established as a "Fruit Testing Branch" with the aim to study the possibility of growing fruits in condition of Gobi region.

⁵ [Advancing "Healthy Mongolian" National Campaign to the Next Level \(montsame.mn\)](https://montsame.mn)

⁶ National Program of Fruits and Berries, The Government Resolution No. 223, 9 August 2017

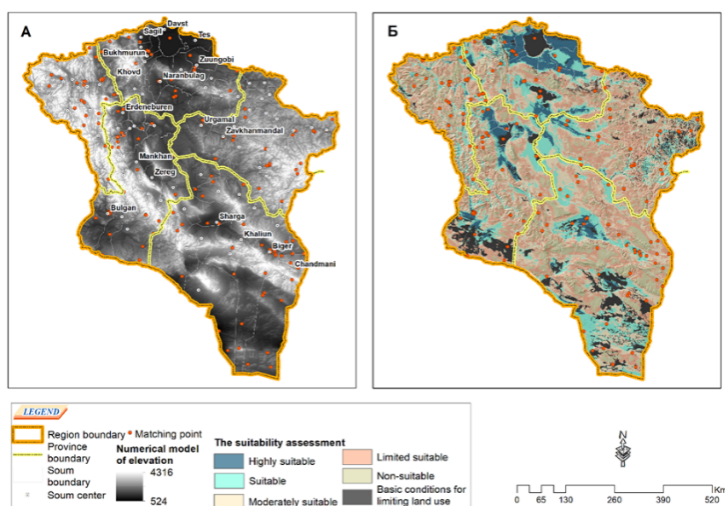
⁷ Identify fruit and berry tree seed varieties with higher adaptive potential to climate risk and suitability analysis, Agroecology School, MULS, 2023

Recommendation

C. Suitable areas to cultivate berry and fruit and promising varieties

The fruit cultivation suitability assessment in western provinces was conducted by Agroecology School, MULS using the SLA⁸ approach in 2023. The suitability map of integrated assessment of factors were mapped and corrected by taking values 0-255 with the help of radiometry (Graphic 3). It shows that areas with higher values are more suitable, while lower values are less suitable for fruit and berries cultivation.

Graphic 3 - Berries and fruit cultivation suitability map



Source: SLA, 2023

As an outcome of the SLA, it is concluded that 13 varieties of apples and 5 varieties of plum can be introduced as promising varieties in the western region in terms of climate resistance (Table 2).

⁸ At the inception phase of the SCALA in Mongolia two key assessments a) baseline survey and b) climate action review matrix (CAR) conducted to identify the key activities under the programme. The specific purposes of these assessments were a) to translate the NDC and/or NAP into actionable and transformative climate solutions in land-use and agriculture with multi-stakeholder engagement, b) identify a priority NDC and/or NAP climate action (or priority area) in the land-use and agriculture sector that has the potential to contribute to transformative systems change in line with the SCALA programme objective c) assess the transformative potential of the priority climate action based on a set of criteria spanning seven key dimensions of transformation: climate rationale; systems-thinking; private sector engagement; gender equality and social inclusion; sustainable development; a whole-of-government approach; technological and financial innovation and d) review the score of the transformative potential of each climate action assessed. As the outcome to conduct these two assessments, the actions defined to the workplan of the SCALA and the system level assessment "to identify fruit and berry tree seed varieties with higher adaptive potential to natural and regional conditions based on climate risk and suitability analysis" was selected as one of the priority actions to implement in Mongolia.

Table 2 - Promising 13 varieties of apples and 5 varieties of plums in the western region of Mongolia

#	APPLES	PLUMS
1	Borovinka	Manjurskaya krasivitsa
2	Antanovka	Padorok chemaliskaya
3	Pepin saffron	Pamyati Putova
4	Altaiskaya chemalskaya	Jyoltaya hopti
5	Altaiskaya purpurovaya	Opota
6	Papirovka	
7	Altaiskaya rumyanaya	
8	Osennee Kravchenko	
9	Yantarska Altaiskaya	
10	Ranetka purpurovaya	
11	Siberskoe zoloto	
12	Altaiskaya desertnaya	
13	Yablonya altaiskoye purpurovoe	

D. Regional hubs and fruit byproducts

In the survey analysis with 84 samples in Western five provinces, in terms of time engaged in fruit related business, 92 percent of respondents replied up to 6 years, and 92.7 percent replied more than 6 years. The result shows that berry growers apart from growing only berry and fruit, some are doing business in sales of seeds, in seedlings, and leaves that are byproducts of berries. It increases productivity of the processed products as well as allows the households to work at both raw material supplying and processing levels (Table 3).

Table 3 - Production of fruit/fruit byproducts by percentage of respondents

RESPONDENTS	PRODUCTS							NUMBER OF RESPONDENTS
	Fruit	Seed	Seedlings	Leaves	Fruit oil	Jam	Juice	
PROVINCE								
Bayan-Ulgii	80.0	6.7	20.0	6.7	6.7	6.7	33.3	15
Gobi-Altai	88.2	0.0	17.6	0.0	0.0	23.5	11.8	17
Zavkhan	100.0	16.7	50.0	0.0	0.0	0.0	0.0	6
Uvs	96.0	8.0	20.0	4.0	32.0	12.0	40.0	25
Khovd	100.0	0.0	11.1	0.0	0.0	5.6	5.6	18
YEAR OF FRUIT AND BERRY BUSINESS*								
Less than 3	92.0	0.0	16.0	0.0	0.0	8.0	8.0	25
6 more than	92.7	7.3	21.8	3.6	16.4	12.7	29.1	55
TOTAL	92.6	4.9	19.8	2.5	11.1	11.1	22.2	81

*1 respondent provided missing information; As this is a multiple-choice question, the answers sum up to more than 100 percent.

When asked about business expectations in the next 5 years, 44.4 percent of the respondents answered, "will develop independently at the current level", 58.0 percent "will join the value chain", and 4.9 percent answered "uncertain/don't know". It shows that the development of the value chain based on the regions features is crucial in the Western regions. It is recommended to find ways to create and do study on possibilities to establish regional hubs or channels based on varieties of the berry and fruit byproducts such as seeds, seedling and leaves, etc. (Picture 1)

Picture 1



Photo Credit: Saruul Dolgorsuren, UNDP Mongolia

Recommended actions

Policy and planning

- Fulfill tree planting activities in line with the “Billion Trees National Movement Initiative” in the region by local authorities.
- Provide policy support to local authorities to establish regional hubs or cooperatives based on berry growers’ current capacities, know-how and technologies.
- Establish regional hubs or channels based on fruit and byproducts supply chain.
- Select the suitable structure of the fruit value chain for Western provinces.
- Demonstrate a map of fruit value chain and find most fitting business model for the region.
- Develop and implement a regional climate adaptation plan by local authorities considering existing climate change related issues such as water shortage, soil erosion, dryness and seasonal transition in the region.

Technology, know-how and human resources

- Conduct research and training on varieties of berries and fruits, and byproducts like seeds, seedling, leaves and their usage.
- Create job positions for professional agronomists in each Western provinces.
- Provide agrotechnological professional guidance, training, and consulting to the berry growers.
- Attract working age population to agro farming by creating incentives locally and increase their awareness on economic efficiency of agriculture.

- Provide knowledge and practice to use modern technology and equipment norms while exploring financial mechanism to increase modern technology adoption at the same time.
- Improve logistics and transportation solutions such as usage of refrigerated trucks and establishment of refrigerated local hubs in the selected suitable locations.
- Increase storage facilities meeting the standards for keeping berries fresh.
- Identify and install the most appropriate irrigation system for the region to grow berries.

Business environment

- Select local niche products of each province of the Western region and compete for their geographical indications and pave the ways to enter to new markets.
- Build infrastructure or plants to increase production of finished products.
- Expand trade flows, logistics and implement measures to improve local business environment.
- Reduce common barriers such as access to bank loans and obtain land usage rights.
- Transform into cluster development model after establishing proper fruit value chain.
- Sustain the competitive advantages of the Western region via proper local fruit value chain.

References

1. Ulaanbaatar, 2020, Assessment report on “National Program of Fruits and Berries”
2. Ulaanbaatar, 2020, Long term development policy of the Government of Mongolia “Vision 2050”
3. Ulaanbaatar, 2021, One Billion Tree Initiative
4. Ulaanbaatar, 2021, Food Supply and Security Initiative
5. Ulaanbaatar, 2021, Healthy Mongolian Initiative
6. Ulaanbaatar, 2018, “Land conditions, quality and suitability assessment”, I. Myagmarjav and P. Myagmartseren
7. Population growth census 2020-2050
8. Ulaanbaatar, 2022, “Statistical Data”
9. Ulaanbaatar, Ministry of Road and Transportation Development of Mongolia, 2009, Development project of Western region,
10. Agroecology School, MULS, 2023, Identify fruit and berry tree seed varieties with higher adaptive potential to climate risk and suitability analysis

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Country support includes strengthening policies, adopting innovative approaches to climate change adaptation, and removing barriers related to information gaps, governance, finance, gender mainstreaming and integrated monitoring and reporting. To achieve this shift, the programme will engage the private sector and key national institutions.

SCALA supports countries to develop the capacity to own and lead the process to meet targets set out in their National Adaptation Plans and Nationally Determined Contributions under the Paris Agreement, and to achieve the Sustainable Development Goals. The SCALA initiative builds on another FAO-UNDP led programme, Integrating Agriculture in National Adaptation Plans (2015-2020) which is currently phasing out.

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www.fao.org/in-action/scala/en

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