



"DEVELOPMENT OF SEA BUCKTHORN AND OTHER HORTICULTURAL MARKETS IN THE ASIA REGION"

AsiaBerry-2024

Ulaanbaatar, Mongolia

October 30 – November 1, 2024

PRACTICAL EXPERIENCE IN INDUSTRIAL GARDENING WITH ORIENTATION ON MECHANIZED HARVESTING. HONEYSUCKLE, SEA BUCKTHORN

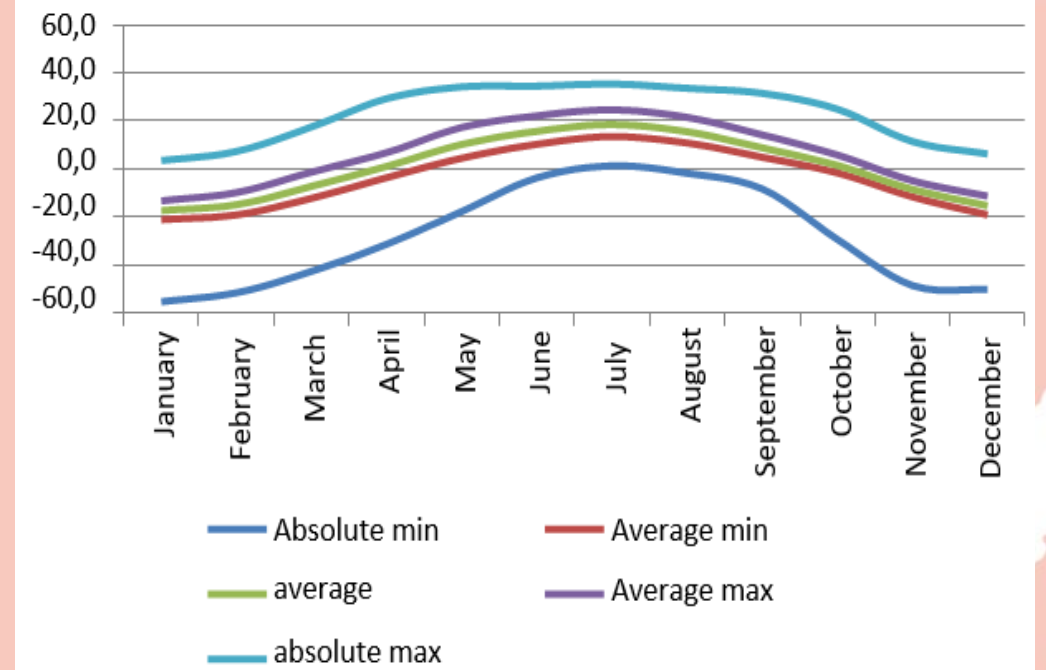
Karpov Viktor Tomsk, Russia
Executive director «North Garden»



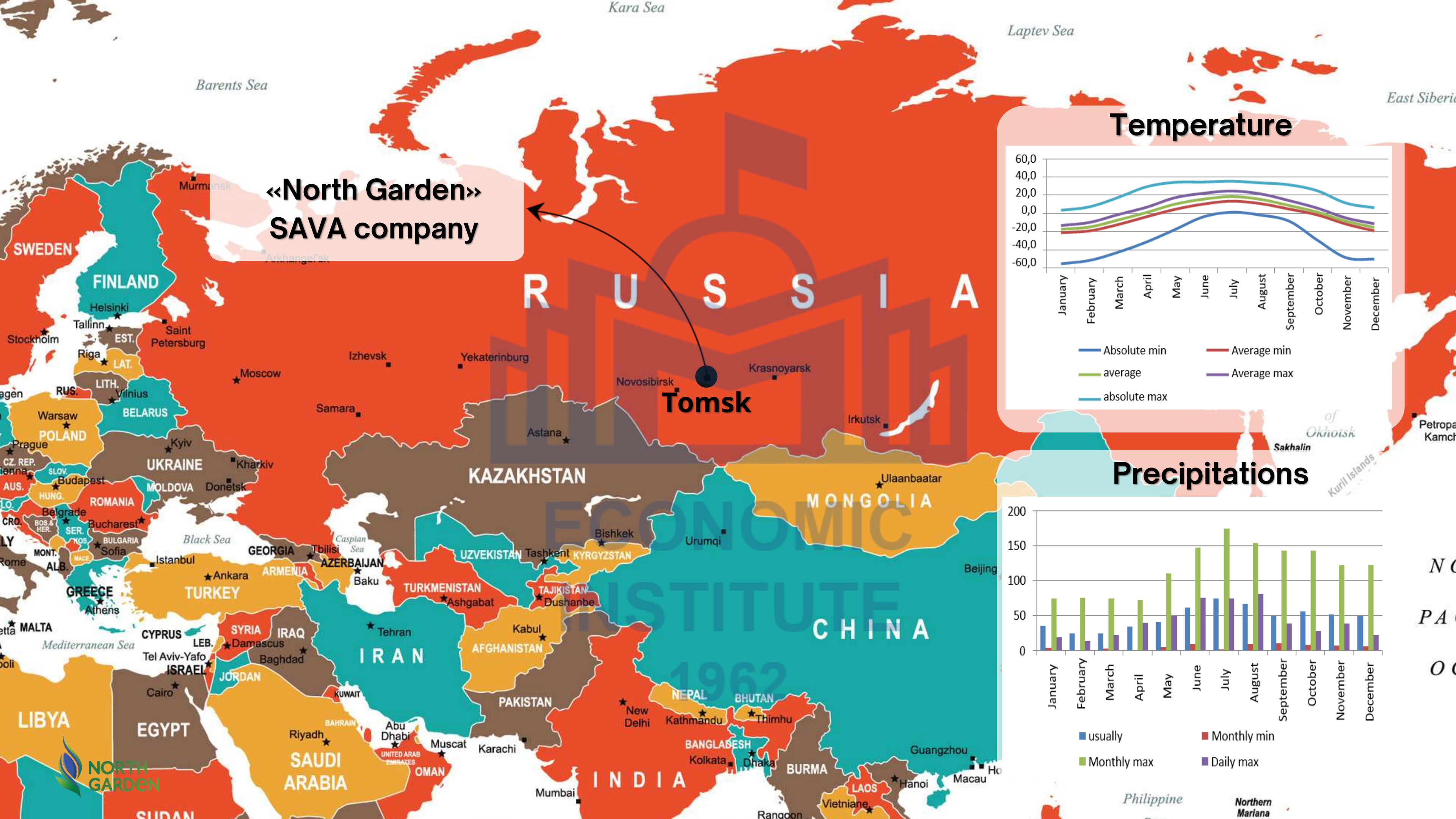
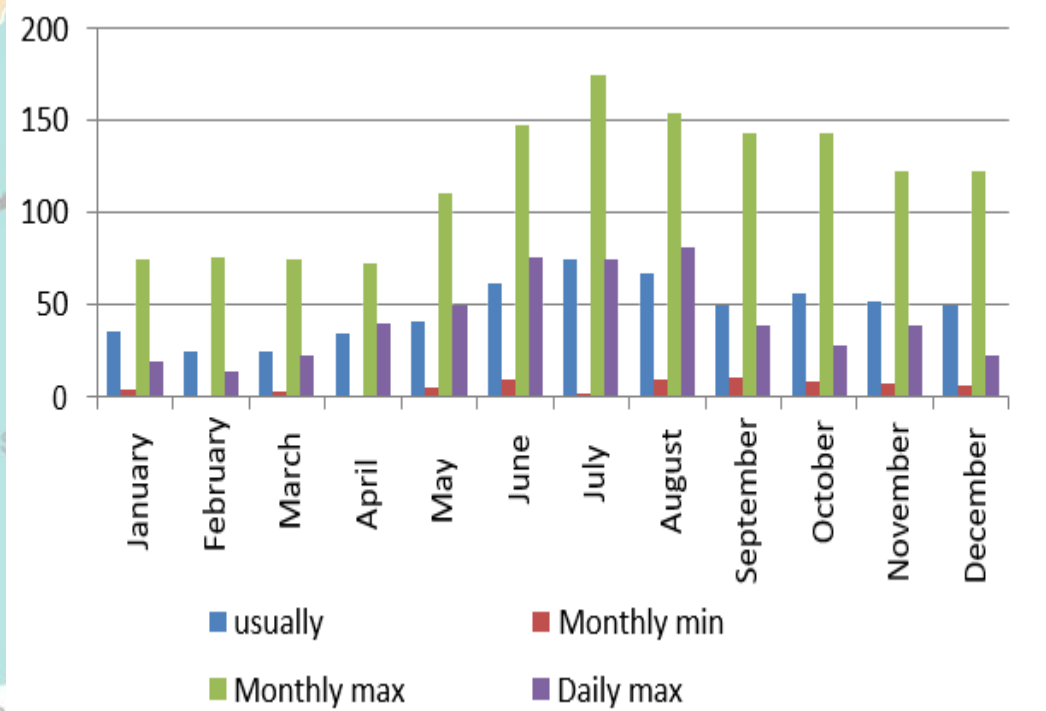
«North Garden»
SAVA company

Tomsk

Temperature



Precipitations



Tomsk Production Company SAVA

SAVA processes berries like lingonberry, bilberry, sea buckthorn, haskap, raspberry, chokeberry, strawberry, cherry.

Product's range includes over 600 products names:

jams, juices, extra virgin oil, preserves, syrups, smoothies, desserts, herbal tea, pine nut drink, dried berries.





Sales geography

Export to 21+ countries:

Mongolia, UAE, Malaysia, Czech Republic, China, Estonia, Poland, Kazakhstan, Taiwan, Belorussia etc.

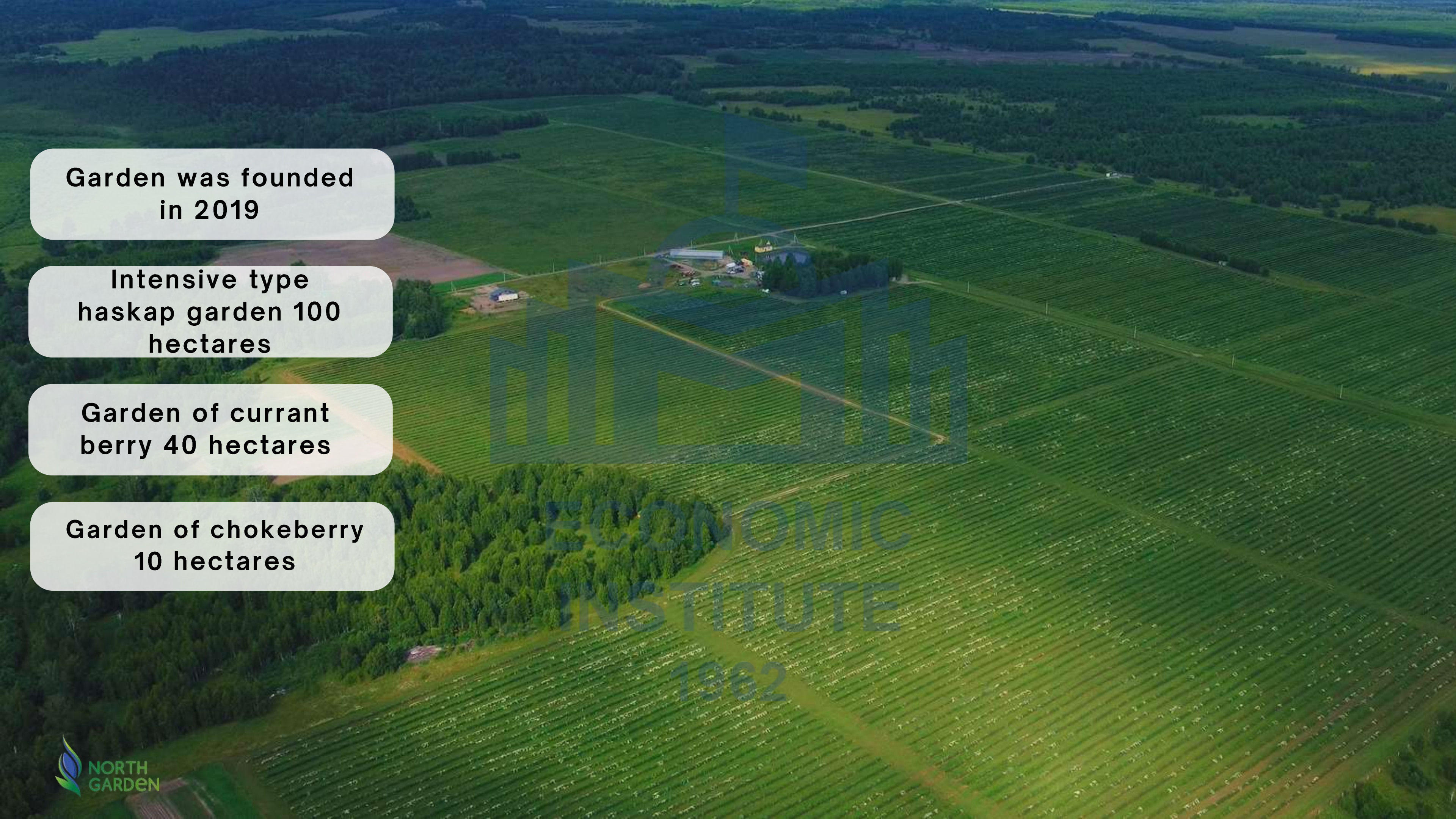


SAVA are available in well-known federal and regional retail chains in Russia.

SAVA annually represents the Tomsk region at leading exhibitions and events both in Russia and abroad such as PRODEXPO, SIAL CHINA, CHE and BioFach.

Every year becomes the award winner at PRODEXPO exhibition.





**Garden was founded
in 2019**

**Intensive type
haskap garden 100
hectares**

**Garden of currant
berry 40 hectares**

**Garden of chokeberry
10 hectares**

For mechanized harvesting, it's necessary

Straight rows raised above the soil with the help of a ridge

A place for turning the tractor, at least 8 meters

The distance between the rows depends on the size of the processing equipment, at least 4 meters

High planting density, for the formation of a fruit «wall»

SCHEME OF PLANTING OF BUSHES

SELECTION OF BERRY VARIETIES

MAINTENANCE OF ROW SPACING AND PLANTING

The shape of bush – inverted triangle

Characteristics of berries – dense berry skin, fruit detachment force is light, steady ripening

Selection of varieties with different maturation periods

Tinning of row spacing

Absence of weeds in the row and near the ridge

Watering for steady plant development

**The experience of the company
«North Garden» in application of
intensive gardening technologies**

**Accurate garden layout using
air navigation**

**Planting in a ridge under
ground cloth (covering material)**

Drip irrigation and fertigation

**Planting density (2500 plants
per 1 hectares)**

**Tinning of row spacing for
the second year**



Technologies applied in North Garden



Planting density
(2500 plants per 1 ha)

Planting in a ridge
under ground cloth



1962

Accurate garden layout
using
air navigation



Tinning of row spacing
for the second year

Drip irrigation and
fertigation



The composition of the fertigation and drip irrigation system of North Garden

- ▶ STORAGE POOL 4000 M3, 24 km of underground pipelines, 416 km of drip tape
- ▶ Control of land reclamation valves via MOTOROLA RADIO CHANNEL
- ▶ Agrojet fertilizer mixing unit, preparation of nutrient solution according to the program GALLILEO
- ▶ Monitoring of PH and EC indicators in automatic mode



The experience of North Garden in machine harvesting

- ▶ The first harvest with a combine was carried out in 2024
- ▶ Total harvest volume of haskap berry in 2024– 22 tons
- ▶ More than 70% of harvest has been harvested. The main losses are due to the small size of bushes (the garden will reach commercial yield in 2026)
- ▶ Collection costs were 0,4\$/kg
- ▶ Shock freezing was produced in the garden



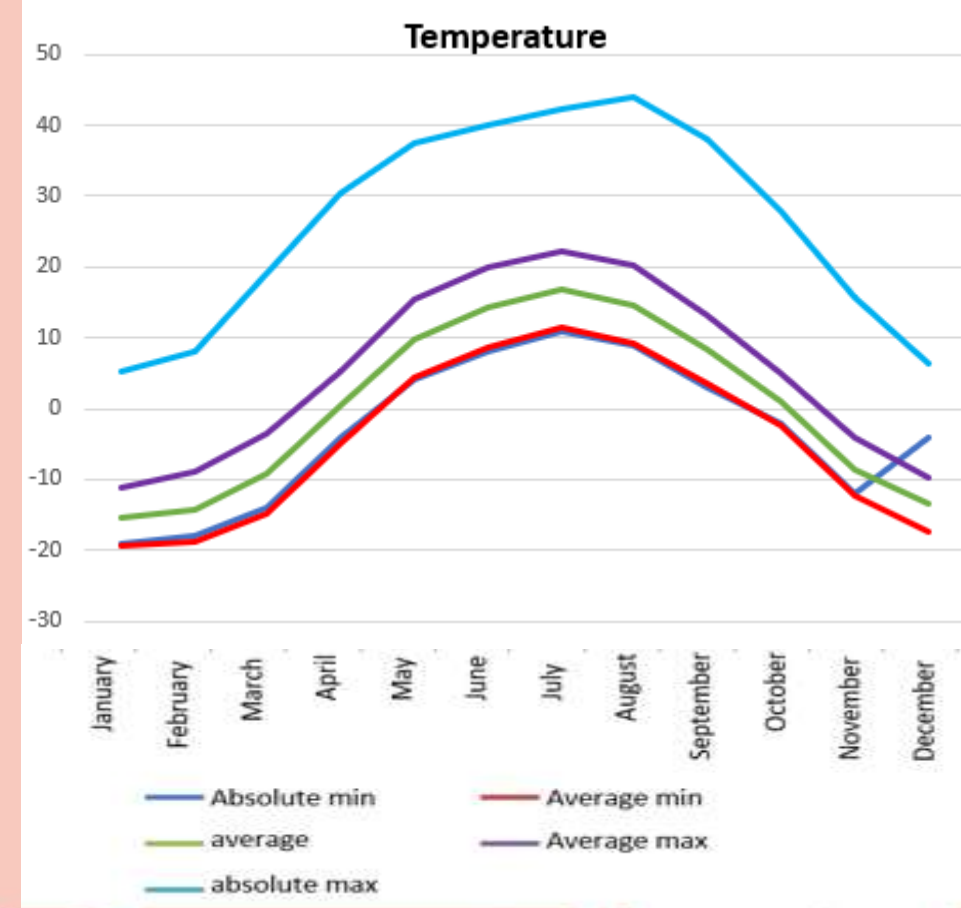
«Sava Altai»

The volume of harvesting berries (branches) is up to 2000 tons/year

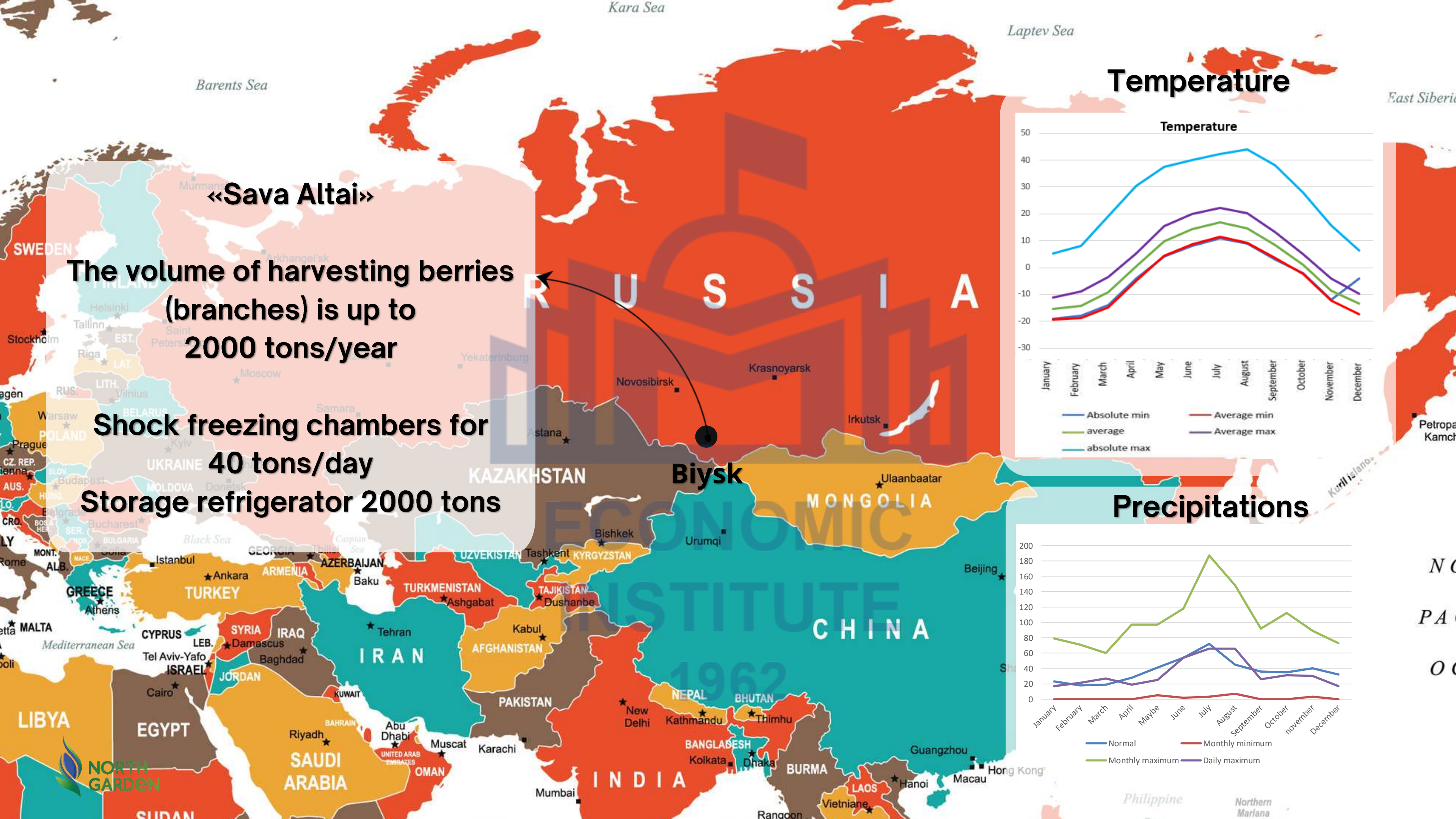
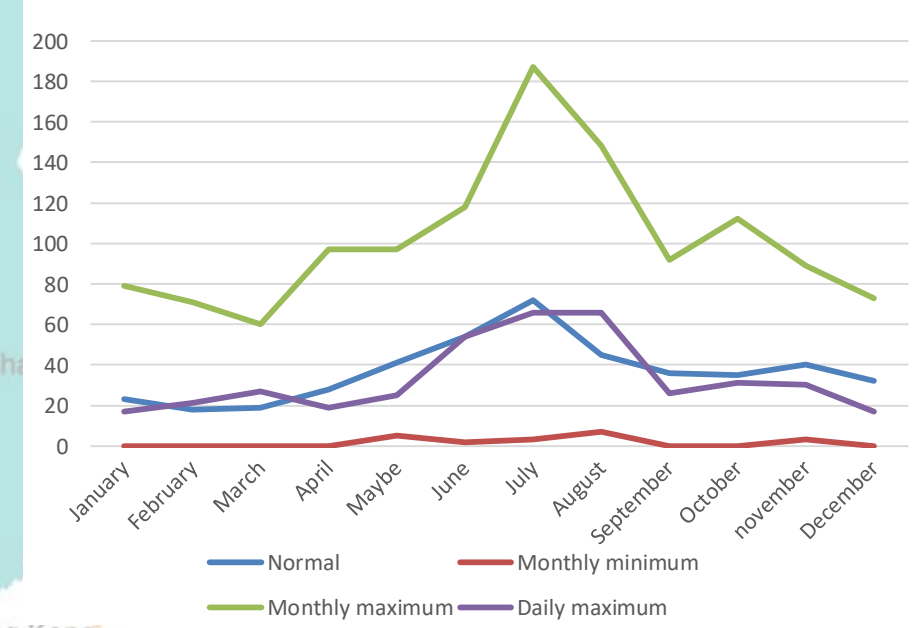
Shock freezing chambers for 40 tons/day

Storage refrigerator 2000 tons

Temperature



Precipitations



The main problems of sea buckthorn orchards

01

Shortage of personnel for harvesting by pruning and manual harvesting

High cost of manual harvesting

02

03

Lack of proven technology of mechanized harvesting

Lack of an integrated plant protection system

04

The experience of North Garden in cultivation of sea buckthorn using intensive technology

In 2021 the experimental sea buckthorn plantation was established

Intensive cultivation technology was developed (ridge, drip irrigation, fertigation and, agro cloth

Method of facilitation attachment of peduncle of sea buckthorn has been developed. The separation force of berry reduced from 1,8 newtons to 0,7 newtons. The optimization of method continues

The effectiveness of sea buckthorn harvesting by a serial harvester («Karen») for varieties of Altai breeding has been proven.



The current situation of mechanized harvesting of sea buckthorn



For 30 years, research has been conducted in Russia on the mechanization of sea buckthorn harvesting by leading specialized institutes: M.A. Lisavenko Research Institute, Institute of Agricultural Mechanization (closed in 2015).

During this time, sea buckthorn varieties have been bred, which crumble more easily and are suitable for harvesting by machine.

In 2022, mechanized harvesting was conducted in Greece using the combine «Lettau».

For two years (2022-2023), the studies of preparation for mechanized harvesting are ongoing with the help of specialists of «North Garden» and the leading specialists.

In 2024, an experimental harvesting by a combine harvester was carried out on two plantations (Tomsk, Altai Territory), more than 70% of berries were removed in two passages without damaging the bushes.

The possibility of harvesting sea buckthorn berries with a combine harvester has been proven, thanks to special treatment of bushes before harvesting.

Conclusions

Machine harvesting of sea buckthorn proved possible

01

02 Elements of intensive cultivation technology (ridges, agro-cloth, drip irrigation and fertigation) are practiced

A method for facilitating the attachment of sea buckthorn berry peduncle has been perfected. Optimization of the method continues

03

04 Efficiency of sea buckthorn harvesting by serial harvester (Karen) on varieties of Altai selection is proved





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***“If you have a garden and a library,
you have everything you need.”***

Cicero