

SPECICROP study trip in Altai 2014

English version by B. Galambosi

During 2014 August 17-24 twenty Finnish herb and fruit/berry experts and project leaders have visited first in Altai, Russia. The aim of this study trip was to be acquainted with the natural and cultivated medicinal plants of the Altai Mountains, to visit in companies utilizing the Altai herb flora in health care and medicinal industry. Additionally we have visited in a local reindeer farm.

The group flew from Helsinki-Moscow-Novosibirsk route and travelled by bus on the route Barnaul-Bijsk-Gorno Altajsk and Teleckoe lake. The study trip was organized by a Finnish-Russian joint project (Special crop education for economic development in North-West Russia and South-East Finland (SPECICROP 2012-2014) financed by the CBC ENPI Program 2007-2013. Both in the mountain botanical tour and in the companies we have had excellent local professional guides.

1.

In Novosibirsk we visited in **the Central Siberian Botanical**

Garden(<http://www.csbg.nsc.ru/en/home.html>) which is the biggest botanical garden in Siberia (800 ha, 10.000 plant species, 250 researchers). We have visited in the Department of the Aromatic and Medicinal Plants. The research activities focused on the physiological and phytochemical evaluation of endemic MAP species, their propagation biology and introduction into culture.

They have bred several new varieties adapted to the Siberian climate, like "Zolotodolinskij" cv. of *Hypericum perforatum* cv. "Limonnij" of *Thymus serpyllum* and cv. "Pervenets Sibiri" of *Acorus calamus*. It was interesting to see *Acorus* plantation species without any irrigation (Picture 1.)

The utilization of the flowering shoots of *Potentilla fruticosa* (*syn. Dasiphora fruticosa*) as "Kuril tea" was totally new for the European visitors. (Picture 2). This herb is named after the Kuril Islands, where sailors used it instead of common tea. However, the Baikal people had known of its cleansing properties long before. Since then local people have always used it for alleviating any indigestion.

We have walked in the experimental plots of the fruit and berry plants, where the main focus on the breeding activity is to improve the winter tolerance of new varieties. This department has bred several varieties of *Sorbus*, *Prunus padus*, *Prunus sp.* and *Lonicera caerulea*. The nursery propagates the new varieties for the home gardens as well.

2.

In Barnaul we visited in the "**M.A. Lisavenko Research Institute of Horticulture for Siberia**"

(<http://www.niilisavenko.org/index.htm>), which is a famous and important organization for the professional and private gardeners in South- Siberia (Picture 3). Besides the beautiful "*Barnaul Dendrarium*" and several own new apple and pear varieties, the institute is the centrum of the Russian sea buckthorn research (*Hypophaea rhamnoides*). They develop the cultivation techniques, sea buckthorn-based health products, but the main focus on the breeding of new varieties. During 1963 -2011 totally 43 new varieties have been bred here and it is calculated, that in the world among the professional buckthorn cultivation nearly 90 % of the varieties are bred this institute (Picture 4). The writer has visited first time in this institute during 1983 aiming to buy several ten thousands seedlings for cultivation in Hungary. Presently about 6000 ha sea-buckthorn is cultivated in Russia. The institute area is cc. 1000 ha, the 130 members of the staff includes 60 researchers and they sell annually cc. 3 million seedlings, produced in three nurseries.

3.

In Barnaul there is a **Pharmaceutical Factory "Galen"**, who is specialized on plant-based anti-cancer drugs development and these products are used in the clinics of **Phytocenter Alfit** (<http://alfit.ru>). The name is coming from the abbreviation of Altai (*Al-*) natural herbs and Fitoterapy (*-Fit*) words. During the last 20 years they have developed and put into practice a number of herbal remedies for the prevention and adjuvant treatment of cancer based on medicinal plants collected from the ecologically clean regions of the Altai Mountains.

Presently they have cc. 90 different herb preparations under the brand name "Alfit". (Picture 5). The company prefer to use naturally grown medicinal plants, therefore they educated their collector organizations. In the factory they process the raw materials carefully and the end product is the sc. "brikets", consists of dried, milled and pressed mixture of herbs dosing for a glass of hot water.(Picture 6). For intensive information's, they have numerous monographs, articles and books based on their many years of clinical observations. The quality of the products were confirmed by multiple clinical trials, and are used by doctors and patients at cancer centers.

4. Botanical tour in the Altai Mountai.

The founder and general director of Alfit company, Dr. Sergej Korepanov is a good botanist and he organized for our group an excellent botanical tour in the high mountain of Sarlyk. From Shebalino village we drive up to 800 m high to the Karalskie lakes by Russian Zil trucks in a region, where there is no any roads. (Picture 7) After an exciting driving, we have enjoyed the natural beauty of the lakes with dramatic snow-covered peaks of mountains and the extremely reach vegetation. Dr. Korepanov carried out a two-hour botanical trip around the 7 lakes and we have met first in their original habitats such well known plants, than *Leuzea carthamoides*, *Dracocephalum sibirica*, *Veratrum album*. We have tasted the "Siberian tea" made from black leaves of *Bergenia crassifolia* grown everywhere, (Picture 8). but we found only two small plants of *Rhodiola rosea*, since it became an endangered medicinal plant.

5. Teletskoe lake

From the idyllic small town, Gorno Altaijsk, which is the center of the Altai tourism, we drive about 2,5 hours to the famous Teleckoe lake. It is the largest lake in the Altai Mountains. It is situated at height of 434 m above the sea level, the lake is 78 km long and 5 km width and its deepest point is 350 m.

Its surface area is 233 km² contains no less than 40 km³ of fresh water. Even it is the 13th largest lake in the world, its nickname is Little Bajkal (Picture 9).

It is situated in the Altai Nature Reserve and listed as one of UNESCO World Heritage Sites, under the name "Golden Mountains of Altai". About 70 rivers and 150 temporary streams flow into the lake, but a single outlet is the River Biya, which, after its confluence with the Katun river at Bijsk town forms one of Siberia's largest rivers, the Ob river (3650 km long.) The 900.000 km² Altai Natural Reserve is a strickly conserved natural region, having a lot of special endemic animals and geological values. We have spent several hours by boating and walking and studying the natural flora.

5. Kaimskoe maral farm

We have visited in a traditional maral farm, which is a special breeding of the Siberian red deer, or maral (*Cervus elaphus maral*). The red deer is a cc. 200-250 kg wide animal, which presently are breed in farms, but not for its meat, but for their velvet antlers. (Picture 10). It is believed that the antlers and blood of maral have unique healing properties. Maral preparations have adaptogenic properties allowing the human body to adapt to any changes and withstand daily stresses. Preparations from velvet antlers are very popular in Russia and it is exported, e.g. to China, South-Korea.

The marals prefer in the nature for eating *Leuzea carthamoides* for its adaptogenic properties, therefore its general name is maralroot. (Picture 11).

It is estimated, that cc. 250 maral farms are exists in Altai region, with 1000-6000 animals in one farm. A variety of medications (dry powder, tea, extracts, cremes) sold on the domestic market are being developed in partnership with research centers and pharmaceutical companies. In addition, health tourism is on the rise, and people from all over the world travel to the Altai region to get access to fresh products. Therapeutic baths, for instance, are booked up 12 months in advance.

The Kaimskoe maral farm keep red deer in parks, where they roam free. The farm has 3000 ha area fenced off and the 1200 animals live there quite wild. One animal needs cc. 2 ha area. In early summer, when the new antlers are full developed, the rangers collect the marals, they run through a corridor into a special snare where handlers immobilize the animal's head, blindfold it and saw off the antlers in a matter of several seconds. On average, marals live eight -nine years and have their antlers sawn off seven times over the course of their lifetime beginning at age two. The antlers (between 6-10 kilograms) dried and processed for the market.

6. **ZAO Evalar**, in town Bijsk (www.evalar.ru) is one of the largest pharmaceutical companies in Russia, the country's absolute leader in the volume of released natural preparations for health preservation and promotion. The company's profile is development and production of natural medicines and dietary supplements. Presently the company produce over 200 medicines and dietary supplements in different product forms: pills, capsules, tinctures, instant drinks in sachet, tisanes and teas in tea-bags, oils, creams, beauty aids in tubes. All the products have 100% natural plant, mineral or animal origin.

In 2013 the area of the manufacture buildings was 20.000 m², facilitated with modern machinery (Figure

12). They employed 1100 persons and they export into 23 countries, including Germany, USA. In Russia their products sell in nearly all pharmacies and they have 14 own pharmacies all over in the country. One of the highlights of the study trip was the visit on the fields. The company has own cultivation of cc. 20 medicinal plants, like *Leonorus cardiaca* (120 ha), *Avena sativa* (100 ha) (Figure 12), *Trifolium repens*, *Chamomilla recutita*, *Fagopyrum esculantum*, 35-40 ha/each. They started to cultivate *Rhodiola rosea* as well- The seedlings are produced in Bijsk, but the fields are situated in the high Altai mountains. Additionally they buy large quantities of medicinal plants collected from the nature, like the endemic Altai red root (*Hedysarum neglectum*). We have seen in the field a newly discovered adaptogenic plant, *Potentilla alba* (Figure 14). The own cultivation area covers the 30 % of the demand of raw material of the factory and an extensive enlarging activities are going on. The company won many special prizes and awards, like the honorary title "Number one trademark in Russia", or a "Year Best Manufacturer" in several years.

Summary

The study trip have given experiences and knowledge's over the expectations of the participants visited first in this region. During the history this large country have got several influences from the Asiatic, Chinese, Japanese, Tibetans and European traditional and official medicines. Therefore we have seen several medicinal plants, which is known only in Russia, not in Europe (*Hedysarum*, *Potenilla alba*, *Potentilla fruticosa*). We have seen the large popularity of the plant based medicaments in Russia, both in the local markets, in drug stores or in pharmacies. According to the visited companies, we have seen both middle size local medical company (Alfit) and the country's biggest, modern, international medical company /Evalar). The study trip give rich influences for the participants of this environmentally nice region of Russia (Figure 15).

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Cultivation of *Acorus calamus* without irrigation 173 Kb



Plantation of *Potentilla fruticosa* for Kuril tea 148 Kb



The sculptor of the founder, Prof. M.A. Lisavenko 128 Kb



The newest sea buckthorn varieties . 125 Kb



Testing of Alfit herb teas and herb-honeys. 90 Kb



Dr. Korepanov shows the storehouse of the milled raw materials 106 Kb



On the road. "No road at all!" 134 Kb



Hectares of natural *Bergenia crasifolia* populations on the hill. 212 Kb



View of beautiful Teleckoe Lake 76 Kb



The Siberian red deer, "maral" 129 Kb



Maralroot (*Leuzea carthamoides*) grows abundantly 161 Kb



View of the factory of Evalar in Bijszk 87 Kb



Harvest of shoots of *Avena sativa* for extraction 167 Kb



Plantation of *Potentilla alba* in Evalar field. 170 Kb



Satisfied Finnish group in Altai. 118 Kb