Adaptogen plants from Russia into Hungary and Finland

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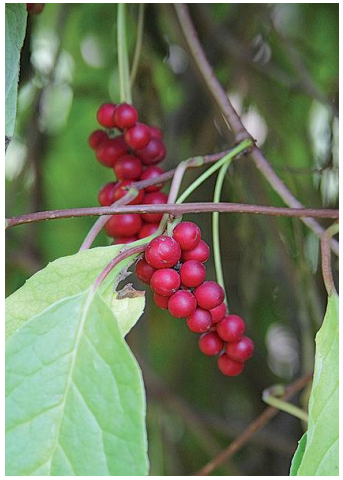
Nikola Vasiljevich Lazarev (1895-1974)

- **N. V. Lazarev was the first researcher, who discovered and described a phenomenon of nonspecific organism stability rising against unfavorable conditions, which was named by him the *state of nonspecific resistance (SNSR) (!)* (1956).**
- ***Liudmila I. Andreeva, (Phytopharm 2008)***

In searching of stimulating remedies instead of Amphethamine N. V. Lazarev studied preparations from plants:




Lazarev proposed to be united their actions in separate pharmacological class: “adaptogens” (1961).

Studies and use of adaptogen plants in the Soviet Union

- **Brekhman, I.I. & Dardymov, I.V. 1969.**

  New substances of plant origin wich increase nonspecific resistance. Annual Review of Pharmacology 9: 419-430.

Wide range of pharmacological, clinical and agronomical research of 8 classical adaptogen plants during 1960-1990:

Aralia mandshurica, Echinopanax elatum, *Eleuterocossus senticosus, Leuzea carthamoides, Panax ginseng, Schisandra chinensis, Rhodiola rosea,* *Stercunia platanifolia*

The word ”adaptogen”

- In Google: adaptogen (2014. 04.04) **Wikipedia : 935 000 records**

- In Russia there are already over **1700 studies** (mainly pharmacological and clinical) published concerning extracts or individual compounds from the adaptogenic plants. (Shikov et al, 2009)

1. Leuzea carthamoides
(Stemmacantha carthamoides)

Stone age picture of Maral reindeer from Siberia

Introduction of *Leuzea carthamoides* into Europe

Introduction into Hungary 1975-85

- **In the Research Institute for Medicinal Plants at Budakalász**
  - Földesi, D., Lehoczky, M., Danos, B., Tetenyi, P**. 1982. Results of the acclimatization of *Rhaponticum carthamoides* (Willd.) ILJIN in Hungray. Herba Hungarica, TOM. 21. No. 2-3, pp. 99-109.**
- **During 1980th cc. 50 ha cultivation was in several cooperatives.**

First plantation of *Leuzea* in Szilasmenti Cooperative, Hungary, 1979.

Products in Hungary

- **Leuzea drop –**

  Alcoholic root extract in Szilasmenti Cooperative, 1980-1990
- **Robofitt Drops –**
- Alcoholic root extract produced by Research Institute of Medicinal Pants Budakalasz

  From 2000-

Products of *Leuzea* in Slovak Republic and Czech Republic

Introduction of *Leuzea* into Finland

- In MTT Agrifood Research Finland Mikkeli **1989- 2005**
  - Galambosi, B. 2003. **Elaboration of cultivation technology of *Leuzea carthamoides* /Willd./ DC.) , introduced in Finland during 1989-2002**. Maa- ja elintarviketalous 37: s. 63-76. www.mtt.fi/met/pdf/met37.pdf
- Hyötykasviyhdistys Nurmes Pohjois-Karjala, from **1989**
- Several special growers, 1-2 ha

Field experiments of *Leuzea* at Mikkeli, Finland

Problems in cultivation of Leuzea

1.Birds in seed production

Problems in cultivation of Leuzea

2. Cleaning the roots

Finnish alcoholic extract ”Maralmax”

(1995-2000)

Decoration from Leuzea flower heads

2. Inroduction of *Eleuterococcus senticosus* into Finland

Introduction of *Eleuterococcus senticosus*
(syn. *Acanthopanax senticus*)

- **In Finland:**
- **Dendrologist Penti Alanko during 1970**
- **Grown in Botanical gardens**
- **Agronomical trials at MTT Mikkeli 1874-2003**
- **No commercial importance**

- **In Hungary:**
- **No cultivation**
- **Imported raw material in several preparations**

5-years old Eleuterococcus plants in Mikkeli, Finland

Stems and the root system of *Eleuteroccus senticosus*

Good quality berry and seed yield in Mikkeli

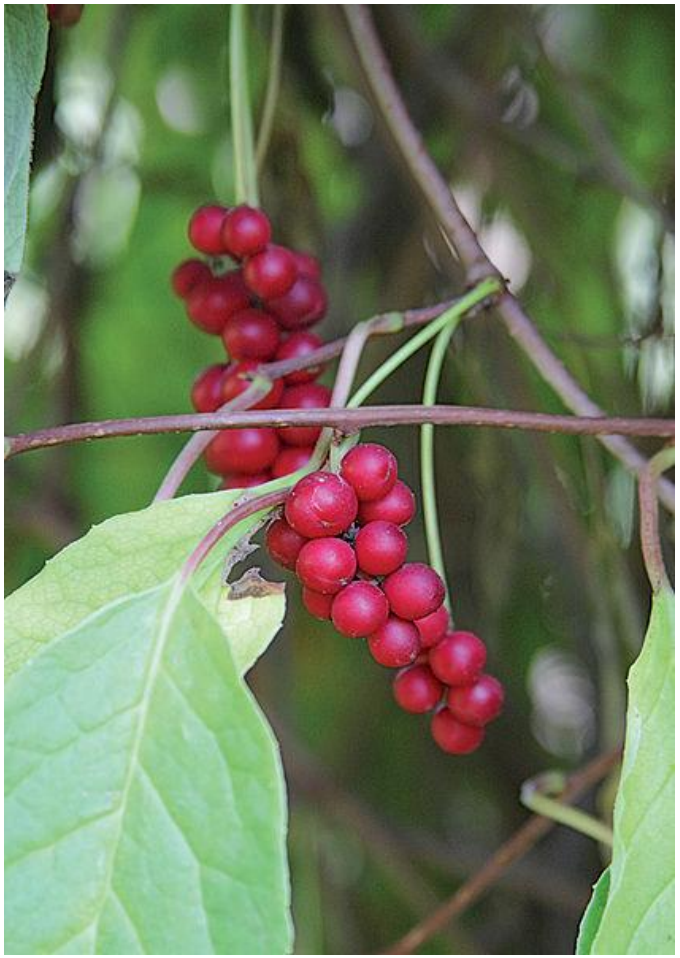
Seedlings from own seeds

4-year old plantation in plastic mulch, Mikkeli.

3. Schisandra chinensis

- **In Finland:**
- **Only a special berry plant for home gardens**
- Owervintering in South and Central Finland

- **In Hungary:**
- **No importance**
- Only in adaptogen preparations



4. Introduction of *Panax* species into Finland

Introduction experiments with *Panax* species in Finland

- ***Panax ginseng*** **from USA from 1990 –**

  Some experiments by growers,

  Experiments in universities

- ***Panax quinquefolium*** **from Canada, USA from 1996 -** Bot. Garden of Helsinki Univ.

- **Agronomical studies of *P. quinquefolium* in MTT Mikkeli 1996-2002.**
  - Galambosi, B., Jokela, K., Slacanin, I. 2004. Experience of cultivation *Panax quinquefolium* L. in South Finland. In: Phytopharm 2004 Mikkeli, Finland . p. 513-517 **.**

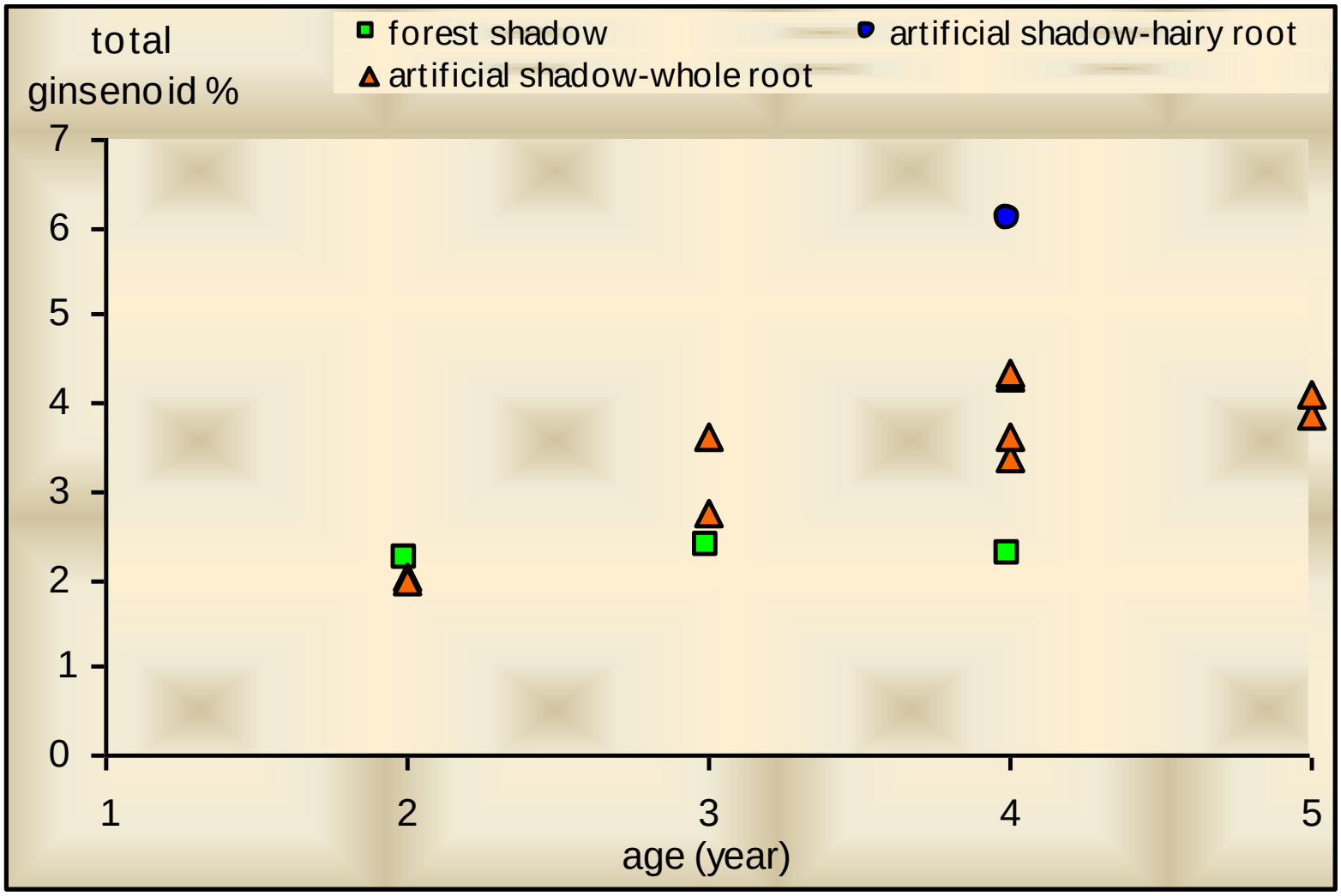
Panax quinquefolium sown and transplanted into plastic mulch. Shadowing by nets.

Life cycle is 4-5 years

Lost of plants during 4 years:
from sowing 80 %, from transplanting 50 %.

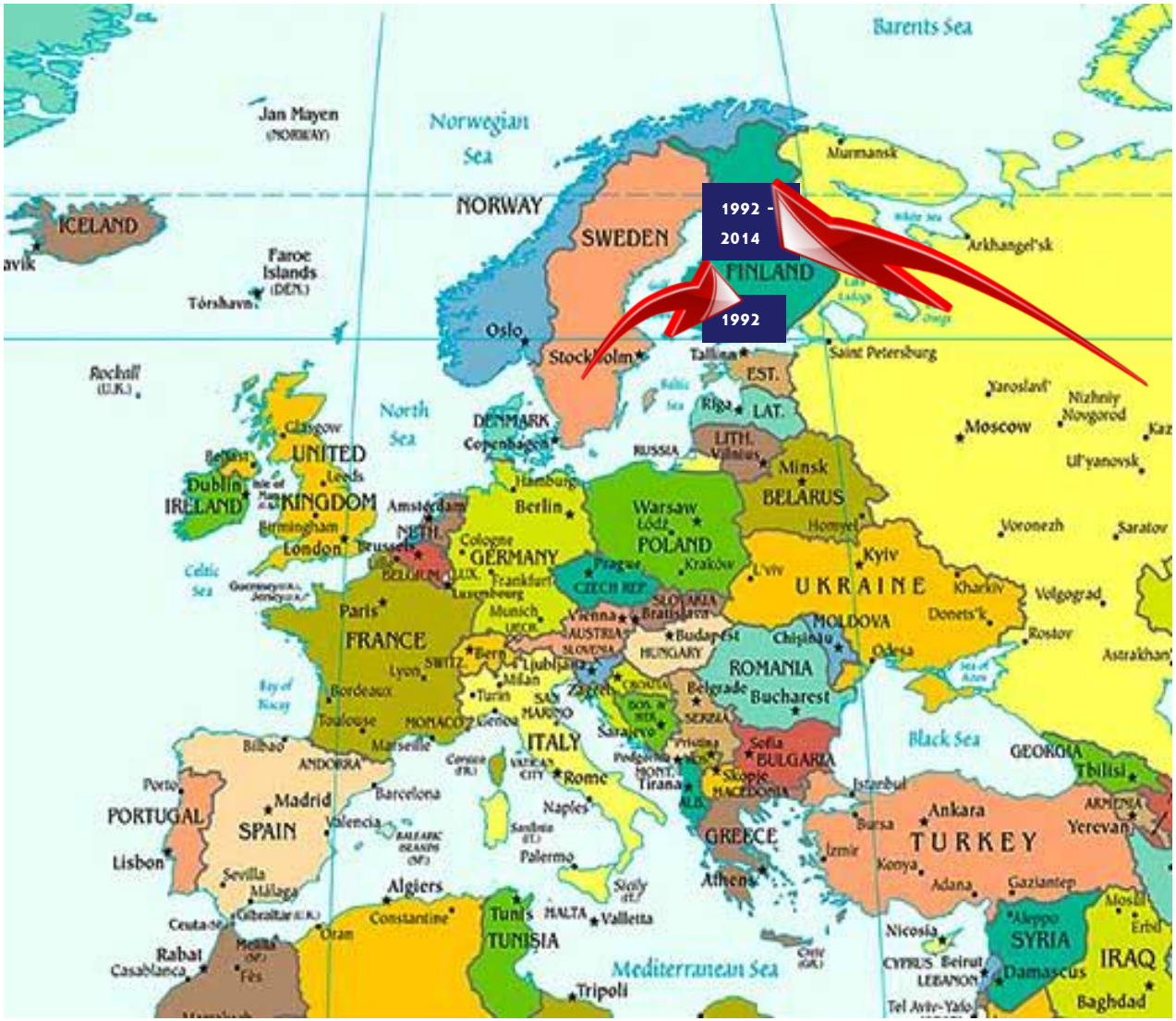
Hand harvest, typical root formation

Good quality: the total ginsenoid contents at Mikkeli by plant age, 2000-2003



Root and berry production of *P. quinquefolius* is possible in Finland, but it is not economical

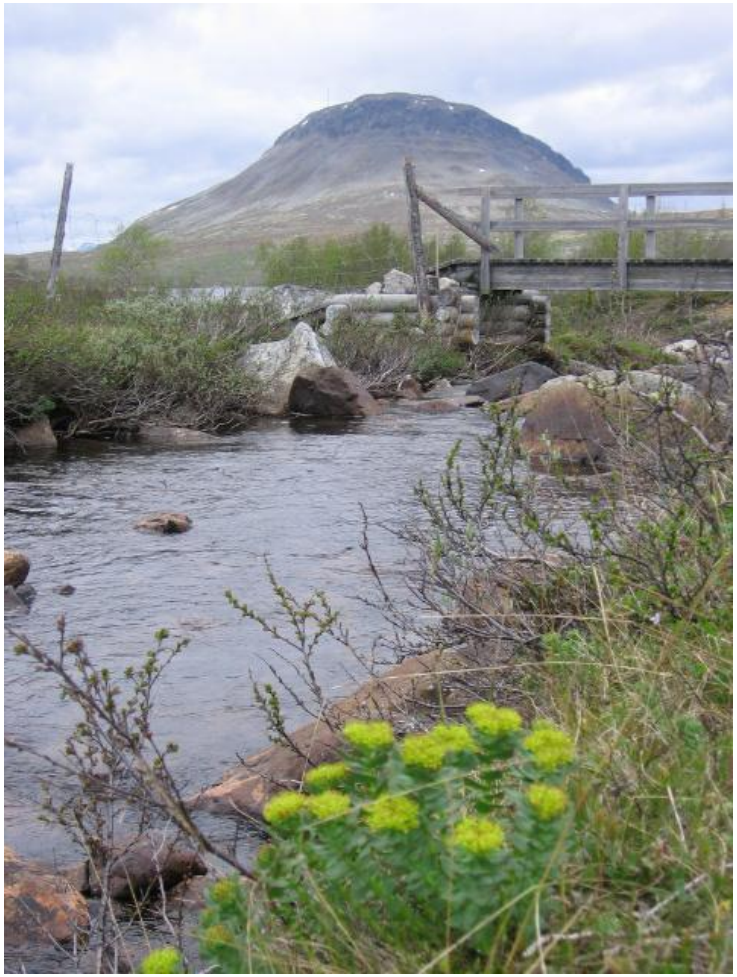
5. Domestication of *Rhodiola rosea* in Finland



Impulses for domestication of *Rhodiola rosea* in Finland

- Rhodiola is endemic pant, in North Lapland

- **Informations:**
- from Russia: 1992-2014
- from Sweeden: 1992-
- First cultivation experiments at MTT Mikkeli: 1992 –
- 10 publications on biology, quality and cultivation



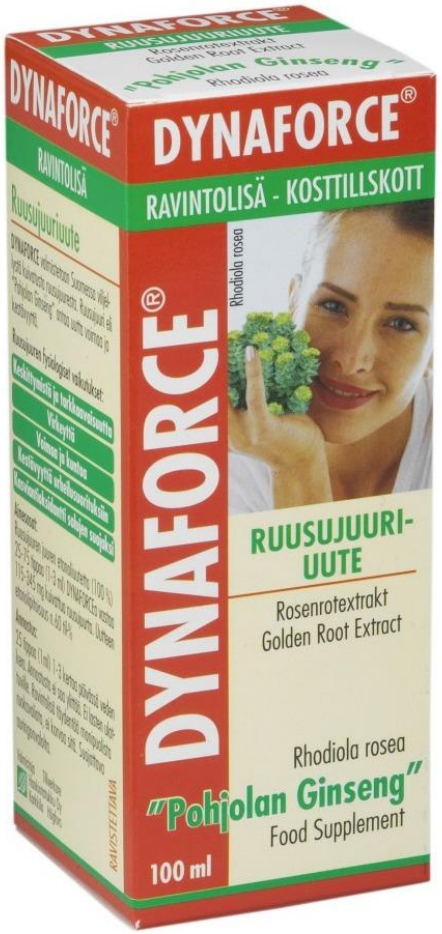
25 accessions in the *Rhodiola rosea* collection at Mikkeli

Black plastic mulch is suitable technology for 4-5 year life cycle

Experiments for harvest and post harvest processing of Rhodiola root yield

Rhodiola products in Finland: Dry root extract and tablets

*Rhodiola rosea p*roducts of Hankintatukku LtD in Finland



Golden Root tablet in Lapland. (2009)

In Hungary no climatic suitability for growing. On the market: a norvegian *Rhodiola rosea* product

Conclusion

- **Adaptogen medicinal plants are a relatively new crops (except Panax)**
- **Their advantageous properties were prooved**
- **Their popularity among consumers is increasing continuously.**
- **Most important species*: Panax, Rodiola, Eleuterococuus***
- **Less importance of *Leuzea, Schisandra***
- **Their introduction into new countries is a very interesting task!**
- **The success depends on several climatical, agromical, economical and marketing factors.**

THANKS TO

- **SPCPA organizers for invitation !**
- **For several Russian, Hungarian and Finnish Colleagues for the fruitful collaboration during last 40 years!**
- **Herb Team of MTT Agrifood Research Finland Mikkeli for the agricultural experiments**