

RESEARCH INSTITUTE FOR FODDER CROPS, Ltd. Troubsko Agricultural Research, Ltd. Troubsko



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CERTIFIKAČNÍ ORGÁN č. 3002



ČSN EN ISO 9001

CERTIFIKAČNÍ ORGÁN č. 3046



ČSN EN ISO 14001

Research Institute for Fodder Crops, Ltd.

Troubsko

- Research
- Breeding
- Consultant service
- Agricultural production
- Business activity
- Services



Agricultural Research, Ltd.

- Basic and applied research
- Services

Agrolab, Ltd.

- Analyses (amino acids, fertilizers, feeds, seeds, soil, plants, lipids , water)

Research activities





Fodder crops

Maize

Sunflower

Wheat

Barley

Sugar beet

Poppy

Intercrops

Minor crops



- Crop diversity
- Conservation of genetic resources

- Genetics
- Breeding

- Technology inputs –

agronomy, plant protection,

- Non.food production



Department of Genetic Resources

National programme of conservation and utilization of plant genetic resources and agrobiodiversity

- Acquisition and collection, evaluation and description, storage and giving of seeds samples of breeding a wild fodder crops.
- The main species of fodder crops: *Medicago sativa*, *Medicago* spp., *Trifolium pratense*, *T. repens*, *Trifolium* spp.
- The marginal species of fodder crops : *Onobrychis viciifolia*, *Lotus corniculatus*, *Anthyllis vulneraria* aj.
- Minority crops: *Carthamus tinctorius*, *Phacelia tanacetifolia*, *Phalaris canariensis*, *Trigonella foenum-graecum* aj.
- Wild species usable in agriculture, species of florid meadows, rare and endangered species, vanishing weeds.



Department of Genetic Resources

Research projects

- **„ Minor crops for specific food utilization“**
 - cultivation of selected minor crops (hulled wheat, hulled oat and barley, millet, tartar buckwheat, pea, cowpea, chickpea, safflower), study of nutritive quality and their utilization in grocery.
- **„A pilot project of prevention of soil biological degradation under conditions of arid climate “**
 - study of utilization auxiliary soil substances, autochthonous tree species and of lesser-known xerophilous grasses and legumes for recultivation of arid soils.



Department of Genetic Resources

Research projects

- **„Eureka E! 3824 INWASCOMP From Industrial Waste To Commercial Products“**

- selected industrial waste (slag, ashes, fly-ashes etc.) are used as components of the material called „EnviMix“. The project suppose elimination of such negative effects, which are connected with destruction of stabilization elements in the countryside (soil erosion, high surface loss of nutrients, floodings etc.).





Sowing of experiment in Troubsko within of project:
„A pilot project of prevention of soil biological degradation under conditions of arid climate “





Department of Genetic Resources

Collecting expeditions

- Domestic and foreign collecting missions are organised every year.
- Collecting expeditions are aimed collecting of wild species seeds and old landraces of cultural plants in distinct, mostly geographically determined area.
- Seed samples gathered at collecting missions are after clearing stored at gene bank and are utilised mainly within breeding programmes and within *on farm* and *in situ* conservation.





Department of Genetic Resources

Other Activities of the Department

- **Breeding and the use of non-traditional fodder species in agriculture and in landscape creation:**

Phacelia tanacetifolia, Trifolium resupinatum, T. alexandrinum, T. incarnatum, Phalaris canariensis, Onobrychis viciifolia, Anthyllis vulneraria, Lotus corniculatus, L. ornithopodioides, Medicago lupulina, Secale cereale var. multicaule, Bromus secalinus etc.

- **Cooperation with Podyjí National Park and Moravský Kras Protected Landscape Area:**

Cooperation within *on-farm* conservation projects of old landraces of cultural plants, within *in-situ* conservation and repatriation of selected endangered wild species, within the storage of seed samples in the gene bank, within preparation of the research projects, within providing advisory services etc.



Department of Genetic Resources

Other Activities of the Department

- **Advisory services:**

Accredited Personnel by the Ministry of Agriculture, aimed at landscape protection, organic farming, permanent grasslands etc.

- **Seed quality laboratory:**

Germination, seed quality, seed samples analyses, purity etc.





Department of physiology and genetic

Laboratory of molecular biology

**QTL detection (resistances of maize, clover
and lucerne)**

**Determination of genetic variability of clover
and lucerne**

**Identification of maize hybrids by RAPD
markers**

**Fylogenetic analysis of Bumble-bee through
the sequence based typing of mitochondrial
genom CO1**





Department of physiology and genetic

Gas chromatography laboratory

**Nitrogen symbiotic fixation and activity of
nitrogenase enzym – ethylen**

Oil quality – fatty acids detection

**Acaricide residues in beewax-
acrinathrin, fluvalinate**





Department of physiology and genetic

**Laboratory of Bumble-bee rearing
for pollination**

**Investigation of Bumble-bee
inhabitation and their feed sources**



Department of physiology and genetic

Fodder crops breeding

***Trifolium* and *Lotus* hybridization**

Nontraditional oilseeds

**Research of energetic plants and their potential
utilization**



Department of Plant Protection

- **Accredited workplace for the plant protection formulations testing**

Accredited workplace for the viral pathogens testing

- **Mycological and mycotoxicological laboratory**

Study of important harmful organisms – fungal, viral, insectual and weedy

Plant protection counseling service



Department of Plant Protection

Accredited virological laboratory

- **Diagnostic of plant viral pathogens – ELISA**
- **Resistance tests of various plant material**
- **Virulence tests of individual viral isolates**
- **Viral isolates storage**



Department of Plant Protection

Entomology



➤ Solving of the insect pests problems – research projects

➤ The evaluation of plant protection formulations (insecticides) efficiency

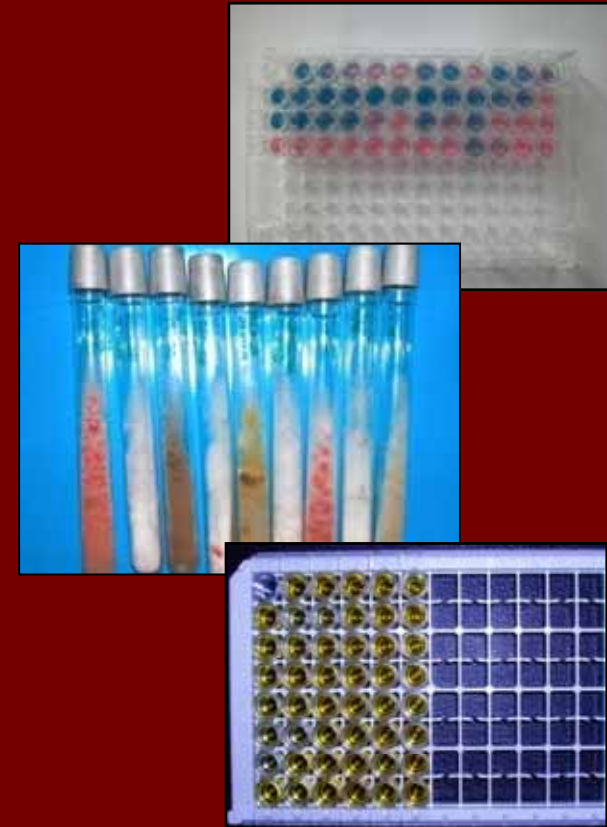




Department of Plant Protection

Mycological and mycotoxicological laboratory

- The important fungal pathogens isolation and determination
- Fungal isolates storage
- Virulence tests of the individual fungal isolates
- Resistance test of various plant material
- Mycotoxicological analyses - DON, T2, AFL, ZEA, FUM, OTA content





Department of Plant Protection

Herbology

- **Weed control**
 - **traditional fodder crops (maize, clovers)**
 - **non-traditional fodder crops (safflower, malva)**
 - **plant protection formulations for seed growths – expanded utilisation**





Department of Agronomy

Research area

- Forage production and quality of legumes and legume–grasses.
- Choice of mixture components
- Experimental trial platform
- Statistical assesment



- research, consultancy, publications activity, verification, presentation



Department of Agronomy

Research area

- quality of grass stands and legume and legume-grasses on the arable land in the ecological farming
- evaluation of botanical shots of the growth, assesment of quality ensiled pasture, consultancy



- cooperation with other research institutions, schooling, seminars, creation of new projects



Department of Agronomy

Revitalisation of antropogenic contaminated soils (fytoremediation)



Biological decontamination of contaminated soils:

- of diesel oil (assesment: content of extractable matter in dry matter - NEL)
- of heavy metals (slug, cadmium)

Utilisation of nontraditional crops:

- *Carthamus tinctorius*
- *Cicer arietinum*
- *Secale cereale* L. var. *multicaule*
- *Trigonella foenum-graecum* L.
- White sweet clover (only heavy metals)



Utilization of container trials and small plot trials



Department of Agronomy

Research area



➤ **Models of soil management**



➤ **Crop rotations**



Department of Agronomy

Research area



Soil science





**RESEARCH INSTITUTE FOR FODDER
CROPS, Ltd.**

Breeding





***Carthamus tinctorius* L.**
Safflower
Var. SABINA

- Non-traditional oil crop
- Inter-crop
- Green manure
- Fodder crop
- Nectariferous
- For dry condition





***Malva verticillata* L.**
Fodder mallow
Var. DOLINA

- One-year fodder species
- Inter-crop
- Tolerates all types soils





***Coronilla varia* L. - Crown vetch**

Var. EROZA

- **Anti-erosion species**
- **Decorative**
- **Fodder crop**
- **High yield of seeds**





***Lotus ornithopodioides* L.**
Trefoil
Var. JUNÁK

- Annual multi- cut fodder crop
- Green manure
- Inter-crop
- good for legume-grass mixtures
- Tolerates all types soils





***Cicer arietinum* L. – chick pea**

Var. IRENKA

- For food
- For fertilization of sandy soils
- Good preceding crop
- Thermophilic
- High protein content





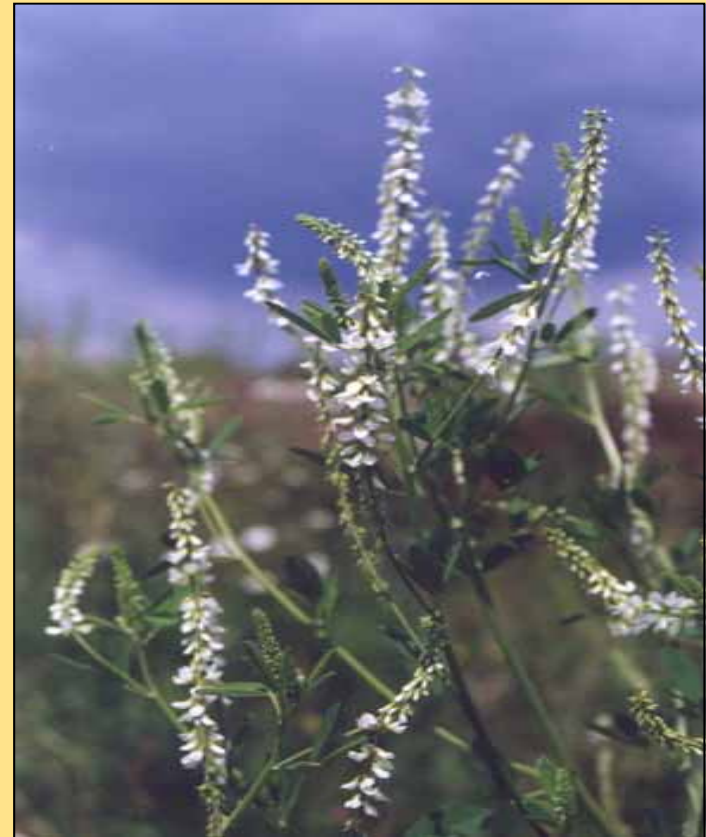
***Melilotus albus* L.**

White sweet clover

– annual: Var. ADÉLA

– biennial: Var. KRAJOVÁ

- **Fodder crops**
- **Green manure**
- **Nectariferous**
- **Ameliorative plants**
- **On non-fertile soils**





***Medicago lupulina* L. – Black medic**

Var. EKOLA

- **Green manure**
- **Fodder crop**
- **Component to the legume-grass mixtures**





Secale cereale var. multicaule

Rye

Var. LESAN

- Annual and biennial fodder crop
- For food
- grain feed
- bulk feed
- On non-fertile soils





***Phalaris canariensis* L.**
Canary grass
Var. Judita

- Annual fodder crop
- Inter-crop
- Food for exotic birds
- Thermophilic
- On non-fertile soils





Trigonella foenum-graecum
Fenugreek
Var. Hanka

- Fodder crop
- Herbaceous plant
- Aromatic plant
- Thermophilic





RESEARCH INSTITUTE FOR FODDER CROPS, Ltd.

Production and sale of seeds

- ***Melilotus albus***
(annual, biennial)
- ***Malva verticillata***
- ***Coronilla varia***
- ***Carthamus tinctorius***
- ***Lotus ornithopodioides***
- ***Medicago lupulina***
- ***Trigonella foenum-graecum***
- ***Cicer arietinum***
- ***Phalaris canariensis***
- ***Secale cereale***
var. ***Multicaule***
- ***Trifolium pannonicum***
- **legume-grass mixtures**
- **Special mixtures**



RESEARCH INSTITUTE FOR FODDER CROPS, Ltd.

Consulting service

- **Technologies of cultivation of fodder crops on the arable soil**
- **Seed growing of legumes**
- **Maintenance or regeneration meadows and pastures**
- **Minimization technology**
- **Technologies of establishment of stands of field crops**
- **Optimalization of rotation of crops**
- **Landscaping - recultivation, amenity planting**



RESEARCH INSTITUTE FOR FODDER CROPS, Ltd.

Offer of services

- Accredited laboratory for diagnostic of wide spectrum of plant viruses
- Analysis of mycotoxins in agricultural products
- Registration and pre-registration tests of preparations for plant protection and fertilisers in a wide spectrum of field crop
- Production of regional mixtures
- Cleaning and scarification of seeds
- Pollination in closing rooms
- Sale of seeds and seedlings
- Laboratory analyses
- Publication – annual reports, methods etc.



European Grassland Federation „Alternative Functions of Grassland“



15th EGF Symposium 2009
(Brno, 7th – 9th 2009)