

**LESYČR**



# **Forests of the Czech Republic**

**Seed production plant in Týniště nad Orlicí**

# About us – Forests of the Czech Republic



- Forests of the Czech Republic is state enterprise cultivated state-owned forests in the Czech Republic
- The enterprise is located in central Europe, in Czech republic, in the city Hradec Králové
- The enterprise employs more than 3 000 workers
- Annual turnover is approximately 800 milions \$
- Cultivated forest area is approximately 1,5 milion hectars (3,75 milion acres)
- Annual timber harvest is beteween 8 milion and 15 milions cubic meters of woods



# About us – Seed production plant

Seed production plant in Týniště nad Orlicí is an organization unit of Czech state forests

- The enterprise has special purpose for seed extraction, seed storage and presowing treatment
- More than 50 years long history – the factory was established in 1971
- The demand of forest seeds has changed over time:
  - from former relatively small group of coniferous tree species seeds (namely Norway spruce, Scots pine, European Larch) to currently required wide range coniferous and broadleaves tree species seeds



# What we do?

In general: almost all activities related to the forest seeds production

In it is included:

- **Processing of raw seed material and producing of seeds**
  - more than 30 tree species
  - common and less common coniferous and broadleaves forest tree species according to forestry demand
- **Seed extraction**
  - cones (*Picea, Pinus, Larix, Pseudotsuga,...*)
  - dry broadleaf seeds (*Tilia, Carpinus, Fraxinus, Acer,...*)
  - beechnuts and acorns (*Fagus, Quercus,...*)
  - fleshy fruits (*Prunus, Malus, Pyrus, Sorbus,...*)



# What we do?

## Presowing treatment

- for all tree species, if they need it
- cold or warm-cold method, special recipe for each tree species
- without or with medium (in peat)

## Seed sorting

- according size or weight fraction
- germinated seeds (maschine sorting – optical sorter)



# What we do?

## Incrusted seeds with bioformulation

- Improvement of mechanical properties of seeds (better pouricity – suitable for accurate machine sowing)
- Increase of purity (seeds without impurities, without parts of wings and without resin - suitable for accurate machine sowing)
- Improvement of seeds visibility on the peat (suitable for accurate machine and manuell sowing)
- The possibility adding of bioformulations to the seed crust (improvement of the germination, protection against fungal diseases, decreasment in the use of fungicides and improvement the plants quality parameters)
- Standardised pocedure in our factory
- Good results in controlled laboratory conditions, in the forest nurseries and in the forest stock



# What we do? The Seeds storage

Storage in air-conditioned boxes, in fully controlled conditions

- freezing or refrigerating (according tree species)
- storage conditions are controlled, monitored and regulated directly or remotely by PCs
- backup by diesel agregator– starts automatically in up to maximally 20 seconds after interruption of electricity supply



# What we do? Seed Testing Laboratory

## The Testing for Seed Production

- we have to know the quality parameters of seeds in each production phase
- all types of seeds testing - purity, watercontent, proportion of empty and damaged seeds, viability, X-ray technology test (Kubtec technology)

We need and we have got very important data for good quality seed production.



# What we do? Sorting of germinated Beech Nuts

We use optical sorter:

- in the end of presowing treatment we separate sprouted beech nuts mechanically
- perfect for sowing in the planter – one beech nut for one cell

Usable technology for the other Seeds sorting.



# What we do? X-ray technology

The production of seeds is very strictly controlled by:

- intake of raw seeds
- seeds extraction
- purification
- storaging
- presowing treatment
- expedition

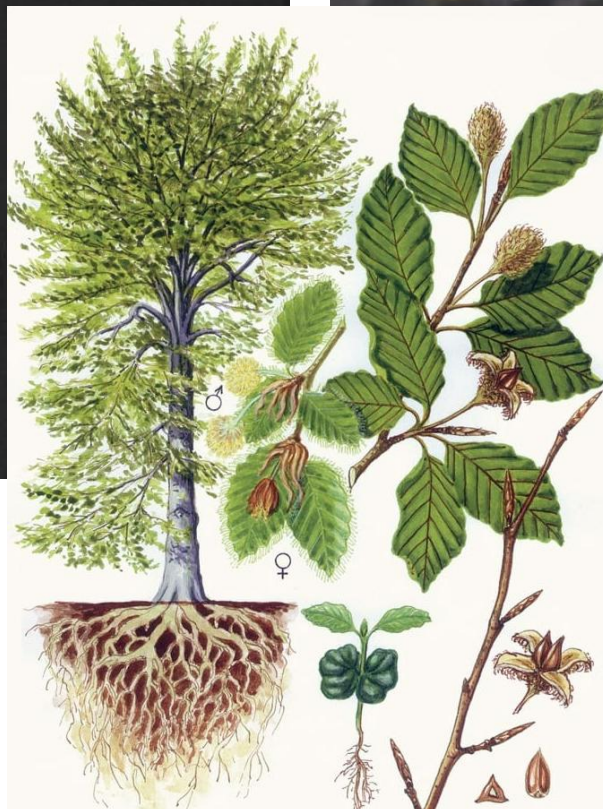
We use X-Ray technology from Kubtec for it

- KUBTEC Parameter 2D Cabinet X-ray machine

Each lot of seeds must be controlled and must meet the quality requirements



# The Beech nuts in X-ray



# What we do? Seed sorting

We sort all of seeds lots:

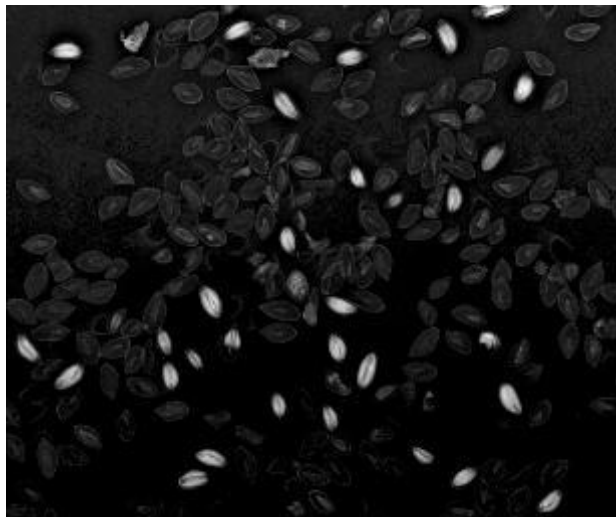
- pneumatic table
- air cleaner
- sieve machine
- floating (Acorns)
- X-ray sorting



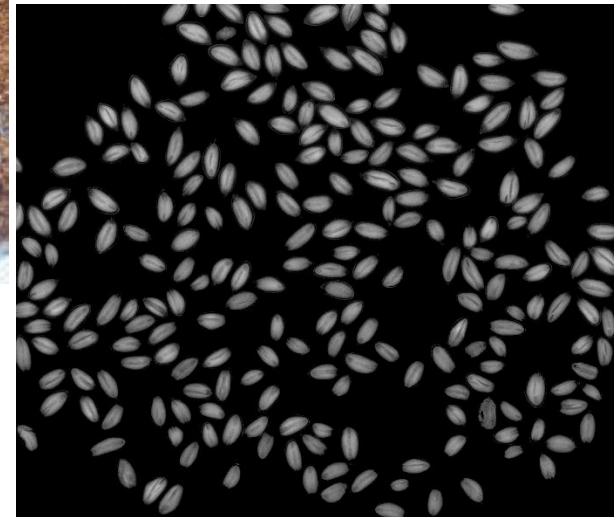
Seeds sorting on the pneumatic table



Inspection of seed sorting results with using X-ray technology Kubtec



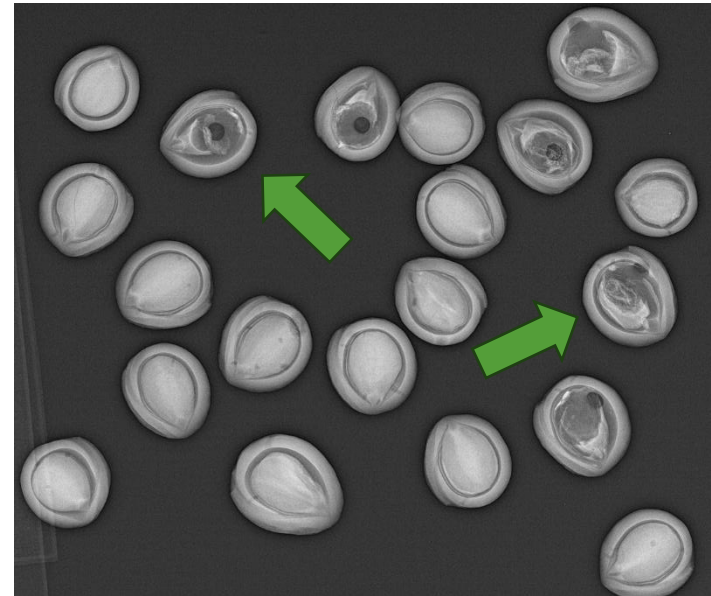
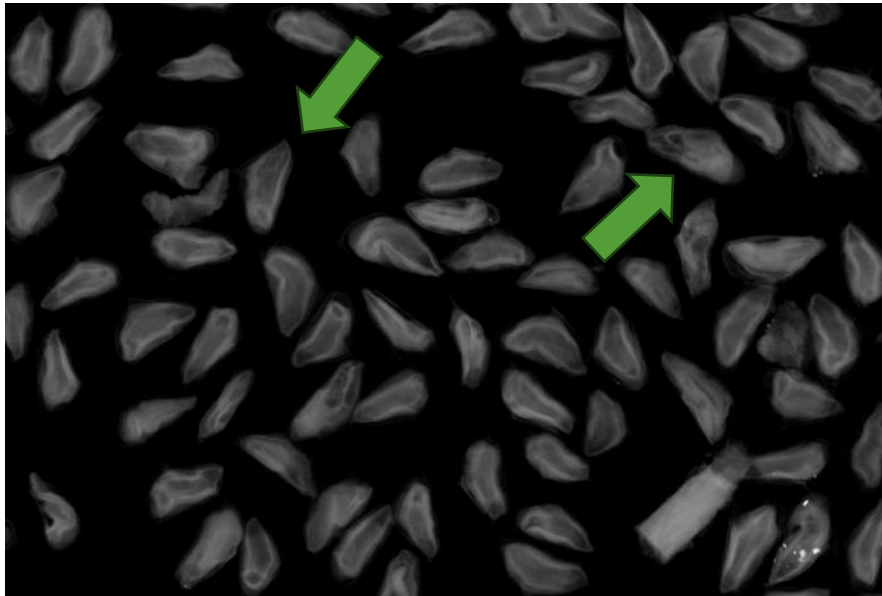
Red line is the border between good seeds and empty or damaged seeds



# What we do? Sorting of seeds with using X-RAY technology

First step - definition of seeds defects on X-ray Kubtec (in our seed production plant)

- empty or damaged Seeds, undeveloped embryo,...

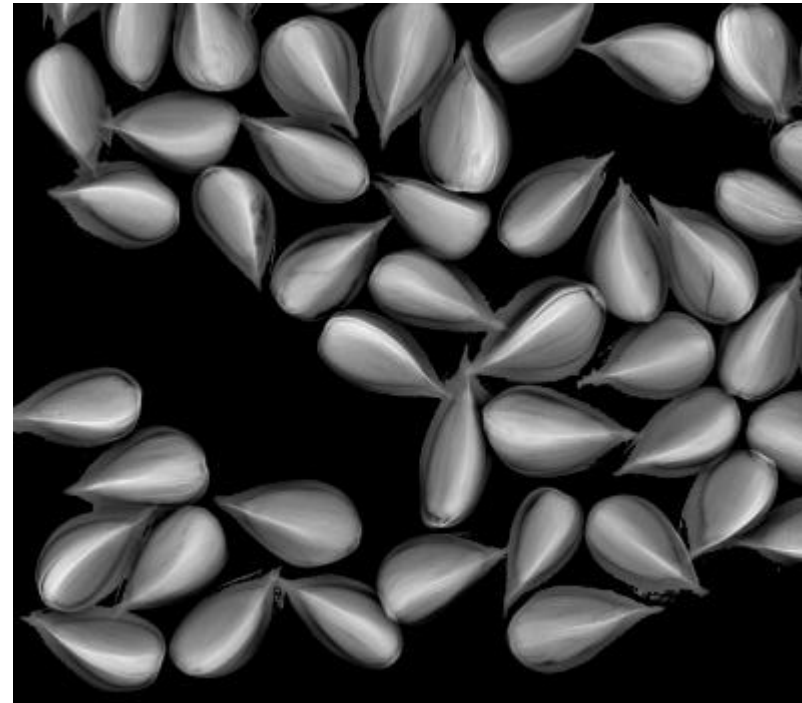


Second - creation of a sorting algorithm for a X-ray sorter

Third - sorting of lot of Seeds on a X-ray sorter

# What we do? Sorting with using X-RAY technology

Forth step – inspection of sorted Seeds on X-ray Kubtec



# What we do? Marketing

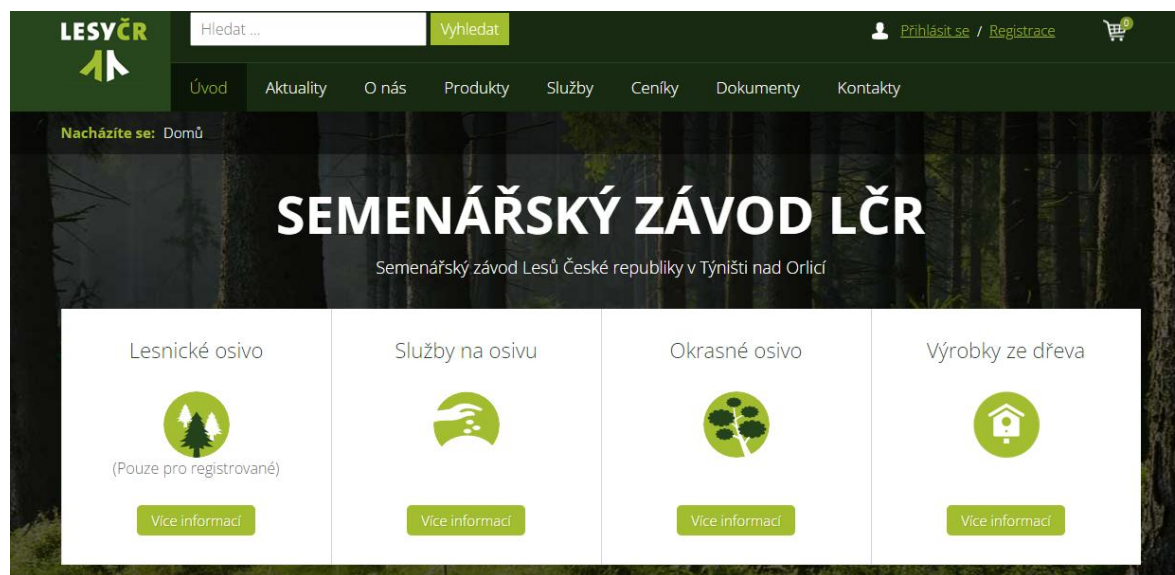
## We offer:

- seeds of both rare and common tree species
- services (presowing treatments, storaging, sorting, incrustation, other special services, ...)

Sale is possible thru our E-shop (for registrated partners) or personally with our sale managers:

Ing. Ivan Chalupa, Ing. Jakub Dvořák

[www.semenarskyzavod.cz](http://www.semenarskyzavod.cz)



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**Thank You for Your Attention!**

