NORSK WAX

Kvaae

Norsk Wax AS
Larvik
NORWAY

Supplier of wax for protecting

plants since 1992

History

- Fertilizer coating with wax since 1984
- Hydro Wax since 1990
  - Built wax blending unit in Norway
  - Started development of Proagriwax and Bugstop/KVAAE in 1992
- Norsk Wax since year 2000 by MBO
  - Main focus on developing formulations and raw materials
  - Production “blending” at partners facilities with NW recipe.

Area of business

Grafting waxes
Proagriwax

- Market leader
- High quality wax and brand.
- Supplies 800-1000 ton/year
- Follow up and advice customers

Forest industry
Bugstop/KVAAE

- Develop from idea to commercial product
- Introduce the wax method in forest nurseries
- Supplies 150 tonne/year wax and develop application equipment

Focus

- Biology and wax
  - Modern plant production is artificial
  - Where are the limits?
- Product is not only wax, but waxed plants
  - Today a strong focus on equipment
- Stable quality in a growing market
  - Collaboration with raw material suppliers and wax blenders.

We cooperate with several partners for production. Here with 150 tonne Proagriwax in Hungary.

Norsk Wax is a world wide supplier of wax for the agriculture industry. We are present in Africa, America, Europe and Australia. Here with customers in Egypt.

A short instruction to wax in vine grafting.

First use of wax is when joining scion and rootstock.

Second wax application before going to the nursery.

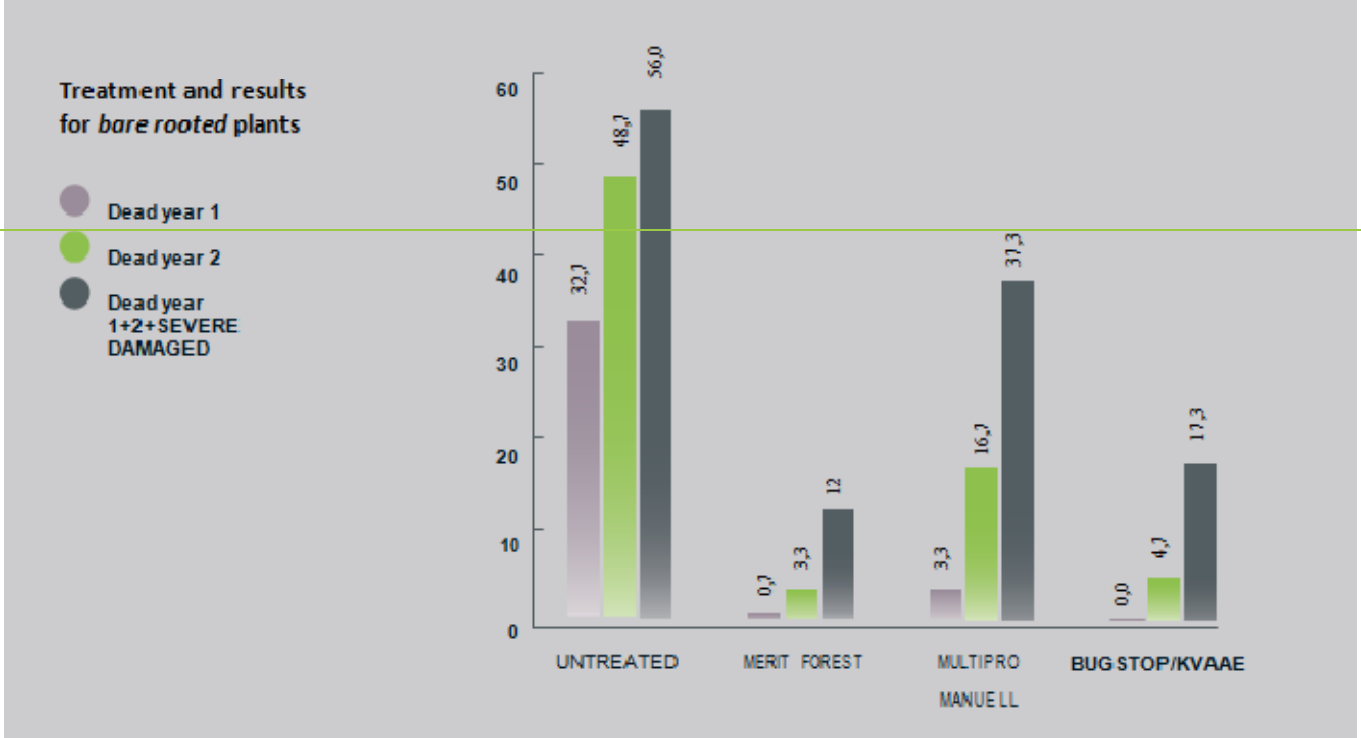
Normally red or green coloured wax.

From a nursery in Germany

Balance root and green parts

Why use wax in the forest?

It is proven to provide protection for two growth seasons.

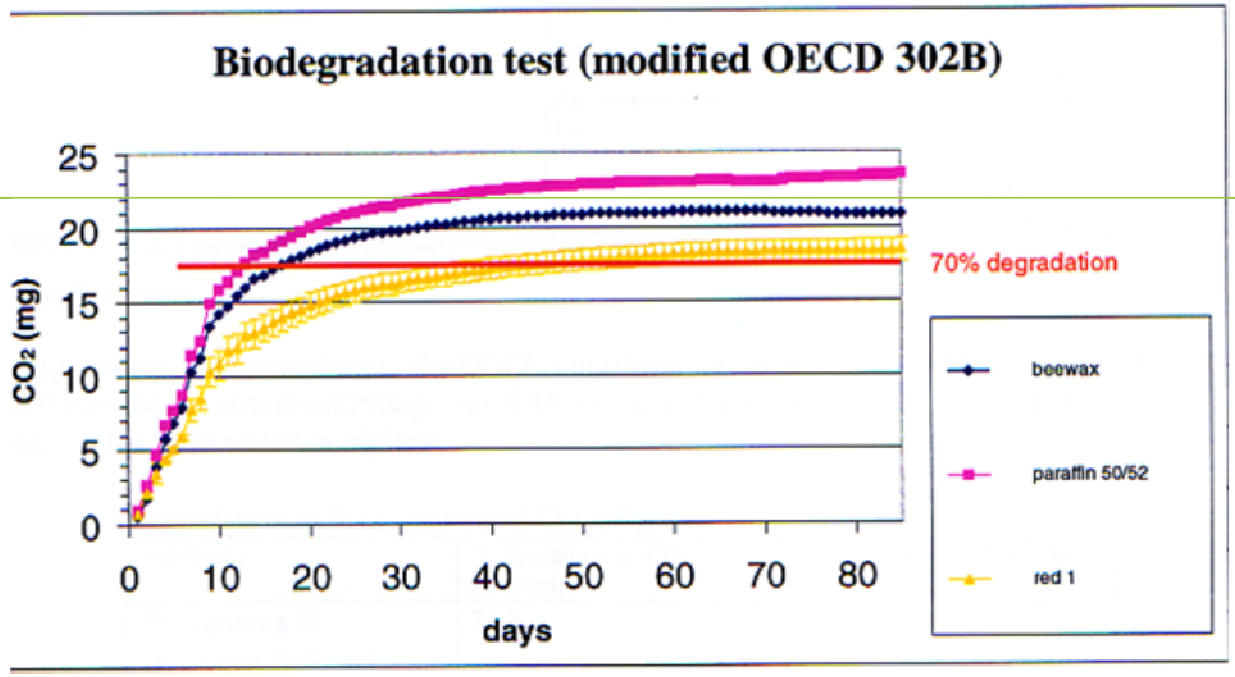


Thoroughly tested in cooperation with research institutions.

No known harmful effect to the natural ecosystem.

- DDT = Bird eggs destroyed
- Permethrine = Fish in lakes killed
- Neonicotinoids/imidacloprid = Bees colonies destroyed.
- Wax is natures own way of protection.

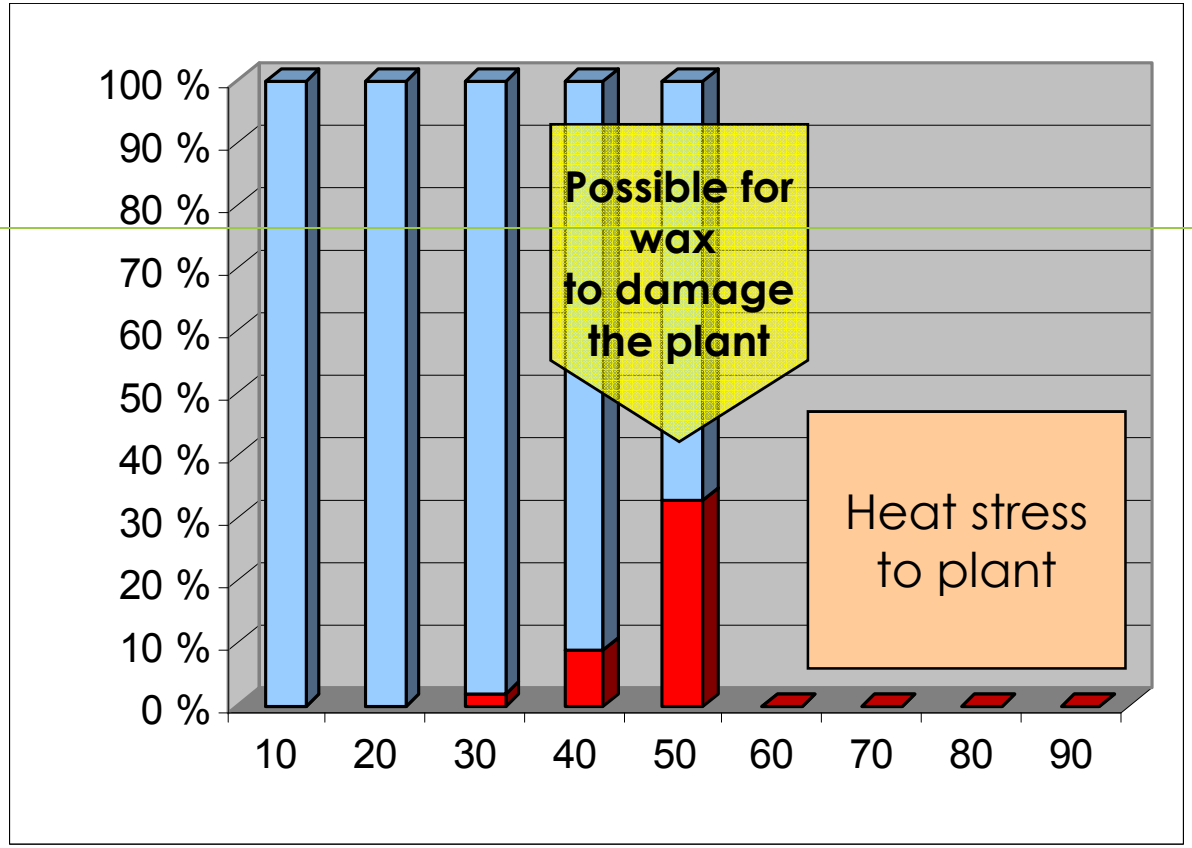
KVAAE wax is biodegradable.



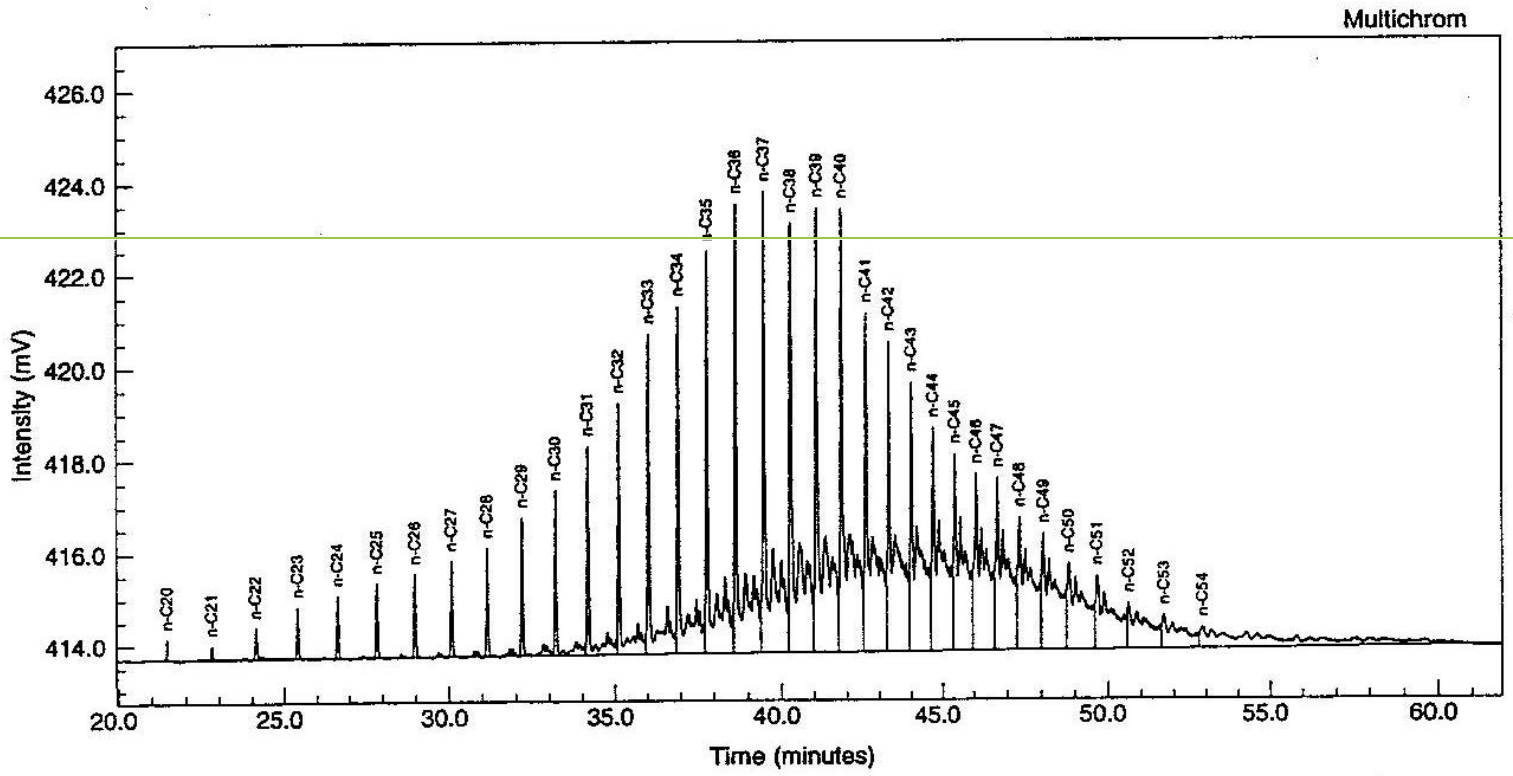
Plant biology and wax

What have we learned after 20 years with wax on plants?

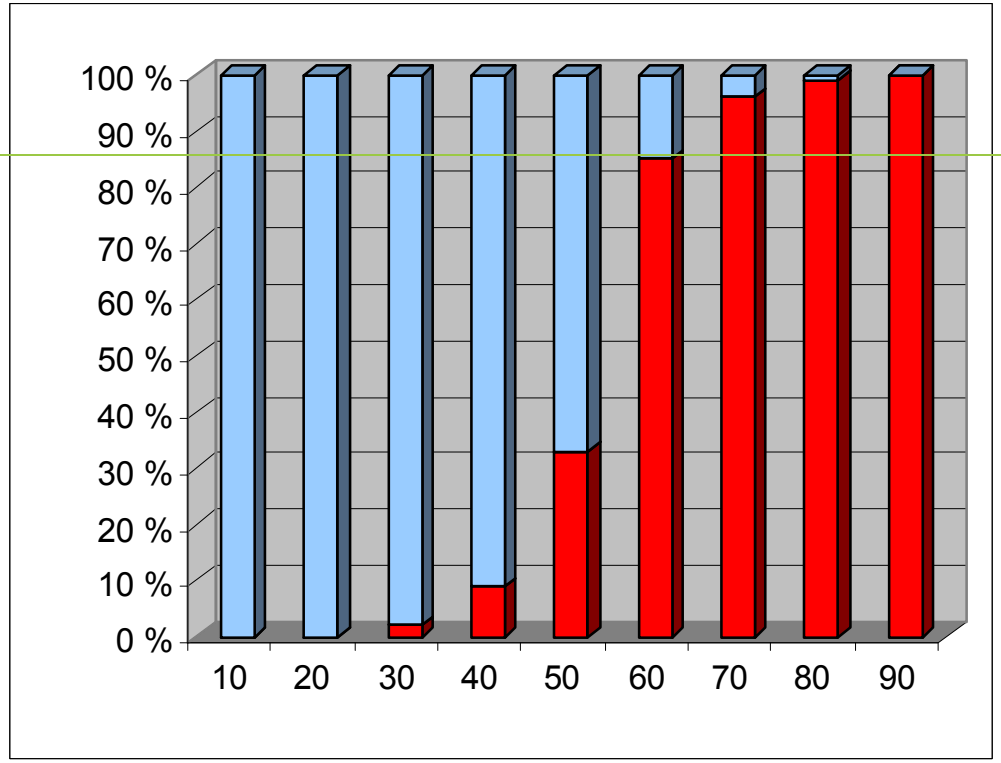
At high temperatures there are risks for 2 types of problems:



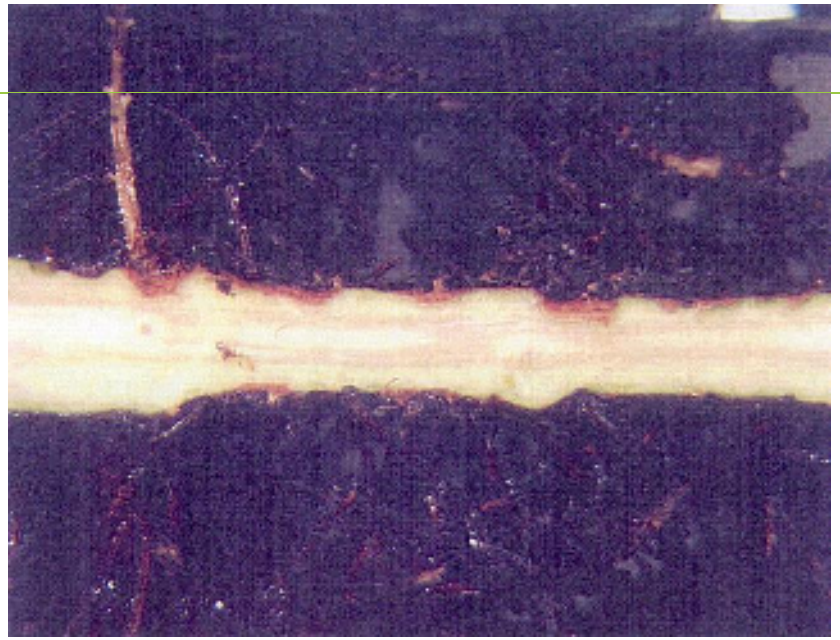
Wax consists of many molecules.



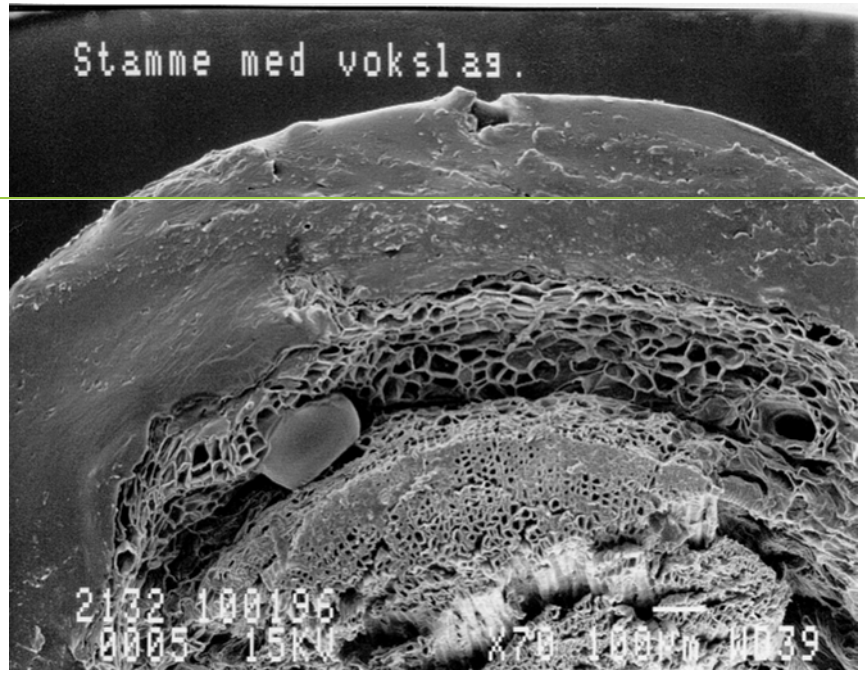
The melted fraction depends on the temperature of the wax.



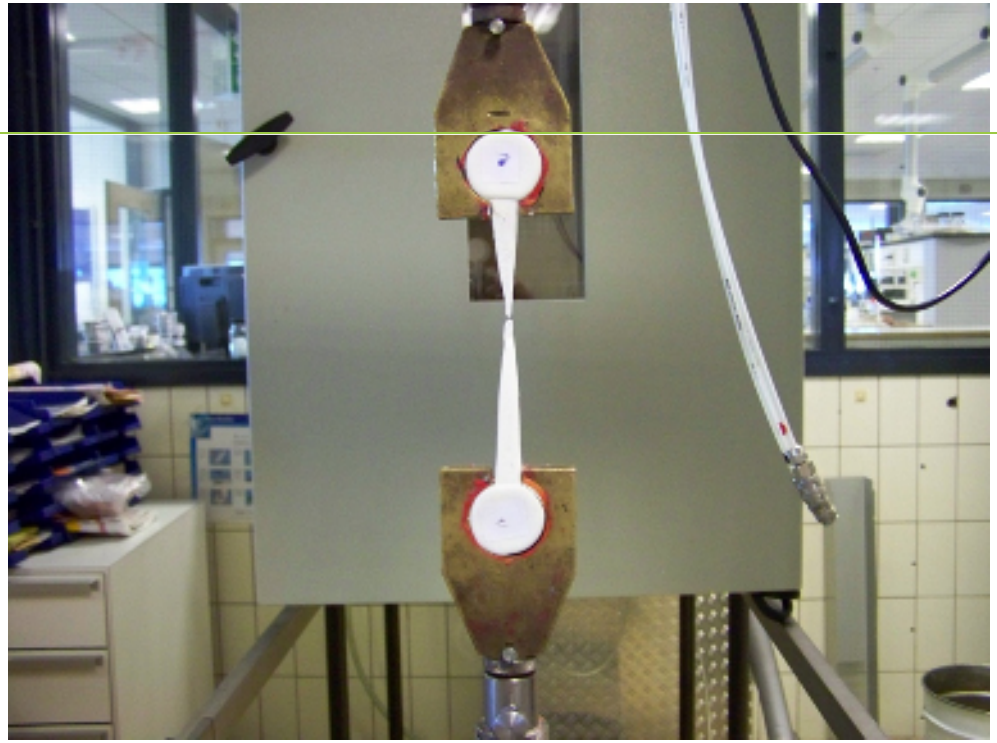
Penetration of the cork by wax molecules creates damage to the vascular cambium



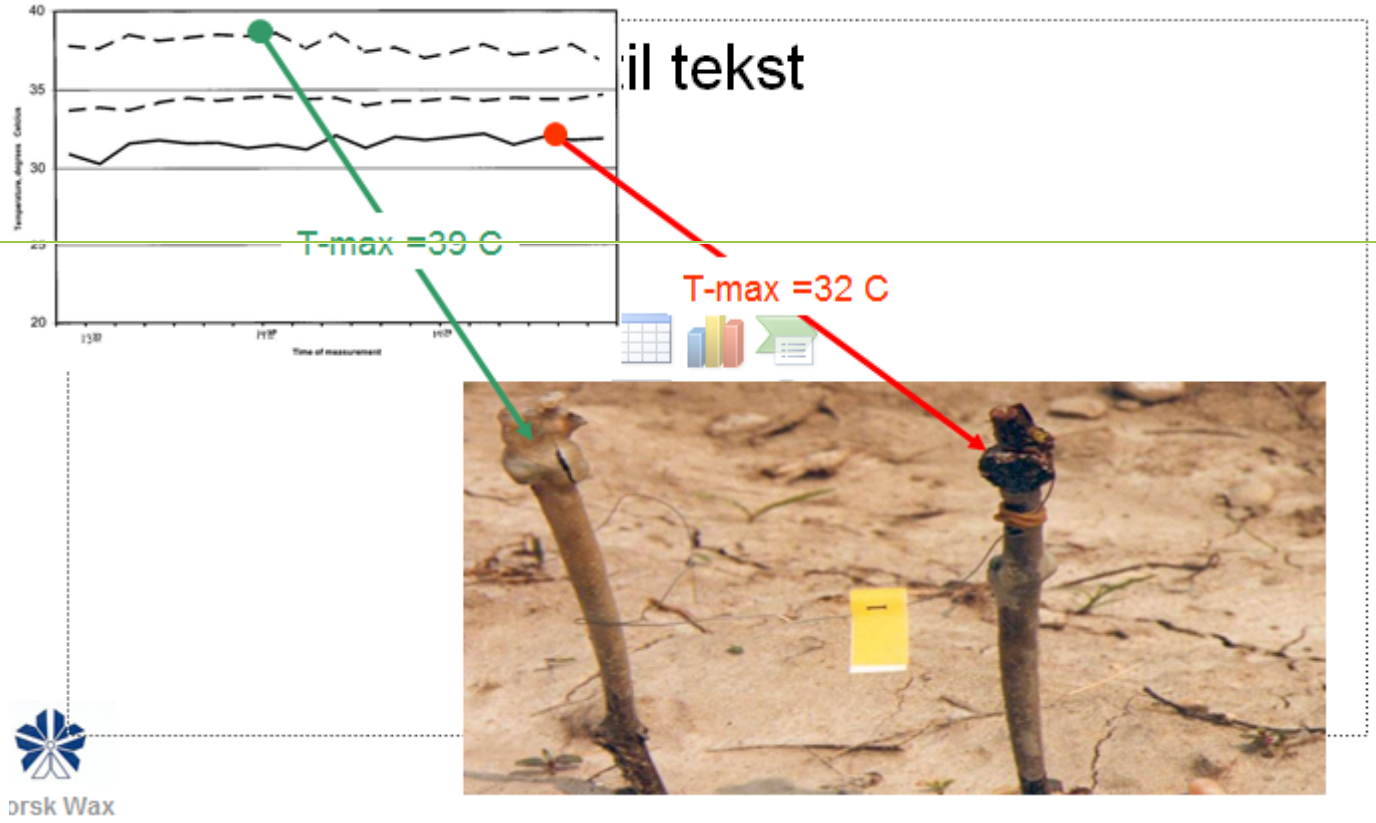
Microscopic view



The wax should follow increased diameter of the plant in our climate = hard wax will crack.



Measurements of callus temperatures



White color reduced temperature by 6-8 degrees C.

Equipment for application

Fountain machine for wax application

Developed a semi-automatic pilot wax machine in 2011. New pilot is under development.

Pilot wax machine in operation at Södra.

Automatic waxing unit of the machine

Fully automatic machine for containerized plants at Bergvik Skogsplantor.

Current activities:

- EU project Weevilstop
  - 3 Year project started September 2012.
  - Development of semi automatic machine for containerized plants. Focus towards small nurseries.
  - Further testing of plant biology and wax.
- Development of new semi automatic pilot machine.
  - Both in Italy and in Norway.
- Further improvements of the wax fountain machines.
- New wax formulations in testing.
- Development of fully automatic machine for containerized seedlings by Holmen Skog/Visser.

Wax in Sweden spring 2013

- 6-10 million bare rooted
- 6 – 8 million containerized plants
- 140 ton wax

Nurseries today working with wax/KVAAE :

Bergvik Skog, Holmen Skog, Södra Skogsplantor, Sundin Skogsplantor, Ramløsa Plantskola, Syd Plantor, Next Forest, Skogplanter Østnorge, Latvijas valsts mezi, Plantex.

2014 ? The industry is signaling a double in volume .