CropHealth Advising & Research
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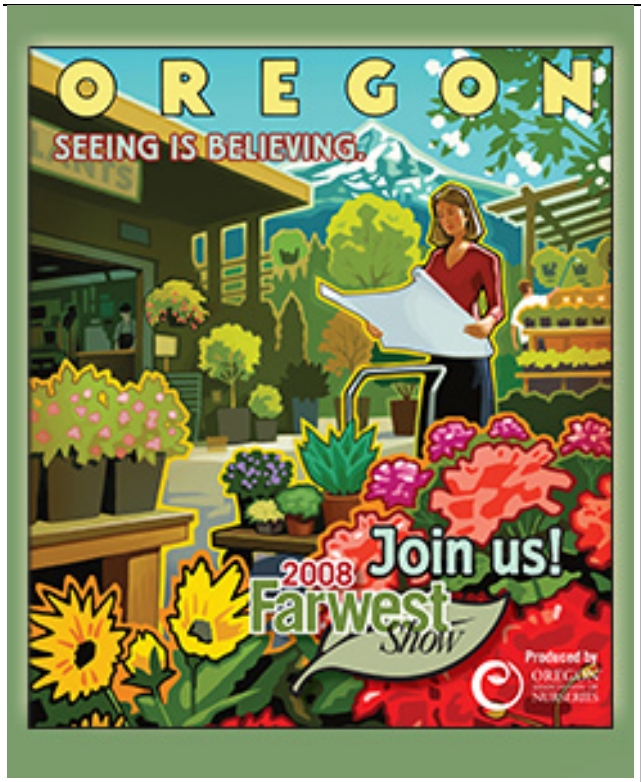
To	Date
JOHN BYLAND **Cc: Frank Branco, Rico Thorsen**	**Thursday December 11, 2008**

7 pages from Mario Lanthier



The "2008 Farwest Show" was held in Portland August 21 to 23.

This meeting is held every year. Technical seminars are held every morning. The trade show has 1200 exhibitors, of which 60% are wholesale nurseries.

Attendance this year was reported at 10,000 visitors, an important drop from 2007 (14,000 visitors) and a reflection of the difficult ecomony in the USA.

For more information, visit http://www.farwestshow.com/. Electronic copies of talks are posted on-line at http://www.farwestshow.com/seminars.handouts.shtml.

Planting the 21st Century Urban Forest

Richard Olsen, US National Arboretum, Washington DC

What will the urban forest look like in 2070?

- Breeders have to think today to release a "new" tree in 2040 to plant in 2050 to 2070.
- What if the climate is warming? "Increase the market, save the planet."
- To reduce carbon footprint, Chicago must plant 5 million trees!
- *Some trees may "disappear" from the market.*
- Red oak is prone to diseases in warm, hot weather. So is London plane tree.
- Norway maple and Sycamore maple are invasive. Hackberry is "dead on arrival".

Breeders are working on these trees for the future.

- Resurrecting American elm, Zelkova, Kentucky coffee tree, lindens, catalpa.
- Nyssa sylvatica, "2008 urban tree of the year". Hybrid oaks are here to stay.

CRACKS ON TREE TRUNKS

Dr. Hannah Mathers, Ohio State University, http://hcs.osu.edu/basicgreen

In 2005, nurseries in the US and Canada reported unusually severe problems with bark splitting on many plant species. Losses amounted to thousands of trees.

Researchers at Ohio State University did not recognize typical "frost cracks" on the South-West side of trees. Rather, they speculated the damage to the East or South sides resulted from the absorption of glyphosate into thin bark. The problem was from "new" glyphosate products which are more rainfast and penetrate faster into plants.

Extent of problem

In U.S. nurseries, losses from bark cracking is estimated at $6.6 million per year (or 2.5% of finished inventory). Trees reported to have bark cracking problems are *Acer, Amelanchier, Magnolia, Malus, Platanus, Prunus, Pyrus, Prunus, Sorbus*.

Herbicide cause of bark cracking

Split bark is seen after glyphosate is "applied improperly or in too high a dosage". With time, the bark becomes sunken with a brown discoloration of the cambium.

However, it is not the glyphosate itself that is causing split bark, but the surfactant added to some products to penetrate better and faster into weeds. These surfactants can get past the thin bark of young trees (green bark or pigmented bark).

In studies done 2007-2008, suckers were removed, followed by herbicide spray.
- Trees most proned to trunk cracks: Acer (by far), followed by Malus, Quercus, Celtis.
- Herbicides resulting in most trunk cracks: Roundup Max and Roundup Pro.

Suggested practices

1) "We no longer recommend tree sucker removal with glyphosate products". Spray before sucker removal, then remove the sucker within a few hours.

2) "If you wish to spray glyphosate, use a product that has no adjuvant load." Use: Roundup Original, Glyfos. Avoid: Roundup Original Max, WeatherMax, Pro.

Other causes of bark cracking

Sunscald or South-West injury develops during winter months. Bright, warm sunny days followed by cold nights trigger thaw-freeze cycle that result in bark splitting.

Cracks may also develop from included bark, weak wood forming when a branch is attached tightly to the trunk in a V-junction (strong branches have a U-junction).

Growth cracks develop during summer months when wood expands rapidly.

TRUNK CRACKS: FROM HANNAH MATHERS

Above:
Trunk crack on a nursery tree

Picture from Dr. Hannah Mathers, Ohio State University.

She thinks the crack shows after the winter on trees sprayed the year before with herbicides, especially for sucker control, or where manual sucker removal was followed by a herbicide spray.

"The improper pruning creates a wound that can lead to trunk cracking, especially when herbicides or systemic postemergents are used shortly after any pruning or the removal of tree suckers has occurred," said Mathers.

She added that researchers are no longer recommending the practice of tree sucker removal with glyphosate-containing products for that very reason.

Below left: "Suckers" are vigorous shoots that arise from dormant buds below the graft. Some trees are more prone to suckering, such as Malus, Prunus, Sorbus. Currently, most nurseries remove suckers by hand ahead of herbicide spraying.

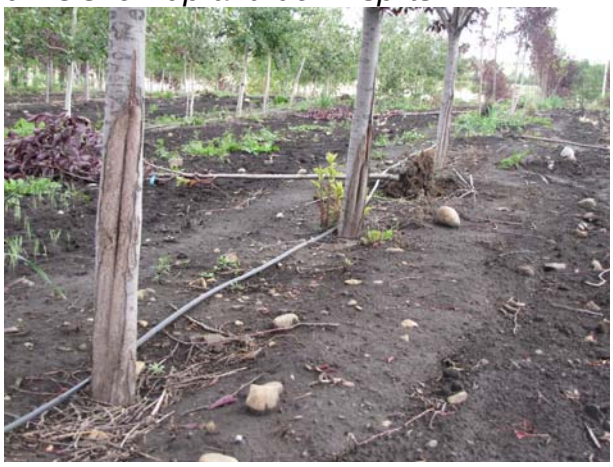
Below right: Application of herbicide for weed control in a nursery. Note the spray is making contact with the lower part of the tree trunk. Some nurseries spray suckers with glyphosate (Round-up and others) or Gramoxone.

TRUNK CRACKS: FROM OUR COMPANY (1)

The pictures on this page are from 3 different nurseries. We could add another 4 more. In each case, the trunk crack is found in a consistent tree location and sun orientation. The cracks can face East or North. The cracks do not always face the South-West side.

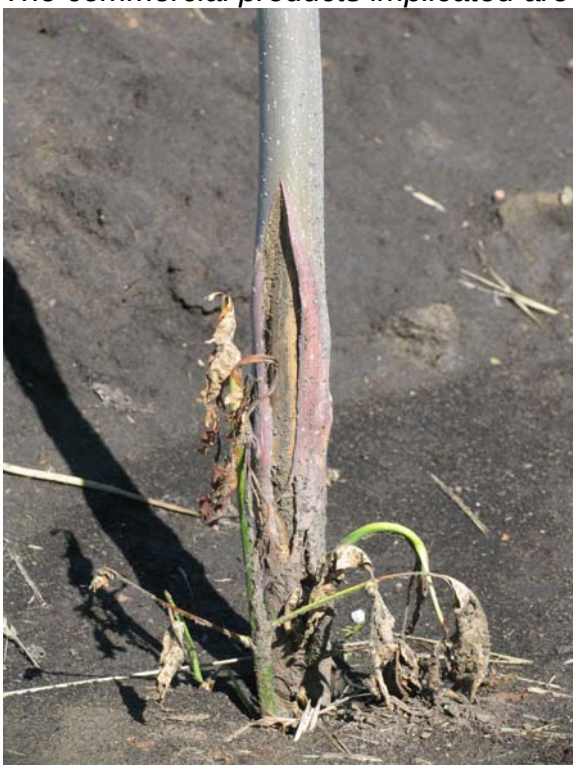
Above: Row of Fraxinus. The trunk cracks are obvious at the bottom of many trees. The next row, trees show cracks in opposite direction (sprayer coming down the row).

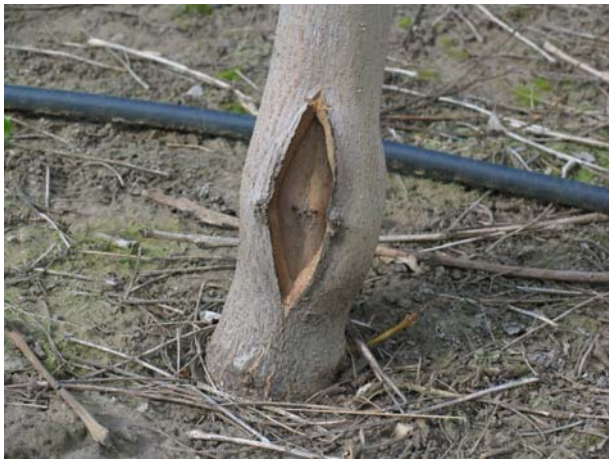
Below left: Row of Fraxinus. The trunks show open cracks near the soil line.
Below right: Row of Prunus Schubert. The trunks show up-and-down splits.



TRUNK CRACKS: FROM OUR COMPANY (2)

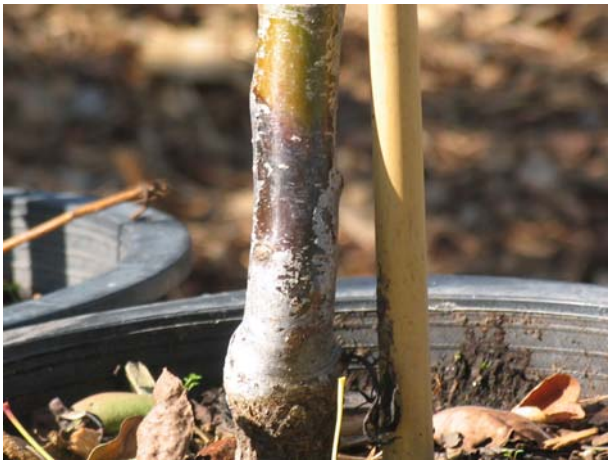
The pictures on this page are from 4 different nurseries.
In each case, the trunk crack seems to follow application of glyphosate the year before.
The commercial products implicated are Roundup Ultra and Roundup Weather Max.





Above left: Fraxinus. Note the dying suckers and up-and-down trunk crack.
Above right: Fraxinus at another location. The trunk crack is near the soil line.
Typical of this injury, the bark and cambium are open, but not the internal wood.

Below left: Pyrus. Many trees showed blackening of the lower trunk, cause unknown.
Below right: Acer. Note the up-and-down trunk crack leaking sap, later turning black.
In 2010, this symptom was seen at 3 different nurseries that planted in spring the same Acer cultivar from the same USA supplier.

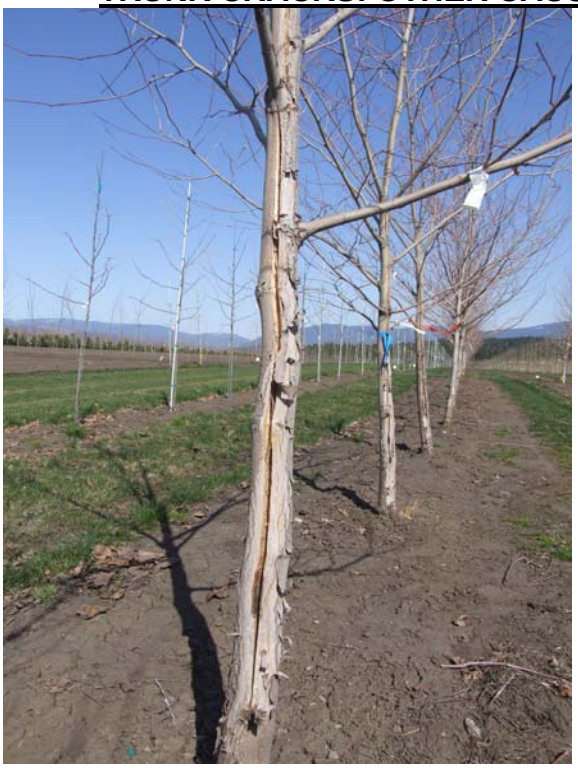


TRUNK CRACKS: OTHER CAUSES (1)

Above: A trunk crack is visible on the outside of Amur cherry.
The trunk was cut across: note the branch junction (brown area at point of cut).

Below: Note the external crack can be followed back to the interior of the trunk.
There, a discoloration indicates wound wood surrounding an old branch.
The 3-year old branch had included bark (poor wood) and was removed 2 years ago.
The included wood triggered an internal crack that became external following frost.

TRUNK CRACKS: OTHER CAUSES (2)



Above left: Trunk cracks on Platanus are facing South-West (winter melt-and-freeze).
Above right: Trunk crack on a mature Aspen. The crack starts at a weak branch.

Below: At this nursery, weed control is done with a mechanical tillage implement.
Trunk damage is caused when the control bar hits the trunk and the driver goes too fast.