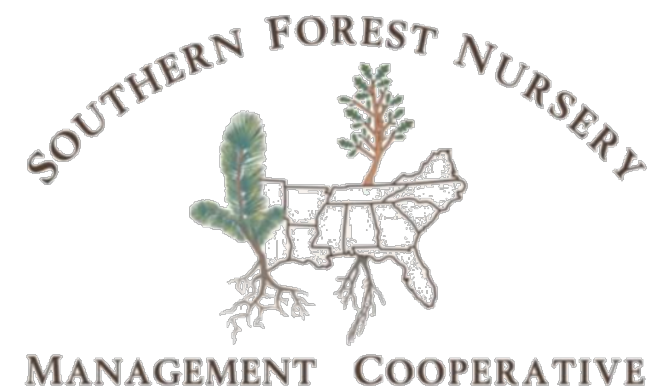




Thiram seed treatment Study

Tom Starkey and Ryan Nadel




Thiram study

- A new source of Thiram appeared on the market
- Signet® 480FS is a seed treatment label from Nufarm containing 44% Thiram. The compound is labeled for use on conifer seed for treatment of damping off at a rate of 2 quarts per 100 pound of seed
- It was reported that seed germination problems were experienced when using Signet®
- A controlled greenhouse study was undertaken to verify these results

What was reported and observed



Pesticides tested



42-S Thiram

Fungicide

Net Contents:
5 Gallons

Intended for use by professional applicators only.
Contains 4 lbs. thiram per gallon.

ACTIVE INGREDIENT:
Thiram (Tetramethylthiuram disulfide) 42%
INERT INGREDIENTS: 58%
TOTAL 100%

EPA Reg. No. 254-020

FIRST AID

IF SWALLOWED:

- Call a poison control center or doctor immediately for treatment advice.
- Have person sip a glass of water if able to swallow.
- Do not induce vomiting unless told to do so by a poison control center or doctor.
- Do not give anything by mouth to an unconscious person.

IF ON SKIN OR CLOTHING:

- Take off contaminated clothing.
- Rinse skin immediately with plenty of water for 15-20 minutes.
- Call a poison control center or doctor for treatment advice.

IF INHALED:

- Move person to fresh air.
- If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible.
- Call a poison control center or doctor for further treatment advice.

IF IN EYES:

- Hold eye open and rinse slowly and gently with water for 15-20 minutes.
- Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye.
- Call a poison control center or doctor for treatment advice.

In case of emergency call toll free the Bayer CropScience Emergency Response Telephone No. 1-800-334-7377.
Have a product container or label with you when calling a poison control center or doctor, or going for treatment.

PRECAUTIONARY STATEMENTS
HAZARDS TO HUMANS AND DOMESTIC ANIMALS
CAUTION
Harmful if swallowed. Harmful if absorbed through skin.
Harmful if inhaled. Avoid contact with eyes, skin, or clothing.
Avoid breathing spray mist or vapor. Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals.

KEEP OUT OF REACH OF CHILDREN
CAUTION

For PRODUCT USE Information Call 1-866-99BAYER (1-866-992-2927)
For MEDICAL AND TRANSPORTATION Emergencies ONLY Call 24 Hours A Day 1-800-334-7377

PERSONAL PROTECTIVE EQUIPMENT (PPE)
Some materials that are chemical-resistant to this product are made of any waterproof material. If you want more options, follow the instructions for category A on an EPA chemical resistance category selection chart.

All mixers/loaders, applicators and other handlers must wear:

- long-sleeved shirt and long pants,
- shoes plus socks,
- chemical resistant gloves,
- chemical resistant apron when mixing, loading, participating in dig treatments, cleaning up spills, cleaning equipment, or otherwise exposed to the concentrate.


NOTE: Persons involved in bagging treated seed, sowing or moving bags of treated seed, or cleaning up bagging areas or seed treatment equipment are pesticide handlers and must wear the PPE required on this label for pesticide handlers.

USER SAFETY REQUIREMENTS
Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables exist, use detergent and hot water. Keep and wash PPE separately from other laundry.

USER SAFETY RECOMMENDATIONS
Users should wash hands before eating, drinking, chewing gum, using tobacco or using the toilet.
Users should remove clothing/PPE immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing.
Users should remove PPE immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

ENDANGERED SPECIES
This bag contains seed treated with thiram. This product may have effects on federally listed threatened/endangered species or their critical habitat in some counties. It is a violation of federal law to kill, harm or harass listed animal species without authorization. To limit the potential for such impacts when using this product, consult and follow the instructions provided in the EPA Endangered Species Bulletin for the County or Parish in which you are applying the seed. To determine whether your County or Parish has a Bulletin consult: <http://www.epa.gov/esbp> before each season's use of this product.

Produced for:
Bayer CropScience LP
P.O. Box 12014, 2 T.W. Alexander Drive
Research Triangle Park, North Carolina 27709
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4218160 

SIGNET® 480 FS

Seed Treatment

Intended for use by professional applicators only.

ACTIVE INGREDIENT:
Thiram* [Tetramethylthiuram disulfide] 44.0%
OTHER INGREDIENTS: 56.0%
TOTAL: 100.0%

* Equivalent to 4.0 lb Thiram per U.S. gallon or 480 g/l

KEEP OUT OF REACH OF CHILDREN
CAUTION / PRECAUCION

Si usted no entiende la etiqueta, busque a alguien para que se la explique a usted en detalle. (If you do not understand the label, find someone to explain it to you in detail.)
SEE INSIDE BOOKLET FOR FIRST AID AND PRECAUTIONARY STATEMENTS

EPA Reg. No. 45728-26-55146

Manufactured for
Nufarm Americas Inc., AGT Division
150 Harvester Drive
Burr Ridge, IL 60527



Inert Ingredients in pesticides

- Regardless of formulation, all trade name pesticides are mixtures of chemicals
- The portion of the formulation that is responsible for the killing, repelling, or controlling is known as the active ingredient
- Other vital components are known as inert ingredients and may range from 0 - 99.99% of the total ingredients of mixture
- Inert ingredients are not required by law to be identified unless a certain inert ingredient has been determined as being highly toxic
- The manufacturers inert ingredients may be considered trade secrets

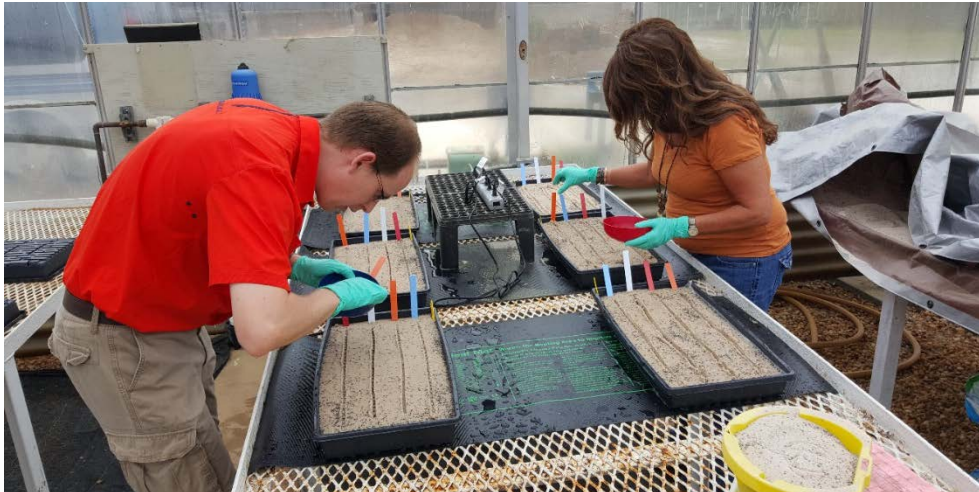


Inert ingredients uses

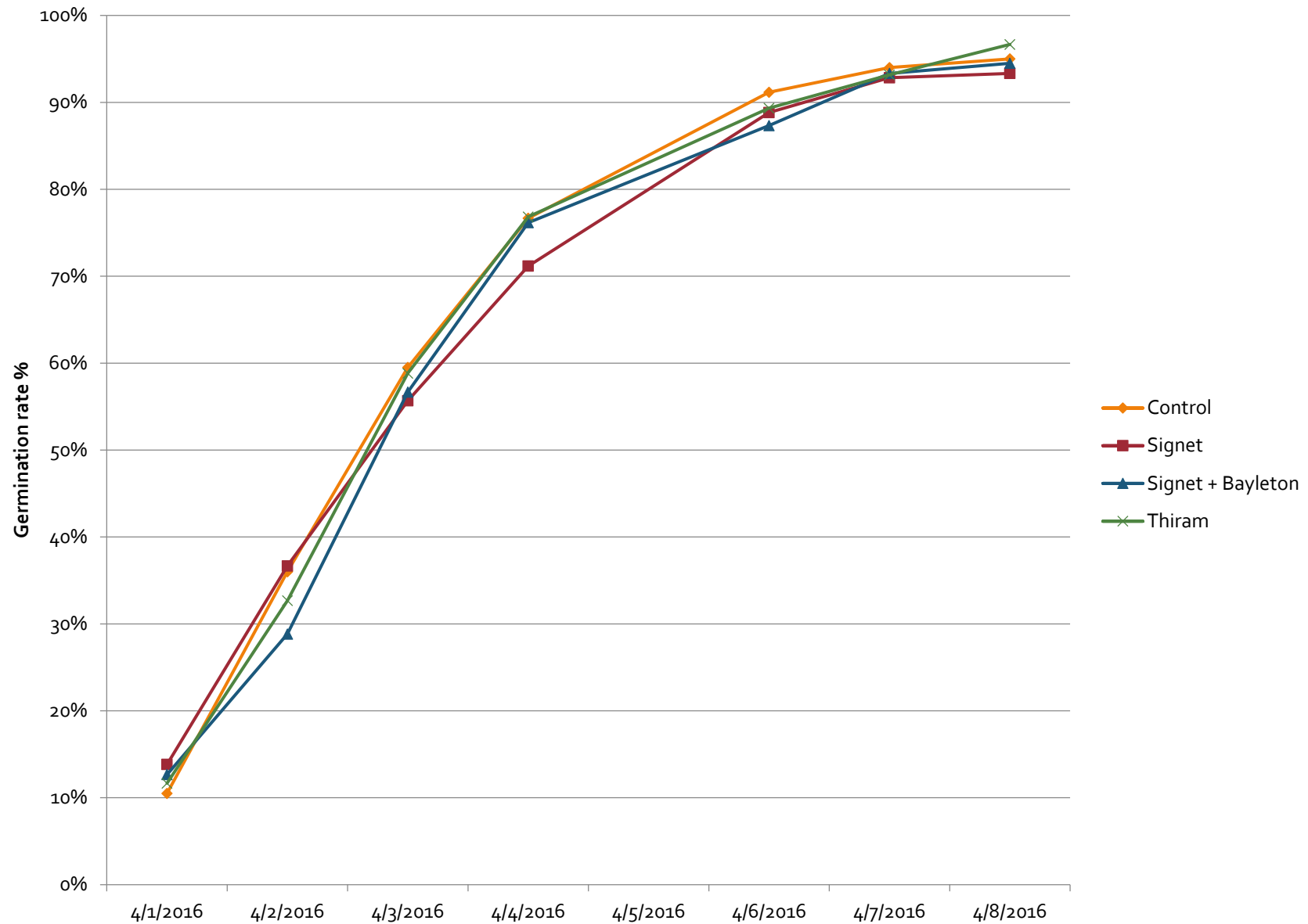
- Improve product activity
- To ease the application process
- To assist in the dilution process when the product is added to water
- To aid in sticking or spreading the product on surfaces
- To help transport the product into the target pest
- To stabilize the product during storage

Methodology

- Control
 - seed coated with water
- Signet®
 - new chemistry
- Thiram®
 - known chemistry
- Signet® and Bayleton®
 - nursery experiencing problem provided us with this premixed seed treatment



Total germination

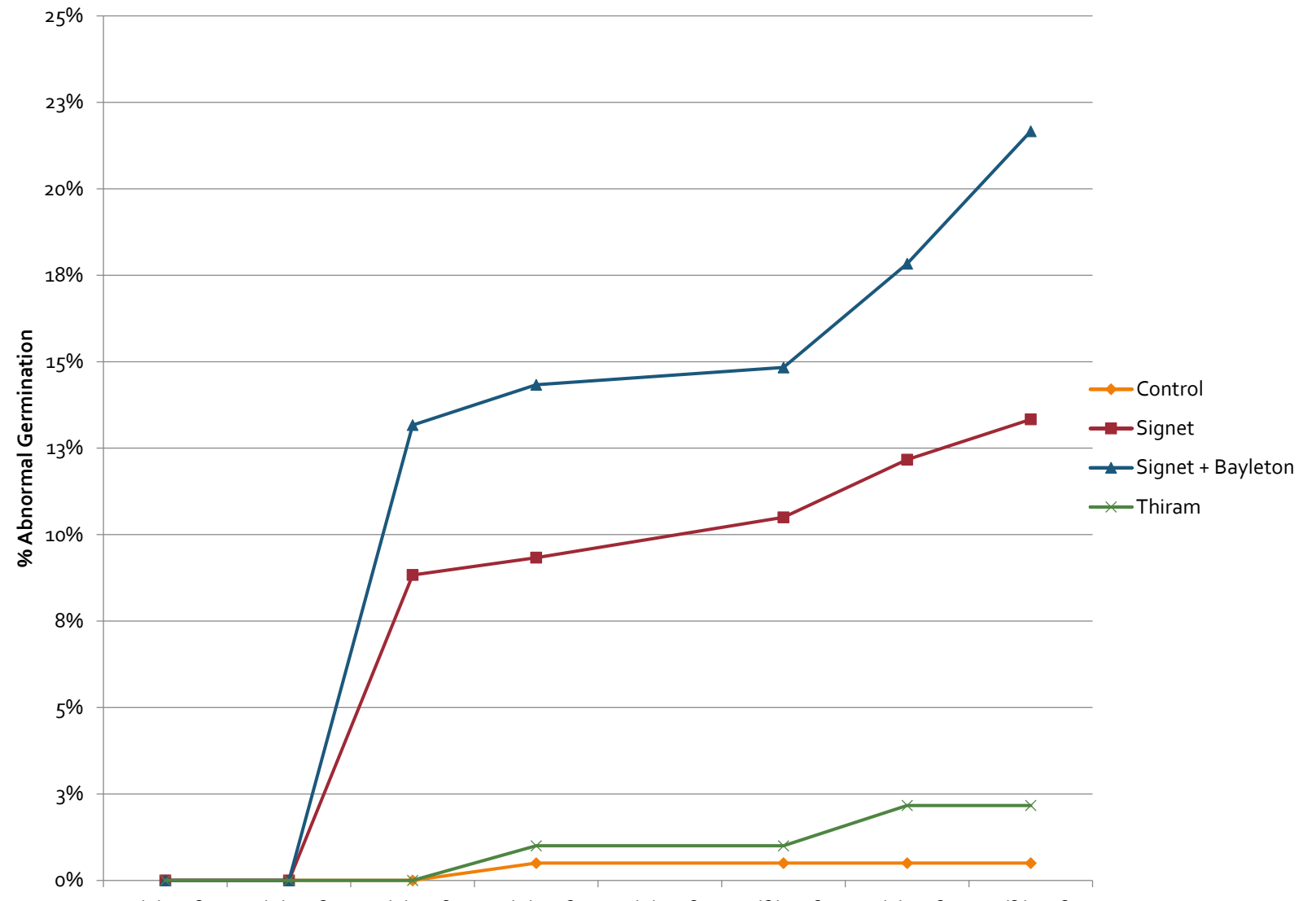


Abnormal germination

- Seed germinate but fall over



Abnormal germination



Conclusion

1. It appears that the Signet® 480FS (Thiram) from Nufarm is affecting the geotropism of the seedling radical causing the inability of the seed to properly send the radical down into the soil.
2. The phototropism is still working, causing the emerging seedling to try and erect itself
3. Problem with Signet® may be related to its formulation of inert ingredients



Management alert

Based on the results, this product should not be used as a seed treatment for loblolly pine



Nursery Cooperative MANAGEMENT ALERT 2016 - 01

SEED GERMINATION CONCERNS WHEN USING SIGNET® 480FS (THIRAM) FROM NUFARM

