

## **Disease Control in Firs grown as Christmas Trees in the UK**

*This document summarises some of the diseases currently found in firs grown as Christmas Trees in the UK, together with some suggested solutions.*

### **Phytopthera Root Rots**

**Crop:** Noble Fir, Colorado White Fir  
Frazer Fir (more tolerant)

**Identification:**

**Noble Fir:** Needles turn from pale green to yellow to reddish brown, often within a period of just a few weeks.

**Frazer Fir** Current season's needles wilt & turn brown followed by the older needles.

**Factors:** Heavy, poorly drained soils

**Outcome:** Roots lose their fibrous nature, & the cambium turns reddish brown.



**Treatment:** Apply fungicides or a phosphite nutrient (Phorce or Farm-fos) every 4 - 6 weeks from April to September  
fosetyl aluminium (Alliette) is the only approved fungicide (max. 3 sprays / season).

### **Interior Needle Blight (Needle Cast)**

**Crop:** Noble Fir

**Identification:** Older needles on lower branches turn brown from July. Typically followed by other older needles on the lower half of the tree. The needles usually remain attached.

Tiny back fruiting bodies are found on the underside of the dead needles.



**Spread:** By wind borne fungal spores

**Treatment:** Apply chlorothalonil (Bravo) at bud swelling, and repeat twice at 2 - 3 week intervals.

**Note:** Post flushing sprays should be applied in warm, overcast conditions with a slight breeze to provide rapid drying and minimise any spotting from this fungicide.

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## Rhizosphaera Needle Cast

**Crop species:** Blue Spruce, Fraser Fir

**Identification:** Needles become pale or yellow overwinter. Older inner needles turn purple/brown on branches close to the ground. Rows of tiny black dots - the fungal fruiting bodies found on affected needles.



**Spread:** By rain splash from spores on the ground.

**Treatment:** Apply copper oxychloride end September & at bud swelling. Alternate sprays of mancozeb and chlorothalonil every 3 - 4 weeks from May to September BEFORE rainfall.



## Pustule Rust

**Crop** Nordman Fir

**Identification:** Pustules, looking like small hatched eggs are found under the new needles in May / June.

**Damage:** Infested needles go brown and fall off.

**Treatment:** Apply chlorothalonil or copper oxychloride at bud swelling. Apply azoxystrobin at full flush 2 - 3 weeks later.

**Prevention:** Rosebay Willowherb is the alternate host of this disease. Eliminate this weed within at least 500m of the crop.



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## Current Season Needle Necrosis

**Crop:** Nordman Fir

**Identification:** New needles develop lateral pale, yellow or brown bands usually in June. These turn brown in summer. Often the problem is limited to occasional trees scattered around the plantation.



**Treatment:** Sprays of phosphite materials such as Phorce can assist. If a fungal infection is suspected, then copper oxychloride applied end September and again just before bud burst will suppress any fungal spores.

**Cause:** This disease is poorly understood, and is thought to be primarily physiological related to root health.

**Other factors:** High temperatures / intense sunshine may influence severity. Trees grown on upland sites seem less affected. Similar symptoms may be caused by fungal diseases. Possibly affected by low calcium, phosphate &/or potash

### General Advice

The above summaries are intended to identify, protect or possibly cure fungal diseases and conditions currently found in UK firs.

However, the risk averse grower may also wish to consider preventative spray programmes in the absence of any identified symptoms.

A reasonable strategy, based on our current knowledge could then be:

Two applications of the inexpensive fungicide copper oxychloride in mid September and again just prior to bud swelling in the spring to help to suppress fungal spores and any incipient disease.

Follow this with two or three applications of a phosphite based material such as Phorce, Farm-fos, Vitaphos made during the growing season May to August.

These materials may be mixed with insecticides where treatments coincide. Do not mix with herbicides.

### Resistance Strategies

Fungi are very good at developing resistance to some fungicides, so it is very important to avoid using fungicides from the same grouping too often in the same season.

The fungicides, such as fosetyl aluminium are particularly prone to failing in this way as they act on just one site within the fungus. Others such as copper oxychloride or mancozeb attack the fungi in many ways and are much more robust. The following table shows those fungicides which may be used in Christmas trees, together with their resistance grouping, and an indication as to whether they act on a single site (S) or multi site (M). It follows that where a programme of fungicides is being used, then growers should aim to use appropriate fungicides from different groups during the same season to avoid the build up of resistance and failure of the product.

## Disease Control in Firs grown as Christmas Trees in the UK

Fungicides approved for use in UK Christmas Trees as at October 2011.

| <u>Typical Product</u>              | <u>Pesticide</u>                        | <u>Resistance Group</u> | <u>Approval</u> |
|-------------------------------------|---|-------------------------|-----------------|
| <u>Strobes &amp; Stobe Mixtures</u> |   |                         |                 |
| Amistar                             | asoxystrobin                            | 11                      | SOLA            |
| Signum                              | boscalid + pyraclostrobin               | 7 + 11                  | SOLA            |
| Swift                               | trifloxystrobin                         | 11                      | SOLA            |
| Vivid                               | pyraclostrobin                          | 11                      | SOLA            |
| <u>Triazoles &amp; mixtures</u>     |   |                         |                 |
| Systhane (1)                        | myclobutanil                            | 3                       | On label        |
| Folicure                            | tebuconazole                            | 3                       | On label        |
| Topas                               | penconazole                             | 3                       | On label        |
| Bumper                              | propiconazole                           | 3                       | SOLA            |
| Mirage                              | prochloraz                              | 3                       | LTOLA           |
| <u>Other</u>                        |   |                         |                 |
| Bravo                               | chlorothalonil                          | M5                      | On label        |
| Aliette                             | fosetyl aluminium                       | 33                      | On label        |
| Stroby                              | kresoxym methyl                         | 1                       | On label        |
| Previcure                           | propamocarb hydrochloride               | 28                      | On label        |
| Subdue                              | metalaxyl-M                             | 4                       | On label        |
| Karamate                            | mancozeb                                | M3                      | On label        |
| Nimrod                              | bupirimate                              | 8                       | On label        |
| Valbon                              | benthiavalicarb isopropyl+mancozeb      | 40 + M3                 | On label        |
| Rovral                              | iprodione                               | 2                       | On label        |
| Switch                              | cyprodinil and fludioxonil              | 9 + 12                  | On label        |
| Triptan                             | thiram                                  | M3                      | On label        |
| Captan                              | captan                                  | M4                      | On label        |
| Cyflamid                            | cyflufenamid                            | U6                      | SOLA            |
| Flexity                             | metrafenone                             | U8                      | SOLA            |
| Folio Gold                          | chlorothalonil + metalaxy-M             | M5 + 4                  | SOLA            |
| Fortress                            | quinoxifen                              | 13                      | SOLA            |
| Fubol Gold                          | mancozeb + metalaxyl-M                  | M3 + 4                  | SOLA            |
| Previcur Energy                     | fosetyl aluminium + prop. hydrochloride | 33 + 28                 | SOLA            |
| Revus                               | mandipromid                             | 40                      | SOLA            |
| Scala                               | pyrimethanil                            | 9                       | SOLA            |
| Corbel                              | fenpropimorph                           | 5                       | LTOLA           |
| Delsene 50                          | carbendazim                             | 1                       | LTOLA           |
| Cuprokylt                           | copper oxychloride                      | M1                      | LTOLA           |
| Headland Copper                     | copper oxychloride                      | M1                      | LTOLA           |

### Key:

SOLA: Single Offlabel Approval. The document must be in the possession of the grower before use. Use is at growers own risk.

LTOLA (LTEOU): Long Term Extension of Use. All products approved under the old Control of Pesticide Regulations (COPR) may be used in Christmas Trees at users risk. Once products are re-approved under the Plant Protection Pesticide Regulations (PPPR) then use on Christmas Trees lapses unless the recommendation appears on the label or a SOLA is authorised.

(1) rate in Ornamental Plant Production (including Christmas Trees) may be too low to be effective.

NB. The information provided on the product label must be read and followed, and takes precedence over any of the above information.

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