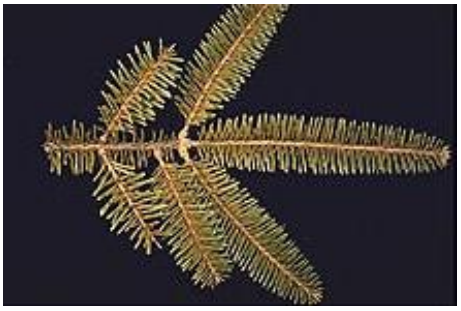
Christmas tree pest and diseases

FACTSHEET

Mites

You should regularly check your trees for mite damage every 7 – 14 days, although wetter weather in Wales may reduce mite damage. Conifer spinning mite has been a particular problem in the past in the south east. Eggs overwinter and hatch in the early spring, with juveniles feeding on the first flush. These reproduce rapidly, and so progress through several generations in a year although these are generally only active in summer and autumn. These feed on sap by puncturing through the cuticle, leaving surface damage which is a rusty colour and leaving the needles at risk of dehydration in hot, dry weather, increasing the risk of premature needle drop. The range of specific acaricides to use for the control of conifer spinning mite is now limited to the use of clofentezine (Apollo 50SC) EAMU. This is active against summer generation eggs (but not overwintering eggs) and very early motile stage (just emerged from egg) mites. Another acaricide discussed for use in outdoor hardy nursery stocks is acequinocyl (Kanemite), but this has yet to receive EAMU approval as of Nov 2024.

Nalepella Mites



Several Eriophyid mite species can affect Christmas trees e.g. N. haarlovi on Norway and blue spruce. Some species that can infest true *firs (Abies*) if the temperature is sufficiently high by actively feeding on needles all year round. These mites feed usually on the underside of needles damaging the wax cuticle of needles so that they appear a dull grey green in colour. This leaves needles prone to dehydration, browning and premature loss. Nalpella rust mites are far smaller than conifer spinning mites and the use of x 20 hand lens is required when looking for them on needles. They are torpedo shaped and very slow moving, compared to CSM. Specific acaricides clofentezine have activity against the eggs and juvenile motiles of rust mites. Sulphur powders like Thiopron (UPL Europe) EAMU can be used to suppress/kill rust mites. Using a programme of applications repeated every 3 – 4 weeks from mid-late May until September. Sulphur can provide some control of conifer spinning mite, however they have found that application rates need to be higher and with this there is an increased risk of needle damage (scorch) if used in hot bright weather.

Aphids

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Giant Fir Aphid (*Cinaria confinis*) a pest of true firs predominantly Nordman and Noble fir, in recent years has become an increasing problem in the run up to Christmas, particularly if customers for trees require pesticides to be applied no later than September. As the adult and juvenile aphids feed under the branches or through the bark on the main stems of trees this aphid can produce honey dew, but more important is the damage it's feeding can cause. When present in large numbers, significant damage to the internal tissues can lead to depressed patches and to scars on the wood.

Although naturally occurring predator insects such as ladybirds, lacewings and hover flies can provide control of giant fir aphid, often infestations occur early or very late in the year when these predators are inactive, or the numbers of aphids in specific areas of a plantation may be so high that bio-control is unlikely to provide sufficiently quickly affective control without some damage to the trees occurring.

Spruce shoot Aphid *(Cinaria pilicornis)*

In recent years like giant fir aphid, the adult females of this species have been seen, at least in the south of England, actively feeding at the bases of the needles of Norway and Colorado blue spruce. Normally this species over winters as eggs, these can hatch very early in the year
i.e. March, producing wingless females which as flush begins move out onto the young growth to feed. Peak numbers occur usually in early-mid summer. Winged aphids appear within the aphid colonies and these fly off sometimes some distance to trees within the same or other plantations. In spring and early summer the aphid colonies can multiply in size very rapidly without mating, the females producing large numbers of live young. This species of aphid produces large amounts of honey dew as it feeds which is infected with sooty mould, infested branches becoming black, sticky and the trees unmarketable, sometimes even several years after the damage occurred. This aphid can be controlled relatively easily, but needs to be spotted early to prevent populations becoming large. Although predation by native beneficial insects can occur, often the use of an insecticide is required in the early spring or autumn months when beneficial's are no longer active within plantations. Aphids can be controlled by acetamiprid e.g. Gazelle (on label), Spirotetramat i.e. Batavia, EAMU and fatty acid products i.e. Flipper (EAMU) can also be effective. Good results have also been reported where unspecified physical control agents (physical pest control surfactants e.g. S B Plant Invigorator have been used).

Adelges can become a serious problem in plantations of true firs and notably Nordman, Fraser and Noble fir. Silver fir woolly aphid (*Adelges now Dreyfusia nordmannianae*) is a problem primarily but not exclusively of Nordman Fir.

Balsam woolly aphid (Dreyfusia piceae) in contrast is a major pest of Fraser and Noble fir but can also damage Nordman, Balsam and several other Abies species, as with Dreyfusia nordmannianae most of the spread of the introduction to plantations is on planting stock or from adjacent badly affected adjacent plantings of trees, the adelges being moved from tree to tree by machinery, on tools during shearing or pruning and on the clothing of staff working in the trees.

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Adelges can be a significant problem, and are particularly active in July. Females overwinter underneath a woolly wax coating, protected from both predators and contact-acting insecticides.

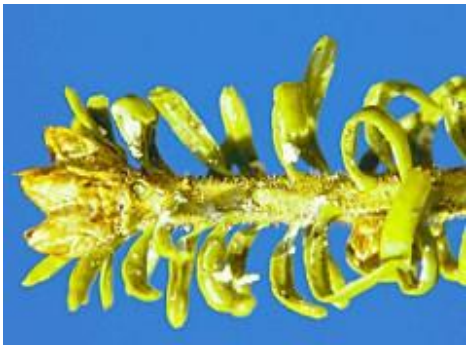
In the case of Balsam woolly aphid immature female aphids over winter on the trees (as tiny black aphids with a white waxy fringe around the edges of their bodies attached to the shoots around or beneath buds). These are very difficult to find especially when the level of infestation is small. The female adelges complete their development (reach maturity) by the end of April. They lay eggs alongside their feeding site which hatch just as trees break bud they are active for a few days and then settle into feeding sites usually in cracks in the trees bark, the eggs produced by these females are tiny dark grey/black crawlers moving out onto the new shoots to feed on the soft young needles.

The damage caused is in most cases insignificant, of more importance are the immature adelges that settle on the bark of stems and twigs, by July these are laying eggs and from then until as late as early October further generations of adelges can be produced, each increasing the amount of damage that their feeding causes to the stems and shoots of the trees. Symptoms of attack are specs of white wax wool on bark of stems, enlarged, swollen, distorted (gouty) shoots, failure of terminal and other buds to break in spring. Infested trees rapidly become unmarketable.

Several insecticides can be used for control flonicamid i.e. Mainman EAMU, thiacloprid e.g. Calypso EAMU and spirotetramat i.e. Batavia, EAMU and fatty acid products i.e. Flipper (EAMU) can be effective. But spray programmes for the control of this and Silver fir woolly aphid (Dreyfusia nordmannianae) should be designed carefully so as to catch each generation of adelges when they are at their most vulnerable and include actives from several insecticide groups so as to avoid resistance. Actives which are translaminar e.g. thiacloprid or can move

Overwintered adult *Dreyfusia piceae*

Damage over several seasons caused by Dreyfusia piceae



Needle distortion from feeding damage caused by Dreyfusia nordmannianae

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throughout the trees translocatory system in phloem and xylem i.e. spirotetramat are particularly useful. On sites where woolly aphids are not a recognised problem or there are very low levels of infestation the routine application in the planting and following 1 to 2 years of lambda cyhalothrin i.e. Hallmark with Zeon Technology in early-mid May (just prior to flushing, may suffice). This approach may need to be reinforced later in the season where aphid numbers are higher with the application of insecticides, each approximately 4 weeks apart, using a programme that includes most if not all of the of the above insecticides. It should be noted that because of the way that it works spirotetramat (Batavia) does not provide a quick kill of these pests sometimes 5-7 days may pass until its impact can be seen.

Caterpillars

Light brown apple moth (LBAM) is a widespread pest of fruit and woody nursery crop plants throughout most of the UK including Scotland. A serious pest in the USA initially affecting Douglas firs grown as Christmas trees about five years ago, it started to be noticed as a pest of especially Nordman but now also Fraser firs in the UK.

Adult light brown apple moth

The detection, identification and monitoring of the population of adult LBAM can easily be carried out with the installation of pheromone traps in plantations where damage typical of that produced by this tortrix moth has been observed i.e. to shoots needles and buds. There can be two generations of LBAM a year, with caterpillars produced from eggs laid by adult moths in May, first seen feeding on trees in June/July, a second flight of adult moths in July can provide further caterpillars that start to feed on the needles, shoots and buds of trees in August and September and then if the weather is warm into the late autumn/early winter. Caterpillars that have not completed their growth and pupated by the late autumn may overwinter on the trees in a shelter created by binding needles together with a web of silk or within buds. These emerge from their hibernation in March or early April and commence further feeding on needles and buds until the onset of bud break when they pupate on trees or in the soil around them. Unfortunately LBAM has developed resistance to a wide range of insecticides so that, currently only indoxacarb e.g. Steward EAMU can be relied upon for effective control.

Alternatively growers could try using routine applications of the bio-control agent *bacillus thuringiensis* e.g. Dipel DF commencing as soon as the adult moths start to be caught in pheromone traps and then routinely every 8-14 days thereafter until the flight has ended. This product will only kill caterpillars in their first instar i.e. that have only just emerged from eggs.

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Diseases

CSNN Symptoms

Current Season Needle Necrosis in Nordman and Noble Fir can be exacerbated by adverse weather conditions during the early part of tree growth, it is now recognised that the symptoms displayed by affected needles on current seasons shoot growth is produced by a fungal infection in the tree. CSNN tends to be less of an issue where the trees being grown are late flushing trees and when the spring weather at the onset of flushing is cool or warm but most importantly dry. The disease is generally most severe when the weather is hot and humid and rainfall occurs at the early stage of tree growth and tends to develop most seriously where following rain the young needles of trees dry slowly, The first symptom observed are a distinct orange/brown scorch marks on the upper surface of needles, this rapidly develops into orange/brown and grey brown bands across the needle lamina, later with black spores protruding from the stomata of the underside the necrotic section needles. Affected needles usually drop in late July through till September i.e. leaving in some cases a high proportion of the current seasons new shoot growth devoid of needles. Badly affected trees are inevitably unsaleable even if left for several years in an attempt to permit them to recover. Although some fungicides in laboratory trials have exhibited activity against the fungus Sydowia polyspora none so far have proved to provide reliable control under commercial field growing conditions. For more on needle diseases specifically see our factsheet.

Fireweed Rust

Fireweed rust spores being produced

Which affects Nordman fir will initially produce similar symptoms to CSNN a high incidence of infection being associated with warm or hot weather and periods of heavy rainfall during early flushing of trees. The upper surface of infected needles display brown/orange scorch marks as per CSNN however unlike CSNN light orange spore bodies very quickly develop on the underside of infected needles. Affected needles are shed within a very short time of the infection being identified and much more rapidly than CSNN. As with most rust fungi Fireweed rust has a second host plant in this case rosebay willowherb (not American willowherb), it can also infect fuchsias, godetia and clarkia.

Rosebay willowherb producing copious wind borne seed

There are limited options for control (Conazole fungicides such tebuconazole (Folicur) also myclobutanil (Systhane 20EW) and azoxystrobin (Amistar) have been shown in trials to have some activity against this fungus, but either do not have approval for use in outdoor ornamentals are no longer available for use, are unreliable in commercial usage or are potentially phytotoxic to the trees. So currently the advice is to avoid planting Nordman fir in areas where there is rosebay willowherb be it in the field or surrounding hedgerows or woods and to aim control this weed within existing plantations so that there are no rust infected shoots present when the trees are flushing. Unfortunately Rosebay willowherb is a very persistent, deep rooted perennial plant that spreads across sites by seed and stolons produced into the soil around parent plants, it is not very sensitive to glyphosate so eradication pre-planting can take some effort and time to achieve.

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Phytophthora (usually *Phytophthora cinnamomi*) –
Following a wet autumn, winter and early spring this soil borne disease is a significant problem in many UK Fraser or Noble fir plantations this year. Infection takes place in the autumn, winter and spring particularly if the winter is warm and wet. Often the disease arrives on site with infected planting material and thereafter is spread from field to field on tractors and cultivation machinery and by water draining after heavy rain from infected to adjacent land. Development within fields can be patchy and often most conspicuous where trees are planted in areas of land which is poorly drained. No products are currently available for control, for bad infestations you could consider a drench of a product containing potassium phosphite but efficacy may be limited.

Symptoms of phytophthora

Rhizosphaera is spread by rain splash, infecting and eventually killing the needles of the current seasons growth year's growth, the severity of the damage caused by this disease is not usually seen until the late winter or early spring of the following year. Spruce i.e. Norway and Colorado blue spruce are very susceptible but in recent years this fungus has been confirmed and in some cases caused serious damage to Nordman fir. The copper-based fungicides which were used for control as was chlorothalonil are no longer have approval in the UK, so at present there are no reliable options for control.

Weeds

Weeds are now becoming an issue in young and established plantings of Christmas trees recent rain has produced rapid germination and then growth of a wide range of annual weeds in young plantations. In addition perennial broad leaved and grass weeds have also been stimulated to grow flower and seed. All early-season residual herbicides will have by now broken down in the soil. In most cases and especially young trees where their annual growth has been completed, weed removal can be delayed until the use in the late summer or early autumn of an overall glyphosate. As you don't need to at aim in the case of young trees for completely bare ground as low-level weed cover can be protective from hot, dry winds and risk of solar damage in the mid and late summer. Some spot treatment of weeds such as creeping thistles with clopyralid (Dow Shield 400) may prove beneficial.

July is a good time to consider your plans for planting next year, choosing sites that are free of horsetail, perennial bindweeds or large populations of other perennial weeds. If you are planting on arable sites avoid those that have previously been used to grow linseed or oil seed rape as these will carry significant risk of volunteers in the following season. Also avoid sites where annual of biennial grass weeds known to be resistant to the majority of graminicides have built up e.g. black grass. For existing plantations look at current weed populations to help you plan what applications to use later in the year and in the spring. Diflufenican i.e. Hurricane SC and or glyphosate e.g. Roundup (only some products are permitted for application overall Christmas trees e.g. have EAMUs or on label approval), can be used later in the year, and at the same time or later in the autumn residual herbicides can be applied for pre and in some cases post emergence control of late autumn and winter germinating annual weed.

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Term Arrangements For Extension Of Use (2002)'. In these cases, the use of the pesticide is at the risk of the user and Farming Connect does not accept liability for any loss or damage caused by such use. The references to on-label approvals and EAMUs for use of pesticides and are correct at the time of writing. These are subject to change and approval may be withdrawn at any point. It is the grower's responsibility to check approvals before use of pesticides. If in doubt a grower should seek advice from a BASIS qualified advisor.

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