

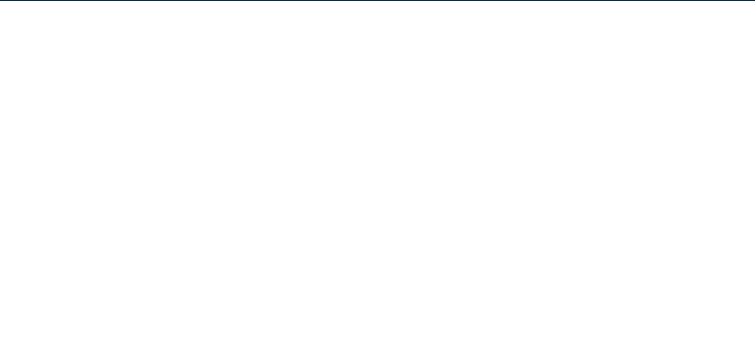
The Bayer Crop Science SeedGrowth centre.

The Bayer Crop Science SeedGrowth Centre at Pinkenba in southern Queensland is located on the banks of the Brisbane River, approximately 10 km north east of Brisbane. This facility is one of 12 within the Bayer global network.

As one of the world's leading R&D companies, we challenge ourselves to always be moving forward, offering our customers the best technology, the best products and the best outcomes.



For further information on Bayer's Seed Treatment products or to enquire about seed loading tests, please contact your local Bayer Crop Science Territory Business Manager or call 1800 804 479.



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SEED TREATMENT AND PRODUCT APPLICATION GUIDE



Bayer SeedGrowth®

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Photos courtesy of Robert Park, Plant Breeding Institute, Cobbitty.
Additional disease information from Hugh Wallwork, Cereal Leaf and Stem Diseases SARDI & CRDC 2000.

Active ingredient(s)	Penflufen 38.4 g/L, prothioconazole 76.8 g/L, metalaxyl 61.4 g/L	Penflufen 240 g/L	Tebuconazole 25 g/L, triflumuron 4 g/L	Triadimenol 150 g/L, triflumuron 4 g/L	Imidacloprid 600 g/L	Tebuconazole 12.5 g/L, imidacloprid 360 g/L
Application rate (mL/100 kg seed)	65-260	40-80	100	100-150	120 or 240 (cereals) 400 (canola)	200
Application rate (mL/ha in-furrow)	200-300	60-120				

Fungicidal Action						
Wheat						
Covered smut (Bunt)						
Flag smut	a	a	a	a		a
Loose smut						
Stripe rust				b		
Leaf rust						
Septoria tritici blotch				b		
Take-all						
White grain disorder						
Crown rot (field infestation)	c					
Fusarium head blight & crown rot (seed borne only)						
Pythium	c					
Rhizoctonia	d	e				
Barley						
Covered smut						
Loose smut						
Powdery mildew						
Barley leaf scald						
Crown rot (field infestation)	c					
Fusarium head blight & crown rot (seed borne only)						
Pythium	c					
Rhizoctonia	d	e				
Oats						
Covered smut						
Loose smut						
Crown rot (field infestation)	c					
Pythium	c					
Rhizoctonia	d	e				
Triticale						
Crown rot (field infestation)	c					
Pythium	c					
Rhizoctonia	d					
Loose smut						
Insecticidal Action						
Wheat aphid ¹						
Corn aphid ¹						
Barley yellow dwarf virus ²						
Stored grain insect pests ³			Wheat, barley, oats	Wheat, barley, oats		
Blue oat mite ⁴						
Redlegged earth mite ⁴						



SEED
TREATMENT
APPLICATION
CHART

Key:

Control

Suppression

- Notes:
- a. Control of seed-borne flag smut, suppression of soil borne flag smut.
 - b. Suppression in seedlings.
 - c. Also registered as in-furrow option @ 300 mL/ha.
 - d. 200-300 mL/ha in-furrow alone.
200 mL/ha in-furrow plus 130 mL/100kg seed treatment combination.
100-150 mL/ha in-furrow plus 100-150 mL/ha surface band spray combination.
 - e. 40 mL/100 kg on seed and 30-60 mL/ha in-furrow.
60-120 mL/ha in-furrow only.
 - 1. Control of feeding damage caused by these aphids. Use higher rate (only for Gaucho) for increased length of control and in areas of high risk.
 - 2. Minimise the spread of barley yellow dwarf virus.
 - 3. Protection from granary weevil, lesser grain borer, rice weevil, rust-red flour beetle, saw-toothed grain beetle, Indian meal moth, tropical warehouse moth.
 - 4. Canola only.

SEED QUALITY

Seed quality is a major factor in achieving optimum seed treatment results. Two key considerations that influence seed treatment quality are the cleanliness of seed (removal of impurities and organic dust) and the calibration of seed sizes.

Only well cleaned and graded (sized) seed should be treated. The presence of dust will result in large amounts of seed treatment product not adhering to the seed but rather adhering to the dust particles. This will result in patchy and uneven coverage of the seed treatment and potential underdosing.

Dust has a very large surface area compared to seed and thus can adsorb a significant amount of the fungicide or insecticide being applied. This means that the product is lost and the performance of the product will be reduced. This can result in unacceptable disease control due to the fungicide not being applied to and sterilising the entire seed surface, or insect control only lasting 3 weeks when 6 weeks is claimed.

Bayer Crop Science offers an active ingredient loading test. This service determines how much active ingredient is on each seed sample. This is valuable for QA purposes, and to monitor the effective result of any changes to recipes or to application technique.



PRODUCT QUALITY

Don't risk your crop yield with poor quality seed treatment products.

To ensure that your seed treatment is the best quality, it is important to make sure you're using high quality seed treatment products. There are several factors that affect product quality including; raw materials and inputs, manufacture, consistency and quality of formulation, and particle size.

Questionable product quality can lead to poor product reliability and potentially poor disease protection for growers. All seed treatment products require even seed to seed coverage to protect against fungal diseases and insect pests. If product quality and consistency is low, even application may be compromised and therefore disease and/or insect control reduced.

Bayer Crop Science is a global leader in research and development with a commitment to manufacturing the highest quality product formulations available.

Different formulation qualities affecting product's stability and sedimentation properties.

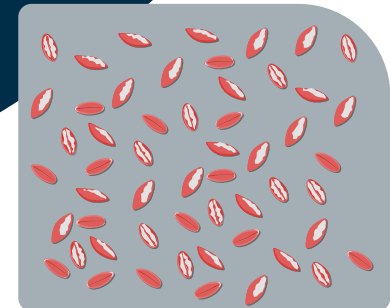
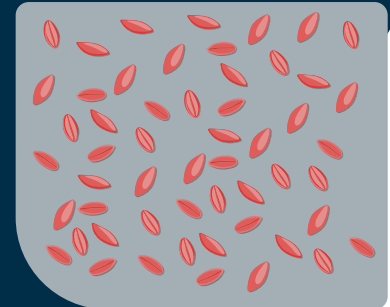


SEED COVERAGE

When assessing seed treatment application coverage, both 'patchiness' and 'evenness' should be considered.

Patchiness is a measure of how patchy a seed's coverage is when a seed treatment product has been applied. If a seed looks patchy then this is an indication that the treatment has not been applied well to the seed. Increased patchiness is undesirable and may result from under or over-mixing, poorly cleaned seed or poor slurry preparation.

Evenness is a measure of how even the coverage of a seed treatment product is when comparing seed to seed. Applicators should aim for high homogeneity and comparable evenness amongst treated seeds.



EVENNESS AND PATCHINESS IS DIRECTLY INFLUENCED BY:

1. SEED QUALITY
2. PRODUCT QUALITY
3. AMOUNT OF DUST AND INERTS PRESENT
4. TOTAL SLURRY VOLUME (PRODUCT + WATER) APPLIED
5. TYPE OF TREATER USED
6. AMOUNT OF MIXING AND SECONDARY AUGER MOVEMENT

Bayer Crop Science runs two day seed treatment application courses exploring these influences and more at its dedicated SeedGrowth Centre in Pinkenba, Queensland. If you are interested in attending one of the courses please contact your local Bayer Crop Science Territory Business Manager for more details.

AVOIDING IMPURITIES

The cleanliness of seed (removal of impurities such as straw, husk and organic dust) is a major factor that needs to be considered when treating seed with a seed treatment.

Only well cleaned seed should be treated. The presence of dust is a major problem due to its very large surface area compared to seed. This increased surface area of dust binds seed treatments taking active ingredient away from seed, resulting in large amounts of seed treatment not adhering to the seed but rather adhering to the dust particles where it is not wanted. This can result in patchy and uneven coverage of the seed which may reduce the efficacy of the treatment and compromise the treatment equipment.

Poorly cleaned seed will have approximately 0.1 – 0.2% dust in weight. Well-cleaned seed has less than 0.05% weight in dust. Data suggests that for every 0.1% of dust, approximately 10% of active ingredient is lost from the seed.

Images 1 and 2 show a wheat sample before and after cleaning. Note the dust and organic matter have been cleaned out of the sample. Well-cleaned seed should have this appearance.



SEED TREATMENT APPLICATION

Correct application of seed treatment products is essential to ensure adequate disease and insect protection for your crop.

TIPS:

SEED

- Seed quality is very important. Seed should be of the highest quality, not damaged by weather or storage conditions and well cleaned and graded before seed treatments are applied.

PRODUCT

- Use high quality seed treatment products for disease and insect protection and the best potential for a high quality and high yielding crop.
- Make sure you know what product you're using and ensure you understand what diseases or insects the product is registered for.

APPLICATION

- Ensure you apply seed treatment products within the suggested label guidelines. Contrary to what some applicators believe, adding water as per the label rates will help to ensure improved coverage of the active ingredients on seed rather than 'weakening' the product.
- Colour dyes in seed treatment products are not the active ingredient. It is important to remember that a more intense colour on the seed doesn't necessarily result in more active ingredient.
- The aim of the game is 'even seed to seed coverage'. Be careful not to over-mix seed as this will result in the seed treatment product being rubbed off the seed surface. Often treated seed is moved through many augers – treater to silo to truck to planter. This should be minimised as much as possible, as once seed is dry, augering may grind products off the seed.

EQUIPMENT & SAFETY

- Before use, be sure to check that all application equipment is in good working order.
- Always ensure you follow the product safety data sheet and label guidelines.
- When using seed treatment products, ensure you use approved and recommended safety equipment.

APPLICATION EXAMPLES

One of the largest influences on achieving well treated seed is "slurry volume" used (product + water), assuming that as much dust as possible has been removed.

Cereal seed is dry and absorbs moisture from the seed treatment. Generally, a slurry volume of about 4 – 6 L/t is required to achieve even application of the fungicide or insecticide over each and every seed being targeted.

The following examples show the visual effect of altering the slurry volume. Only the water volume was altered.

PAGE NO.	PRODUCTS	APPLICATION RATE (PER TONNE)	WATER DILUTION RATE (PER TONNE)	TOTAL VOLUME	SEED TYPE
10	EverGol® Prime	0.8 L	0.8 L	1.6 L*	Barley
11	EverGol Prime	0.8 L	4.8 L	5.6 L	Barley
12	EverGol Prime	0.8 L	1.0 L	1.8 L*	Wheat
13	EverGol Prime	0.8 L	4.2 L	5.0 L	Wheat
14	Baytan® T	1.0 L	1.0 L	2.0 L*	Barley
15	Baytan T	1.0 L	4.0 L	5.0 L	Barley

*Please note this is not a recommended water dilution rate.

Note: The same grain source was used for each comparison. The seed was treated using a Cimbria CC-Lab, Brisbane (2011 – 2012).

APPLICATION EXAMPLES

Product **EverGol Prime**

PRODUCT APPLICATION RATE:	0.8 L per tonne
WATER DILUTION RATE:	0.8 L per tonne
TOTAL APPLIED VOLUME:	1.6 L per tonne [#]

[#] refer to label as total slurry volume is below what is recommended.

Seed **Barley**

SAMPLE COMMENTS: Due to the low water dilution rate, the barley seed has a very patchy and uneven treatment. Note the small patches of red and the larger bare areas on the seed. This is a poor application and could potentially result in poor disease control.



Product **EverGol Prime**

PRODUCT APPLICATION RATE:	0.8 L per tonne
WATER DILUTION RATE:	4.8 L per tonne
TOTAL APPLIED VOLUME:	5.6 L per tonne

Seed **Barley**

SAMPLE COMMENTS: A higher water dilution rate improves seed to seed coverage and spread of the treatment over the barley seed. There is a much higher consistency across the sample with less patchiness. This sample represents a good application.



APPLICATION EXAMPLES

Product **EverGol Prime**

PRODUCT APPLICATION RATE:	0.8 L per tonne
WATER DILUTION RATE:	1.0 L per tonne
TOTAL APPLIED VOLUME:	1.8 L per tonne [#]

[#] refer to label as total slurry volume is below what is recommended.

Seed **Wheat**

SAMPLE COMMENTS: Due to the low water dilution rate of Evergol Prime, coverage of the seed is poor. This is an example of a poorly treated seed as the seed is mostly uncovered by the treatment. Note that the treatment is patchy and uneven.

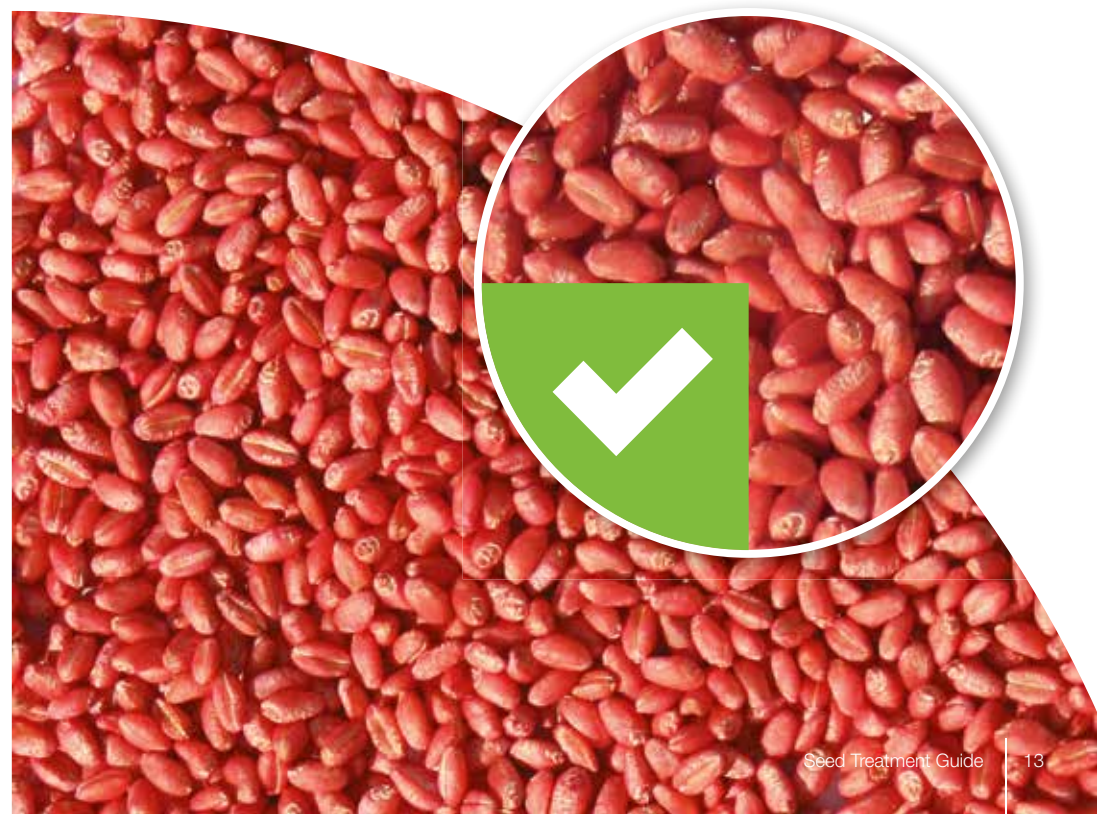


Product **EverGol Prime**

PRODUCT APPLICATION RATE:	0.8 L per tonne
WATER DILUTION RATE:	4.2 L per tonne
TOTAL APPLIED VOLUME:	5.0 L per tonne

Seed **Wheat**

SAMPLE COMMENTS: This is a vastly improved example of seed treatment due to the high water dilution rate. Coverage has significantly improved as seen by the even and deeper red colouring of the seed. There is very little patchiness and the seed has very good seed to seed coverage. This sample represents good application.



APPLICATION EXAMPLES

Product **Baytan T**

PRODUCT APPLICATION RATE:	1.0 L per tonne
WATER DILUTION RATE:	1.0 L per tonne
TOTAL APPLIED VOLUME:	2.0 L per tonne [#]

[#] refer to label as total slurry volume is below what is recommended.

Seed **Barley**

SAMPLE COMMENTS: Due to the low dilution rate, the barley seed has a very patchy and uneven treatment. Note the small patches of blue and the large bare areas of the seed. This is a poor application and is likely to result in poor disease control.



Product **Baytan T**

PRODUCT APPLICATION RATE:	1.0 L per tonne
WATER DILUTION RATE:	4.0 L per tonne
TOTAL APPLIED VOLUME:	5.0 L per tonne

Seed **Barley**

SAMPLE COMMENTS: A higher water dilution rate improves seed to seed coverage and spread of the treatment over the barley seed. There is a much higher consistency across the sample with less patchiness. This sample represents good application.



PRODUCT PROFILES

- // A broad-spectrum fungicidal seed treatment from Bayer that combines the proven disease control of penflufen with the systemic activity of prothioconazole and metalaxyl.
- // Broad-spectrum control of a wide range of diseases including flag smut (seed and soil borne) in wheat, loose smut (wheat, barley triticale and oats), covered smut (barley), and common bunt in wheat.
- // Suppression of rhizoctonia, pythium and crown rot (wheat, barley, triticale, oats), seed borne fusarium head blight (wheat and barley) and white grain disorder (wheat).
- // In-furrow application for rhizoctonia, pythium and crown rot suppression.
- // Excellent seed safety profile.



PRODUCT TYPE	Fungicide
ACTIVE INGREDIENT(S)	Prothioconazole 76.8 g/L, metalaxyl 61.4 g/L, penflufen 38.4 g/L
FORMULATION TYPE	Flowable concentrate for seed treatment
PACK SIZE(S)	10 L, 100 L
CHEMICAL GROUP	DMI, Phenylamide, SDHI
GROUPING	3, 4, 7
MODE OF ACTION	Inhibitor of sterol biosynthesis, Succinate Dehydrogenase Inhibitor, Demethylation inhibitor
APPLICATION RATE	Application rate Seed treatment only: 65–260 mL/100 kg seed In-furrow only (beside or below seed): 300 mL/ha In-furrow + seed treatment: 200 mL/ha beside or below seed + 130 mL/100 kg on seed In-furrow + surface band: 100–150 mL/ha beside or below seed + 100–150 mL/ha above seed
DILUTION RATE	A guide to the volume of mixture required for even coverage is 400 – 600 mL (i.e. EverGol Energy plus water) with each 100 kg of seed



PRODUCT TYPE	Fungicide
ACTIVE INGREDIENT	240 g/L penflufen
FORMULATION TYPE	Flowable concentrate for seed treatment
PACK SIZE(S)	10 L
CHEMICAL GROUP	SDHI
GROUPING	7
FUNGICIDE MODE OF ACTION	Succinate Dehydrogenase Inhibitor (SDHI)
APPLICATION RATE	40 - 80 mL/100 kg seed 60 - 120 mL/ha in-furrow
DILUTION RATE	Apply in a total volume of 400 – 600 mL/100 kg seed

- // Powerful group 7 SDHI active ingredient penflufen.
- // Market leading suppression activity on rhizoctonia root rot.
- // Leading plant health improvements through effective disease control.
- // Up to 20% yield increase in wheat and barley compared to untreated crops.
- // Control of smut diseases* (including bunt).
- // Excellent crop safety with no delay in emergence.
- // Effective disease control resulting in stronger, fitter plants with improved biomass, improved root mass and reduced spear-tipping.
- // Flexible use rate.

* Suppression of soil-borne flag smut.

PRODUCT PROFILES

- // Gives excellent control of a range of seed and soil borne diseases in wheat, barley and oats.
- // For control of bunt, flag smut (seed and soil borne) and loose smut of wheat. For control of covered and loose smut of barley. For control of covered and loose smut of oats.
- // Full spectrum smut protection.
- // Treated seed is also protected against insect pests of stored grain.



- // A specially formulated combination of Raxil® and Gaucho® designed for wheat, barley and oats.
- // For control of aphid feeding damage and prevention of spread of barley yellow dwarf virus in cereal crops.
- // For control of bunt, flag smut (seed and soil borne) and loose smut of wheat. For control of covered and loose smut of barley. For control of covered and loose smut of oats.
- // Goes beyond standard fungicide seed treatment by providing protection from post-emergence insect damage.
- // Protects stored seed from insect pests.

PRODUCT TYPE	Fungicide and Grain Protectant
ACTIVE INGREDIENT(S)	25 g/L tebuconazole 4 g/L triflumuron
FORMULATION TYPE	Flowable concentrate for seed treatment
PACK SIZE(S)	10 L, 100 L
CHEMICAL GROUP	Triazole, benzoylurea
GROUPING	3, 15
FUNGICIDE MODE OF ACTION	Inhibitor of sterol biosynthesis
APPLICATION RATE	100 mL/100 kg seed
DILUTION RATE	Apply in a total volume of 400 – 600 mL/100 kg seed

PRODUCT TYPE	Fungicide and Insecticide
ACTIVE INGREDIENT(S)	360 g/L imidacloprid 12.5 g/L tebuconazole
FORMULATION TYPE	Flowable concentrate for seed treatment
PACK SIZE	10 L, 100 L
CHEMICAL GROUP	Neonicotinoid, triazole
GROUPING	Fungicide: 3 Insecticide: 4A
MODE OF ACTION	Fungicide: Inhibitor of sterol biosynthesis Insecticide: Nicotinic acetylcholine receptor agonist
APPLICATION RATE	200 mL/100 kg
DILUTION RATE	Total volume no more than 600 mL/100 kg

PRODUCT PROFILES

- // Gaucho 600 Red is a red formulation designed specially for on farm and seed grader use.
- // For the control of aphids in faba beans, field peas, canola and lentils, and redlegged earth mite and blue oat mite in canola and lupins.
- // For control of feeding damage caused by wheat aphid and corn aphid and prevention of spread of barley yellow dwarf virus in cereal crops.
- // Registered in both cereals and legumes.
- // Protects stored seed from insect pests.



PRODUCT TYPE	Insecticide
ACTIVE INGREDIENT(S)	600 g/L imidacloprid
FORMULATION TYPE	Flowable concentrate for seed treatment
PACK SIZE	10 L, 100 L
CHEMICAL GROUP	Neonicotinoid
GROUPING	4A
MODE OF ACTION	Nicotinic acetylcholine receptor agonist
APPLICATION RATE	Cereals 120 – 240 mL/100 kg, lupins 300 mL/100 kg, faba beans 120 mL/100 kg, field peas 60 mL/100 kg, lentils 240 mL/100 kg, canola 400 mL/100 kg
DILUTION RATE	Apply in a total volume of 400 – 600 mL/100 kg seed



- // Get wheat, barley and oats off to a strong start with high-powered disease protection.
- // For control of bunt, flag smut (seed and soil-borne) and loose smut of wheat and suppression of seedling stripe rust and speckled leaf blotch. For control of covered smut, loose smut and powdery mildew of barley and suppression of leaf scald. For control of loose and covered smut of oats.*
- // Proven yield benefits through effective foliar disease control.
- // Treated seed is also protected against insect pests of stored grain.

* Not all diseases are registered in Queensland.
 # Can also be used at 150 mL rate where foliar disease is more frequently occurring.

PRODUCT TYPE	Fungicide and Grain Protectant
ACTIVE INGREDIENT(S)	150 g/L triadimenol 4 g/L triflumuron
FORMULATION TYPE	Flowable concentrate for seed treatment
PACK SIZE(S)	10 L, 100 L
CHEMICAL GROUP	Triazole, benzoylurea
GROUPING	Fungicide: 3 Insecticide: 15
MODE OF ACTION	Inhibitor of sterol biosynthesis
APPLICATION RATE	100 mL/100 kg#
DILUTION RATE	Apply in a total volume of 400 – 600 mL/100 kg seed

DISEASE INFORMATION



Rhizoctonia root rot

Rhizoctonia solani



Fungal root disease

SYMPTOMS

Roots trimmed by the fungus cause bare patches, weak spots and uneven crop growth as the plant is unable to access sufficient nutrients and water. Patches can vary in size up to several metres in diameter with defined edges in the growing crop. Surviving plants within patches can be severely underdeveloped, stunted and lacking vigour and biomass. Roots may appear thin due to rotting in the early stages however they often eventually become spear-tipped and shortened. Affected plants remain stunted until maturity or die prematurely.

REASONS TO TREAT

- » Bare patches, weak spots in the crop and uneven growth reduce crop yields and grain quality.
- » Rhizoctonia root rot disease can build up in the soil, particularly where heavy cereal and pasture rotations are used.

Take-all (hay-die)

Gaeumannomyces graminis



Fungal root disease

SYMPTOMS

- » Take-all can show up in winter or early spring as stunted, yellowing plants. It is often most obvious however, after hot, dry weather at heading when whiteheads appear in patches.
- » The paddock symptoms are harder to see in barley than wheat, despite the disease being present.
- » The primary roots should be checked for black lesions. After a damp spring the subcrown internodes, crown roots and tiller bases may also be blackened.

REASONS TO TREAT

- » Take-all can cause very serious yield losses in wheat. If patches of whiteheads are seen, the loss may be from 20 to 50 per cent of the potential yield, however losses up to 20 per cent can occur in crops with no whiteheads. Although barley can become heavily infected, yield losses are generally less than in wheat.

DISEASE INFORMATION



Flag smut

Urocystis agropyri

Fungal disease

SYMPTOMS

- » Long, grey-black raised streaks on leaves, leaf sheaths and occasionally stems.
- » The streaks break through the plant tissues to reveal a mass of powdery grey-black spores.
- » Affected leaves are often twisted and split lengthways.
- » Affected plants may produce numerous tillers, some of which lodge.
- » If heads emerge, they produce poor grain.

REASONS TO TREAT

- » Substantial reduction in yield.
- » Likely downgrading and possible rejection of grain.
- » Contamination of grain and soil that will cause carry-over into subsequent wheat crops.



Loose smut

Ustilago tritici (wheat)

Ustilago nuda (barley)

Ustilago avenae (oats)

Fungal disease

SYMPTOMS

- » Dark brown powdery spores in place of florets at head emergence.
- » Once the spores are released (soon after head emergence), the head is gradually reduced to a bare stalk.

REASONS TO TREAT

- » Loss of potential yield.
- » Barley affected by loose smut may not be accepted for malting.



Covered smut

Tilletia laevis / *Tilletia tritici* (wheat)

Ustilago segetum var. *hordei* (barley/oats)

Fungal disease

SYMPTOMS

- » Infected plants may grow more slowly than healthy ones, and stay green for longer.
- » Smut balls take the place of the grain in the head.
- » The smut balls often break during threshing, releasing the spores.
- » Strong fishy odour (wheat).

REASONS TO TREAT

- » Smutted grain is not accepted into the bulk handling system.
- » Contamination can be hard to eliminate without regular seed treatment.



Leaf scald

Rhynchosporium secalis

Foliar disease

SYMPTOMS

- » Lower leaves are usually the first affected by scald.
- » The first sign of the disease is a blue/grey/green water-soaked area on the leaf.
- » These lesions become bleached, with a distinctive brown margin.
- » Lesions are most commonly seen on the leaf blades, but also seen on the leaf sheath and head when the level of infection is high.

REASONS TO TREAT

- » Scald is potentially very damaging in barley because an infection can kill leaves prematurely, reduce seed weight and subsequently yield.
- » A severe early infection can reduce the number of heads and grains per head.
- » Significant yields losses can occur as can grain quality reductions.



DISEASE INFORMATION



Stripe rust

Puccinia striiformis

Foliar disease



Symptoms:

Leaf infection	Yellow/orange powdery pustules on the leaf surface arranged in stripes parallel to the veins of the leaf.
Head infection	Discoloured florets with evidence of yellow rust spores.

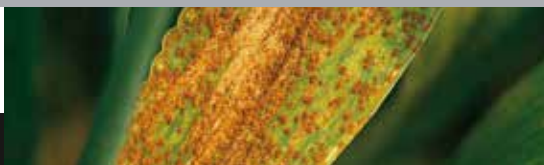
Reasons to treat:

- » Leaf infection reduces green leaf area and subsequently the plant's ability to fill grain, potentially reducing yield.
- » Head infection will produce shrivelled grain, increased screenings and potentially cause seed staining.

Leaf rust

Puccinia triticina (wheat)

Foliar disease



Symptoms:

- » Small circular to oval pustules only on the upper surface of the leaves, which produce light-brown spores.
- » As the crop matures, the pustules will turn black.

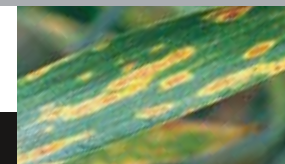
Reasons to treat:

- » Leaf infection reduces green leaf area and subsequently the plant's ability to fill grain, potentially reducing yield.

Septoria tritici blotch

Mycosphaerella graminicola

Foliar disease



Symptoms:

- » This disease will be seen as irregular, elongated blotches, often striped at the leaf edges.
- » The lesions bear characteristic black pycnidia and are surrounded by a yellow chlorotic halo.

Reasons to treat:

- » Leaf infection reduces green leaf area and subsequently the plant's ability to fill grain, potentially reducing yield.
- » The damage caused by this fungus can range from nil to almost total loss of a crop.
- » Intensity of the disease depends entirely on the time of onset of infection and the weather.
- » Some varieties have better resistance than others.

Powdery mildew

Blumeria graminis f.sp. hordei (barley)

Foliar disease



Symptoms:

- » Colonies of fungal spores appear as fluffy white growth on the surface of the leaf.
- » The area surrounding the spores turns yellow as the fungus depletes the leaf nutrients.
- » Older infections turn grey and may develop small black fruiting bodies called cleistothecia.
- » Moderate to severe infection leads to premature yellowing and eventually the death of the entire leaf.

Reasons to treat:

- » Early infection in the crop, in the crop stage leading up to stem elongation, has the greatest effect on yield, as it can reduce the number of tillers.
- » Infection can reduce green leaf area and subsequently the plant's ability to fill grain, potentially reducing yield.

NOTES

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