

Canola Seed Treatment Check List.

Fungicide

- ☒ Apply Jockey as part of an integrated approach to blackleg management
- ☒ Suppression of blackleg leaf lesions and stem canker

Insecticide

- ☒ Apply Gaucho professionally
- ☒ Aphid control
- ☒ Timerite spray with Le-mat
- ☒ Monitor crop for pests

The information and recommendations set out in this brochure are based on tests and data believed to be reliable at the time of publication. Results may vary, as the use and application of the products is beyond our control and may be subject to climatic, geographical or biological variables, and/or developed resistance. Any product referred to in this brochure must be used strictly as directed, and in accordance with all instructions appearing on the label for that product and in other applicable reference material. So far as it is lawfully able to do so, Bayer CropScience Pty Ltd accepts no liability or responsibility for loss or damage arising from failure to follow such directions and instructions

Your product guide to Jockey and Gaucho.



Jockey  **Gaucho**

Partners in precise canola protection.

The **Science** behind canola seed **treatment.**

Targeted

Seed treatment provides the most targeted, effective, practical, cost-effective and environmentally friendly approach to crop protection.

Effective

It protects your crop from the moment of sowing, then keeps on protecting through the vital germination and early establishment stages.

Practical

The active ingredient only covers the surface of each seed – so it's always located right where it's needed, and the total amount of chemical used to protect your crop is dramatically reduced.

Cost-effective

Environmentally friendly

The Seedtech™ System by Bayer takes seed treatment to a new level, with superior active ingredients, advanced formulation technology and ultra-precise application. No matter what pests and diseases you anticipate this season, there's a proven, high-performance Seedtech System treatment designed to help you optimise your crop's quality, yield and marketability – and maximise your return on investment. Together with our network of Seedtech Application Professionals, our comprehensive range has your crop covered.



**Seedtech™
System
by Bayer**



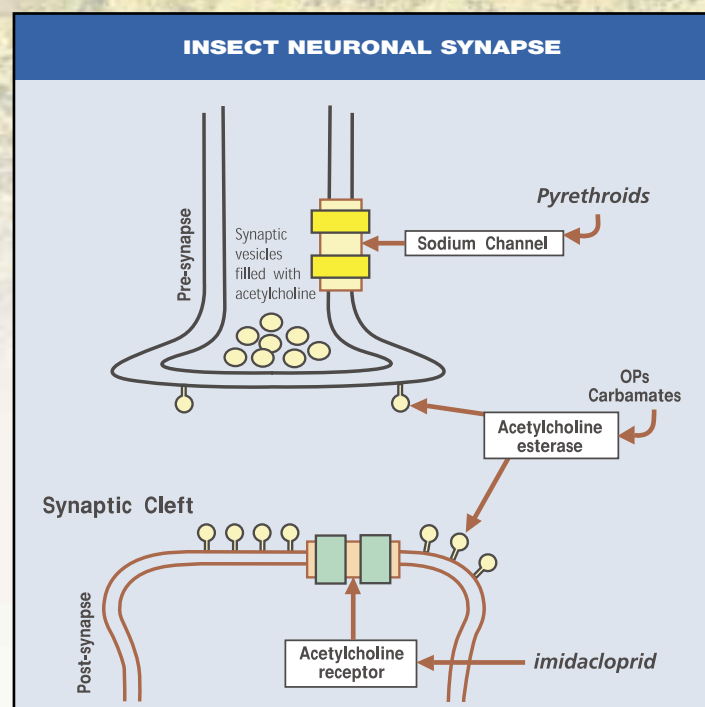
Bayer CropScience

Gaucht.

Protection right throughout germination and the vulnerable early growth phases.

A healthier crop means healthier returns.

Gaucht insecticidal seed treatment gives farmers an easy and effective way to set up canola crops for the best possible yield. That's because Gaucht protects each and every seed and seedling against aphids, redlegged earth mites and blue oat mites right throughout germination and the vulnerable early growth stages.



Mode of action for traditional insecticidal groups

The insect nervous system is composed of many individual nerve cells or fibres that branch out to form a complex network with numerous contacts for intensive impulse transmission. Insect sensory cells are excited by mechanical, visual, thermal, acoustic or chemical stimuli, and this excitation is transmitted via electrical impulses in and between the nerve cells to produce a reaction such as a muscle contraction. Impulses are transmitted between the individual nerve cells across gaps (synaptic clefts) by a chemical substance known as acetylcholine. Once the acetylcholine has forwarded its message to the acetylcholine receptor of the subsequent nerve cell or muscle fibre, an enzyme known acetylcholinesterase degrades acetylcholine. Rapid degradation of acetylcholine is necessary to avoid over-stimulation of nerve fibers and muscles.

Figure 1. Insect neuronal synapse greatly simplified, indicating the distinct point of action for organophosphate, carbamate, synthetic pyrethroid and imidacloprid insecticides.

Unique mode of action

Like the natural messenger substance acetylcholine, the active ingredient in Gaucht, imidacloprid, also binds to acetylcholine receptors in the receiving nerve fibre. Therefore, imidacloprid acts as a very effective agonist, competing with acetylcholine to bind to receptor sites. However, unlike acetylcholine, imidacloprid is not degraded by acetylcholinesterase, resulting in lasting impairment of the insect nervous system. Symptoms of insect intoxication include rapid cessation of feeding, reduced fecundity, lethargy and death of target insects.

Organophosphorus compounds and carbamates inhibit the enzyme acetylcholinesterase, resulting in an increase and accumulation of the messenger acetylcholine at the acetylcholine receptor sites. This leads to the over-stimulation of subsequent nerve fibres of the nervous system, resulting in severe muscle twitching, trembling, paralysis and death of the insect.

Synthetic pyrethroids function to impair the modulation of the "sodium ion channels," of an insect's nerve cell. The sodium ion channels are contractile pores in the nerve cell membrane, along which the electrical impulse travels within the cell. Synthetic pyrethroids block open these sodium ion channels along the nerve fibre, and the result is a continuous signal sent to the nerve ending and continuous production of acetylcholine. This floods the receptor sites with chemical transmitters, causing hyperstimulation in the next cell and eventual death of the insect.

Low toxicity

Gaucht has a low toxicity and is safe to soil microfauna, and earthworms and does not leach through the soil profile.

A targeted approach

To enable the plant to get off to a good start, the active ingredient is available precisely where and when it is needed. So from the moment the seed is sown and throughout the early establishment stage, your crop is given excellent protection. Active ingredient is released from the seed immediately after sowing, quickly surrounding it with a treatment halo. The plant then absorbs the active ingredient from the protective halo via the roots. Active ingredient is then transported to the rest of the plant.

Ideal for IPM programs

When used as directed, Gaucht is safe to beneficial insects such as bees, spiders, ants and ladybirds. This provides an excellent fit into Integrated Pest Management (IPM) programs.

Reduce your workload

Gaucht reduces the need for on-farm insecticidal treatments such as bare earth spraying, foliar or in-furrow treatments.

Delivered on your canola seed

You simply order Gaucht when you order your canola seed, and the treatment is applied by Seedtech Professionals before delivery. And since the seed is delivered already treated, there's no wastage or chance of drift.



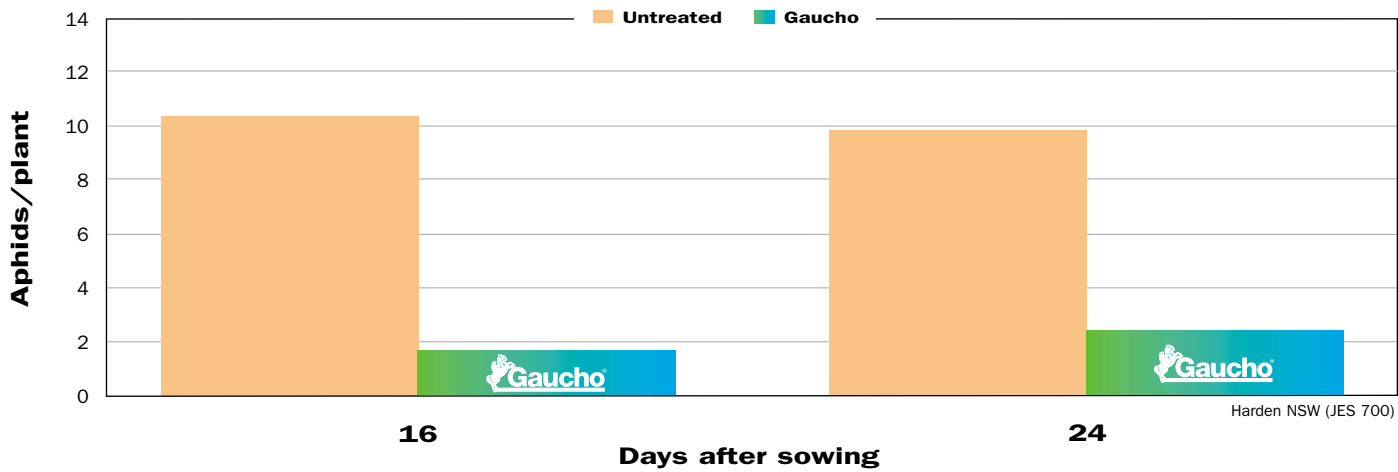
Aphids in Canola

Gaucha is now registered for the control of aphids.

Through direct feeding and virus, aphids are known to cause economic and yield loss. Gaucha will protect canola seedlings from early season aphid damage.

Three species commonly a problem in canola	Two types of damage
<ul style="list-style-type: none">• Turnip aphid (<i>Lipaphis pseudobrassicae</i>)• Cabbage aphid (<i>Brevicoryne brassicae</i>)• Green peach aphid (<i>Myzus persicae</i>)	<ul style="list-style-type: none">• Direct feeding• Virus transmission

Aphid control



Winged aphids may still be present on treated crops, Gaucha will prevent the colonisation of the aphid.

Viral Diseases of Canola

Viral diseases in canola crops have increased considerably in the last few years. The most common virus is beet western yellows luteovirus (BWYV). A range of aphid species transmit BWYV, with green peach aphids being the most common vector. Other viral diseases found in canola crops are cauliflower mosaic virus and turnip mosaic virus. These viruses cause considerable seed yield losses and diminished oil content.

The main diseases are:
<ul style="list-style-type: none">• Beet western yellows virus (BWYV)• Cauliflower mosaic virus• Turnip mosaic virus

Studies of the relationship between virus infection and yield losses in canola have shown that a combination of BWYV and green peach aphids can cause yield losses of up to 50 percent in canola.

Source: Department of Ag, WA.

Badgingarra (WA) 2003



Figure 1. Canola plot without Gaucha - poor appearance due to BWYV infection and aphid feeding damage combined.



Figure 2. Close up of canola plant with BWYV symptoms (stunting and red lower leaves) and green peach aphid feeding damage (distorted young leaves).

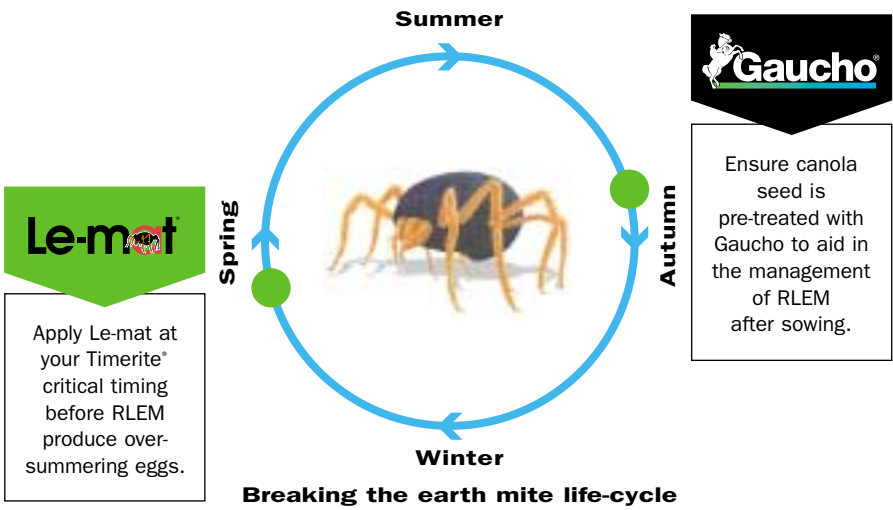
Mite Management

The novel mode of action of Gaucha protects canola from redlegged earth mite (RLEM) through:

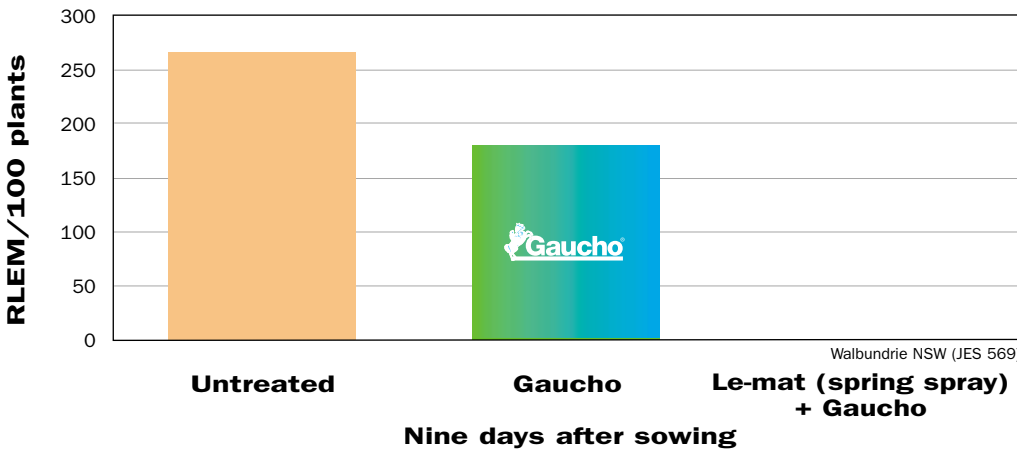
- Anti-feeding – stomach poison which is not sufficient to kill mites but stops them feeding.
- Repellency – stresses the mites via nerve poisons resulting in mites being repelled from the plant.
- Stomach poison – kills some earth mites following ingestion of treated plant parts.

An integrated approach to mite management

1. Apply a spring spray with Le-mat 290 SL Insecticide to lower adult earth mite numbers particularly when coming out of a pasture phase
2. Use Gaucha as a seed treatment to repel earth mites from plants
3. Spray Le-mat around newly sown paddock to prevent earth mite invasions from neighbouring paddocks
4. Monitor crops for re-invasion of earth mites and apply Le-mat if necessary



Spring spray timing for RLEM control using Timerite principles



What to expect from Gaucha Mite Management

Following a well-timed spring spray plus barrier spray:

- Need for further spray unlikely
Monitor for signs of damage and spray if required

Without a spring spray:

- Up to three to four weeks residual protection from sowing
Monitor for signs of damage and expect to apply a spray in seasons of high earth mite pressure



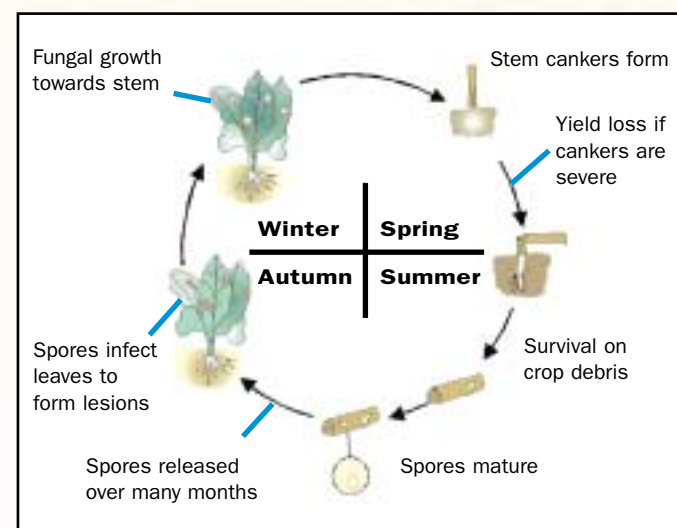
Jockey[®]

Protects canola from blackleg.

Blackleg in Australia

Blackleg (*Leptosphaeria maculans*) is a fungal disease that affects canola crops and can dramatically reduce yield. Since its first recorded appearance in Australia in the early seventies, blackleg has spread across all States and poses a serious threat in most growing seasons. Unfortunately, evidence suggests that the incidence of blackleg in Australia continues to increase.

Figure 1.



Symptoms

Blackleg affects the leaves and stems of canola plants. In seedlings, light grey lesions develop on the cotyledons and young leaves followed by infection in the stems and the characteristic stem cankers (in susceptible plants). Stem infection can result in plant death at any time during the growing season by causing the stems to break off at ground level. For those plants that survive, stem cankering commonly causes premature lodging and associated yield losses. In high disease pressure situations and on varieties with moderate susceptibility, blackleg can cause large reductions in yield due to both seedling mortality and plant lodging just prior to maturity.

Figure 2. Symptoms of Black Leg.



Leaf symptoms.



Stem cankering.

Evolution of a more virulent strain

Traditionally, the major defence against the disease has been the sowing of blackleg resistant varieties. However, a more virulent strain of blackleg has evolved which is able to attack the previously resistant varieties, thus Jockey has become an important part of the blackleg management program.

Fluquinconazole Technical Profile

Fluquinconazole, the active ingredient of Jockey, is a quinazoline-based triazole fungicide. It has a DMI mode of action which inhibits the 14-C-demethylation step of the ergosterol biosynthesis in susceptible fungi.

Fluquinconazole has broad spectrum activity against many Ascomycetes, Deuteromycetes and Basidiomycetes

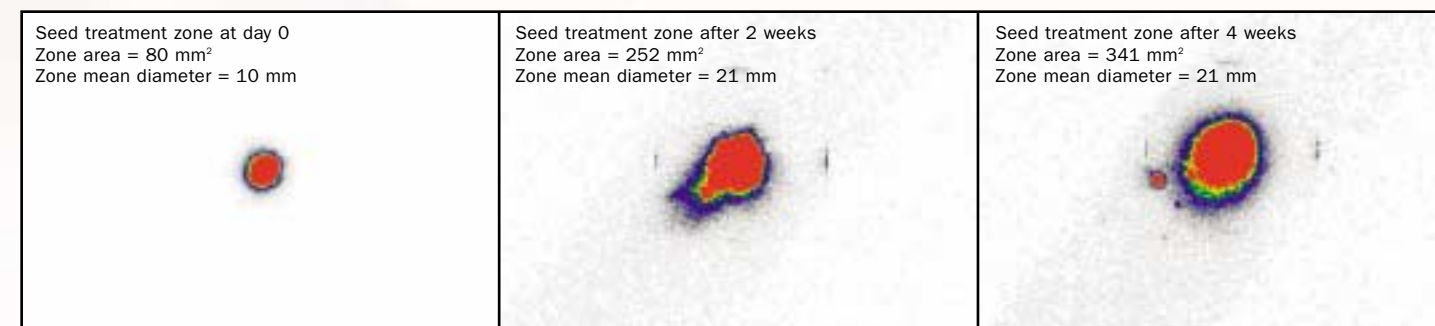
fungi which cause diseases of economical importance in cereals, broad-leaf crops, vines and top-fruit.

Fluquinconazole is systemic and has long-lasting activity combined with excellent crop safety.

Following sowing of treated seed the active ingredient (ai) is released into the soil to form a stable, concentrated seed treatment zone. The stable and compact treatment zone around the seed effectively provides a durable 'reservoir' of ai for uptake into growing roots as they emerge. This provides good residual suppression of diseases such as blackleg in canola.

Figure 3 shows how the compact treatment zone extends over a 4 week period.

Figure 3. Fluquinconazole treatment zone



Jockey[®]

Not all Jockeys are created equal

More convenient, more precise

As a seed treatment, Jockey gives you superior convenience, flexibility and precision. Unlike Impact® – which must be applied to a granulated fertiliser – Jockey offers flexibility in fertiliser choice, timing and accuracy.

The active ingredient in Jockey is located precisely where it is needed, maximising the efficacy of the active ingredient, and reducing the amount of active in the environment (Refer to Figure 4).

As part of the Seedtech System by Bayer, the treatment is applied before delivery. So it's simply a matter of ordering Jockey when you order your canola seed.

Make Jockey a part of an integrated approach

The conservation of resistant genes in canola is important to the longevity of the industry. Now Jockey has added another valuable tool in the suppression of blackleg, particularly stem cankers.

Jockey Systemic Seed Treatment has proven to be highly effective in suppressing and controlling a broad spectrum

of diseases in wheat for the suppression of blackleg in canola (Refer to Figure 5).

Tests prove Jockey maximises your yields

Field trials have shown that Jockey helps maximise yield potential in paddocks with a moderate to high risk of disease. Jockey proved consistent in minimising the severity of blackleg infection, maximising crop density, maximising crop biomass and maximising yield. Jockey has proved to be particularly effective in reducing stemcankering, which leads to lodging and subsequent yield loss.

It's also cost effective

Compared with the available alternative fungicide, treatment with Jockey provides comparable suppression of blackleg in canola - at a lower cost.

Jockey may shorten the hypocotyl length of canola. To avoid possible negative effects, Bayer CropScience recommends following good canola sowing practices. Avoid sowing Jockey treated canola deeper than 20 mm, or into soils prone to crusting. Ensure Jockey treated seed is sown in the season of treatment.

Figure 4.

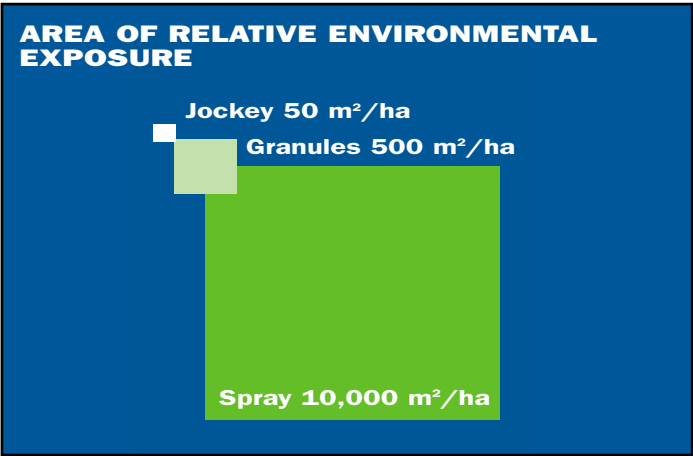
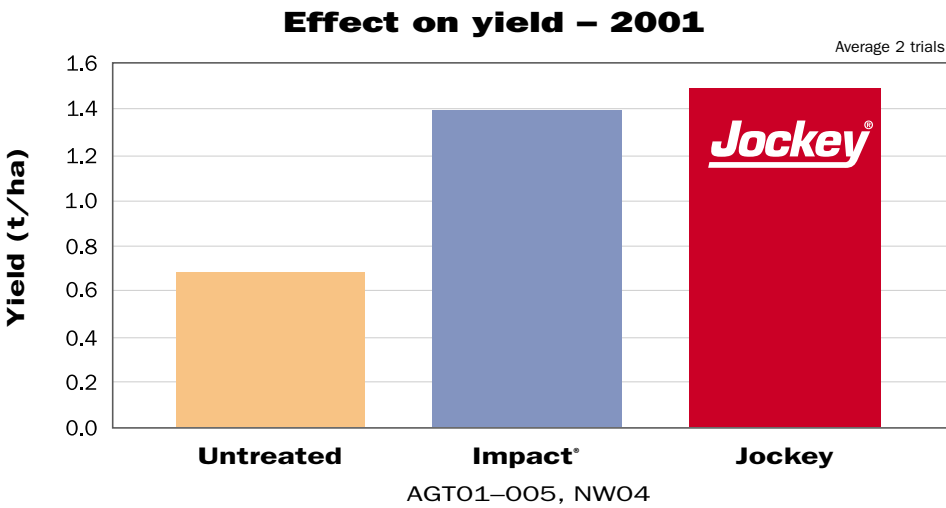
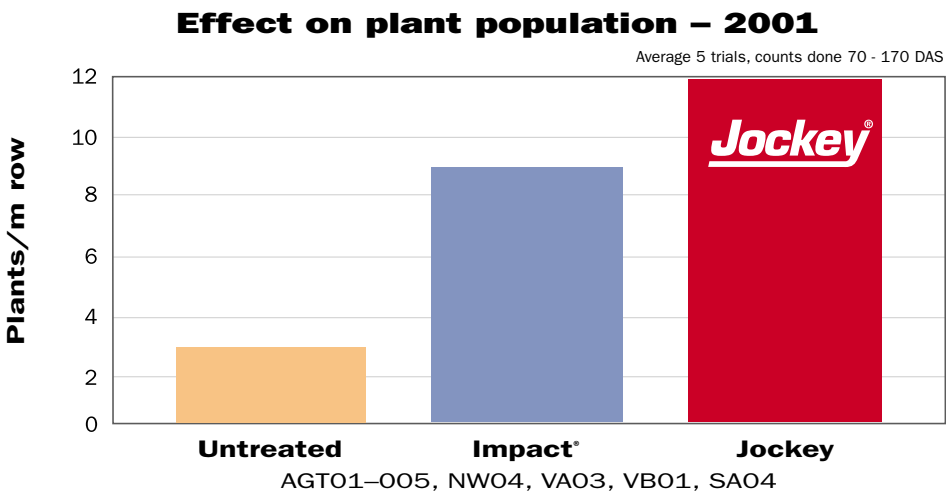
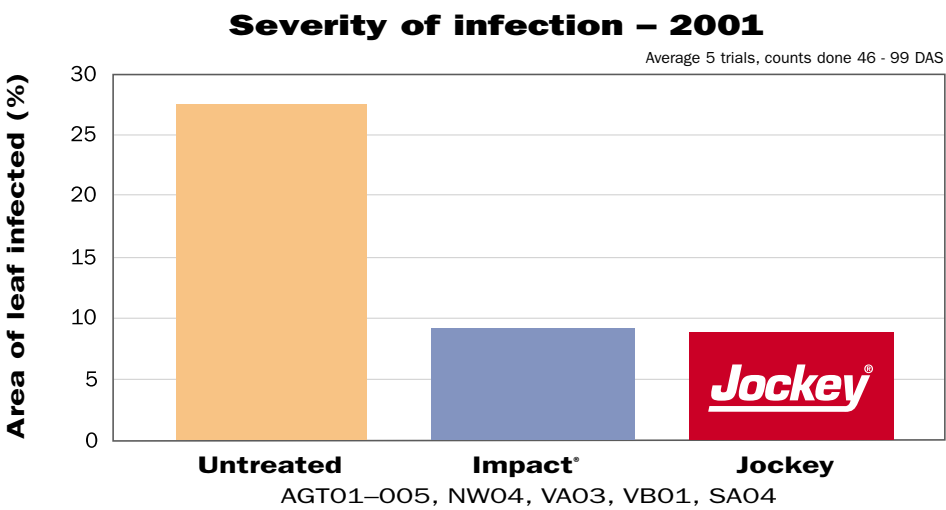


Figure 5.



Effect of blackleg on canola establishment.

Control of *Leptosphaeria maculans*



Not all Jockeys are created equal