Aphids

Aphids are found on the underside of leaves and in the crown of the plant where the plant is most vulnerable to damage. Aphids suck the sap from plants causing wilting and stunting, leading to reduced plant vigour and dry matter yeilds. Aphids are also vectors for several viruses that severely impact brassica growth and bulb development.

Swedes*		
	Percentage of clean crowns	% of leaves with >20 aphids per leaf
Untreated Control (UTC)	0%	45%
0.75L Attack	82%	0%
1.0L Attack	93%	0%

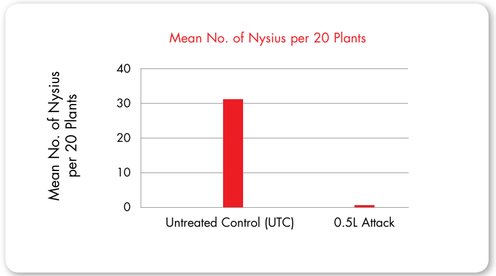
* Aphid numbers assessed 6 days after spraying. Trial NUNZ0914.

Aphids in brassicas, untreated vs treated

Aphids in plant crown

Nysius (wheat bug)

Nysius feed at the base of plant stems causing a 'ring-barking' effect. Young seedlings can be quickly killed, while the stems of older plants wither, become brittle and often break in the wind. Increased stem and bulb rotting also occurs as a result of Nysius damage.



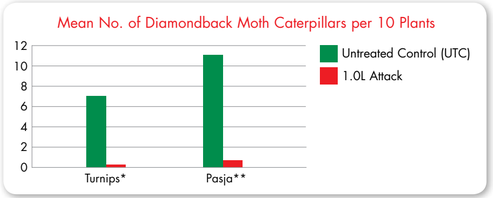
Mixed crop - swedes and kale. Nysius assessed 3 days after spraying. Trial NUNZ0905.

Nysius

Nysius damage

Caterpillars – Diamondback moth and White butterfly

Diamondback moth and white butterfly caterpillars feed on the underside of plant leaves, creating holes between the veins. Severe damage causes a skeletonised leaf with only the ribs of the leaf remaining.



* Diamondback moth numbers were assessed 4 days after spraying. Trial NUNZ0406.
** Diamondback moth numbers were assessed 6 days after spraying. Trial NUNZ0407.

Mean No. White Butterfly Caterpillars per 30 Swede Leaves*	
Untreated Control (UTC)	19.7
0.5L Attack	0.3
1.0L Attack	0.3

* White butterfly numbers were assessed 5 days after spraying. Trial NUNZ0903.

Diamondback moth caterpillar

White butterfly caterpillar

Nufarm NZ
www.nufarm.co.nz
6 Manu Street, Otahuhu
PO Box 22-407, Auckland 1640, New Zealand
Phone 09 270 4157, Fax 09 270 4159

Photo 1 courtesy of Plant and Food. Photo 2 courtesy of W. Cranshaw, CSU, Bugwood.org

Attack®

The all-in-one insecticide for broad spectrum pest control in fodder brassica crops.

Nufarm

Attack is the best form of defence

The importance of pest control in fodder brassicas

Pests can severely damage brassica crops, reducing productivity and resulting in poor quality crops. Major brassica pests thrive if uncontrolled and can cause devastating damage, reducing dry matter production which is costly.

What is Attack?

Attack is an easy to use, broad spectrum insecticide for use in fodder brassica crops to control all major pests including - leaf miner, aphids, Nysius (wheat bug), springtails and the caterpillars of diamondback moth and white butterfly.

Two insecticides in one

- Attack contains both permethrin (25g/L) + pirimiphos-methyl (475g/L) for an effective kill.

How does Attack work?

Attack works in five different ways to protect your crop:

- **Contact** - pests killed by contacting sprayed foliage
- **Ingestion** - acts as stomach poison when sprayed foliage is eaten
- **Fumigant** - vapours kill pests
- **Translaminar** - moves through leaf to kill pests inside and underneath the leaf
- **Repellency** - repels pests from the sprayed plant

Use in fodder brassicas

Rates	
Springtails	100 - 200ml per hectare
Leaf miner, Nysius, white butterfly	0.5 - 1 Litre per hectare
Aphids, diamondback moth	0.75 - 1 Litre per hectare

Application

Apply Attack in at least 100-300 litres water/ha. Use the low rate on young crops and the higher rate when the crop has reached canopy closure. For aerial applications, use the lower water rate. The use of a non-ionic wetting agent such as **Contact® Low Foam** (25-50ml/100L water) is recommended to improve coverage, especially when spraying for aphids and caterpillars.

NOTE: Avoid tank mixing Attack with herbicides unless compatibility and crop safety is known. Contact your Nufarm representative for further information.

Stock withholding period

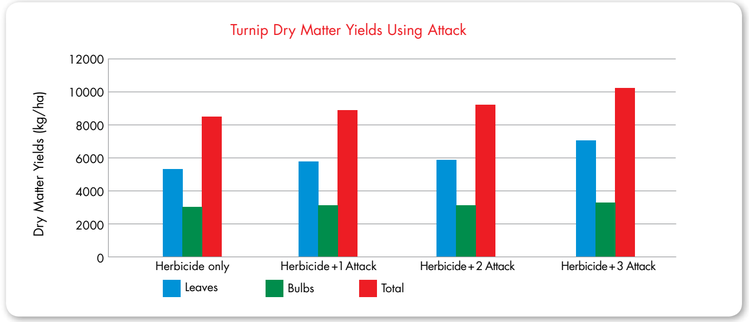
Attack has a 7 day withholding period for grazing animals.

Timing

For early control, add Attack to the tank-mix when spraying for broadleaf weeds and grasses (provided compatibility is known). Attack should be applied when insects first appear or when damage becomes visible. Repeat applications may be necessary during the growing season as these pests have highly mobile stages and re-invasion can occur. It is important to monitor the crop at least weekly for pests throughout the season.

Economics of using Attack to control pests

Trials have shown that controlling pests, particularly leaf miner, in brassica crops greatly improved yields and was very cost-effective. Between 0.5 and 2.3 tonnes of extra dry matter per hectare was grown at a cost of only 4-8 cents per kg DM.



Planted 30 Nov; sprayed 23 Dec, 15 Jan, 5 Feb; assessed 24 Feb. Trial NUNZ0958

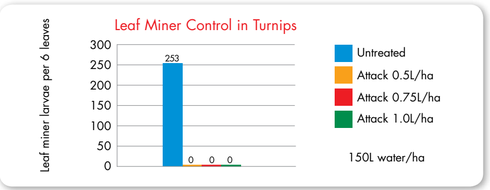
	Number of Attack sprays	Mean increase in dry matter yield over herbicides only[1] (kg DM/ha)	Cost/ha[2]	Cost/kg of extra DM grown
1	0.5L/ha Attack tank mixed with herbicide	535	$20	4 cents
2	0.5L/ha Attack tank mixed with herbicides + 1.0L/ha Attack applied 3-4 weeks later	1226	$95	8 cents
3	0.5L/ha Attack tank mixed with herbicides + 1.0L/ha Attack applied 3-4 weeks later + 1.0L/ha Attack applied 3-4 weeks later	2367	$170	7 cents

[1] Mean over 4 trials, NUNZ0955-58. [2] Assumes $40/L for Attack and $35/ha for application (excld GST). No application cost included for 1st Attack spray when tank mixed with herbicides.

Pest control in fodder brassica crops

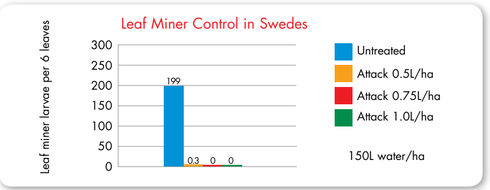
Leaf miner

Leaf miner larvae live within the leaf tissue, creating tunnels in the leaf and often damaging leaf veins. The damage caused by tunnelling larvae reduces the photosynthetic activity of the plant and causes premature leaf senescence and death. Plant leaf growth is reduced leading to decreased crop yields. Leaf miner is a grossly underestimated pest in brassicas, especially turnips and swedes. Controlling leaf miner with multiple Attack sprays throughout the life of a brassica crop has been shown to increase yields by up to 2.3 tonnes of dry matter per hectare.



Sprayed 8 Jan, assessed 5 days. Trial NUNZ0904

Leaf miner larvae tunnelling in leaf vein.

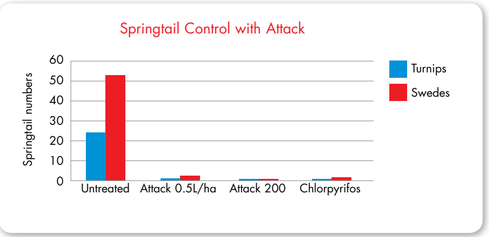


Sprayed 7 Jan, assessed 4 days. Trial NUNZ0903

Extensive Leaf miner damage

Springtails

Springtail attack begins as soon as the brassica seedlings begin to emerge. Feeding can sever the stem, destroy the growing point, or totally defoliate seedlings. Tank-mixing an insecticide (eg. **Dew™ 600**) with Roundup TRANSORB® at sprayout, plus sowing treated seed or insecticide granules should always be the first option for springtail control. If springtails become a problem after seedling emergence, apply Attack.



Springtails