BYDV: Monitoring Guide: Aphid and Beneficial Insect Identification

Sticky traps are used to determine if there are "winged" aphids active in and around the crop, especially while the crop is establishing and is too small for direct searching or sweep netting. Once the crop is well established, use a combination of direct searching/sweep netting and sticky traps. You can find yellow traps at many rural supply stores.

Steps for sticky trap establishment and collection:

1. Set up 3-4 traps* in a "W" formation along tramlines, at least 20 m into the crop to avoid edge effects (Figure 1).
2. Using a bamboo pole*, use a knife to create a slit in the top of the pole, big enough to slide a sticky trap in to.
3. Open the sticky trap and insert it into the slit horizontally. Use a cable tie or bulldog clip to secure the trap – if the traps aren't secure, they can blow away in strong wind (Figure 2).
4. Traps need to be just above the crop, but make sure to leave sufficient room for the crop to grow.
5. Leave the first set of traps for 1 – 2 weeks, then follow the schedule below (Table 1).

***Notes:**

Normally headlands or along treelines are not monitored, but if there is an area of concern, a trap can be established to provide a comparison with the rest of the paddock.

If you don't have bamboo poles, fibreglass rods or electric fence standards will also work. Secure the trap using cable ties or bulldog clips. The cable ties can snap off if it gets really windy so may need to secure traps with tailing rings above and below to prevent them from slipping. The schedule can be flexible, it depends on when the crop was drilled and the weather conditions. If in doubt, contact the FAR office.

Direct searching/sweep netting

1. Direct searching involves looking in the crop for eggs of predators and "wingless" aphids (Figure 3-6) at 1 – 2 points within 5 m of a trap. If in doubt, send leaf samples with eggs or wingless aphids to FAR with the sticky traps.
2. Once the crop is well established (from around the start of tillering) use sweep netting (4-5 sweeps, each around 10 m in distance) at crop level. Ideally this should happen when the crop is dry (not always possible).
3. Either assess insects in the sweep net in the field (wingless aphids are easy to identify once you have your eye in; Figure 3), or if you are unsure, take photos or put in specimen containers and send to FAR.

1. If you don't have a sweep net, visually check the base of tillers and underside of leaves (especially the lower leaves), and also look inside the leaf sheath.

Table 1. Monitoring schedule for autumn sown cereals

Monitoring Date	Approximate growth stage	Replace traps
early-May to mid-June	12-21	2 weeks
mid-June to mid-September	21-28	Monthly
mid-September to mid-October	28-30/31	2 weeks
mid-October to late-October/early November	31-39	Weekly

Spring sown cereals

Insecticide seed treatment should provide control of aphids up until the plant reaches GS 13/21, or as the first tiller is appearing. When and how often you monitor will depend on the sowing date. If the crop was drilled early and reaches tillering between the middle of September and the middle of October, monitoring should take place every two weeks. From mid-October, crops should be monitored weekly until it reaches GS 39.

For "later" sown crops (those which reach tillering from mid-October – early-December) crops should be monitored weekly until it reaches GS 39.

Trap collection

Using glad wrap, take the trap off the pole and wrap it in glad wrap. Don't use too much as you want to be able to identify species clearly. Examples of aphids and beneficial insects can be found below (Figures 3-6).

1. Label each trap with:
    a. date
    b. paddock number
    c. location in field (give each trap a number or a GPS reference).
    d. growth stage at collection
2. You may wish to record what you find. See below for an example of a recording sheet (Table 2).
3. If you want help with interpreting traps, insects from sweep nets or direct searching, please either send clear photos or the traps themselves, containers from sweep nets of samples with eggs or wingless aphids to: jo.drummond@far.org.nz or by post to:

Jo Drummond
Foundation for Arable Research
PO Box 23133
Hornby
Christchurch 8441

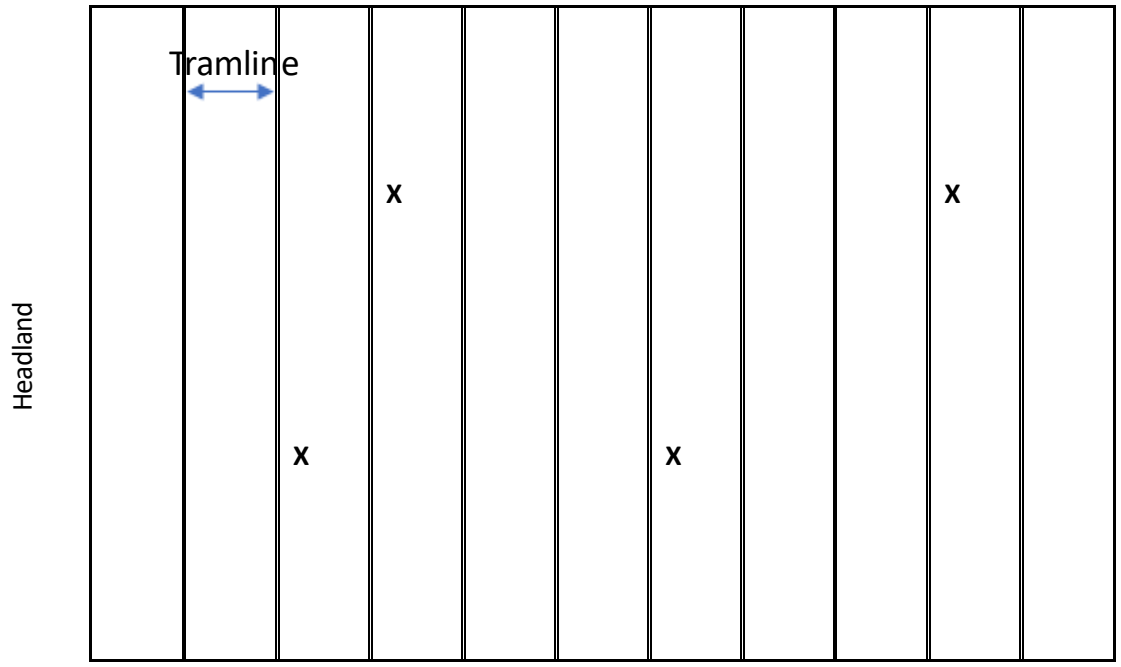
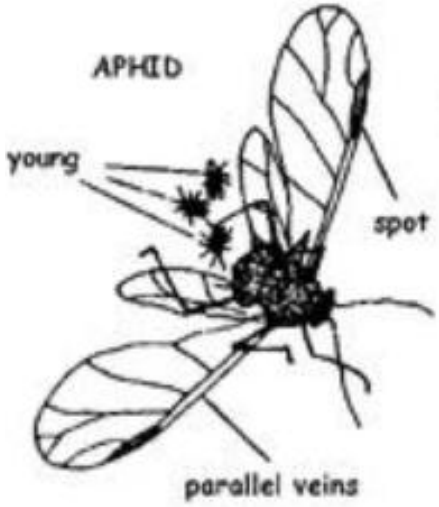


Figure 1. Formation for aphid trap set up. If using additional traps, just make sure it's in a representative area and is at least 50 m away from another trap.

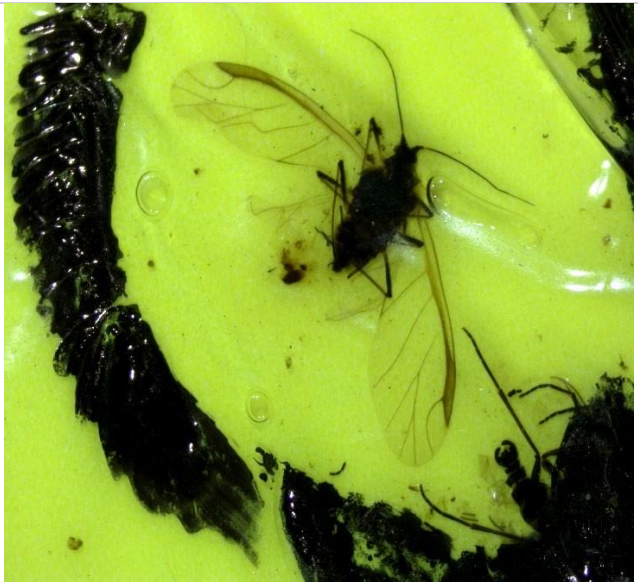
Figure 2. An example of a sticky trap set up. In this example, the trap was secured using house-plant stakes, tailing rings and a bulldog clip.

Aphid and Beneficial Insect Identification

Bird cherry oat aphid (*Rhopalosiphium padi)*
(winged and wingless)



Rose grain aphid (*Metopolophium dirhodum*)
(winged and wingless)



Aphid mummy

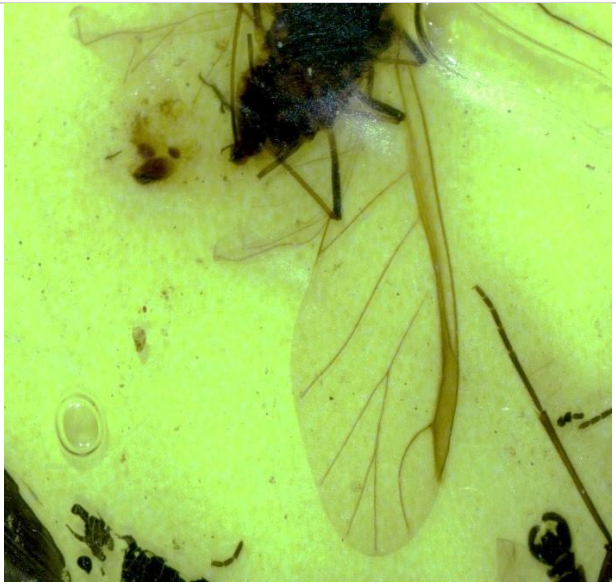
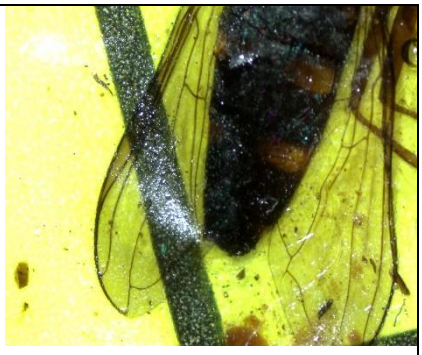
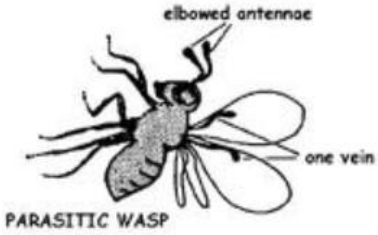
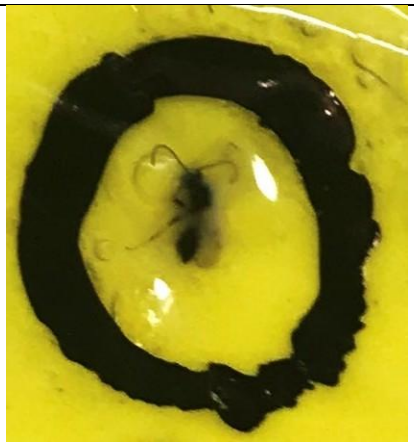


Figure 3. How to identify aphids on sticky traps.



a. Hoverfly





b. Parasitic wasp

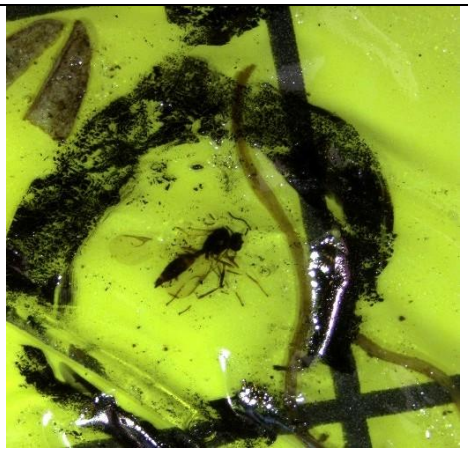
c. Lacewing

Figure 4. How to identify a) hoverflies, b) parasitic wasps and c) brown lacewings on sticky traps.

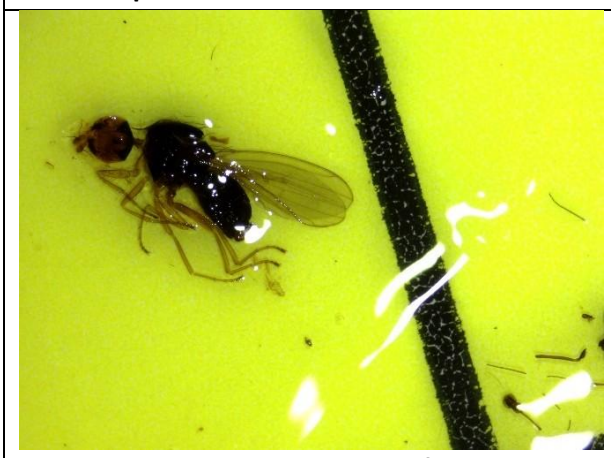
		
Brown lacewing egg	Brown lacewing larva and aphids	Brown lacewing adult
		
Hoverfly eggs	Hoverfly larva	Hoverfly adult
		
Ladybird eggs	Ladybird larva	Ladybird adult

Figure 5. How to identify lacewing, hoverfly and ladybird eggs and larvae through direct searching.

1. **Aphid - harmful**



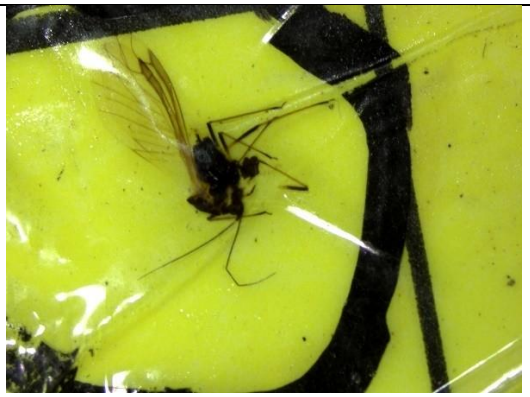
2. **Parasitic wasp - beneficial**



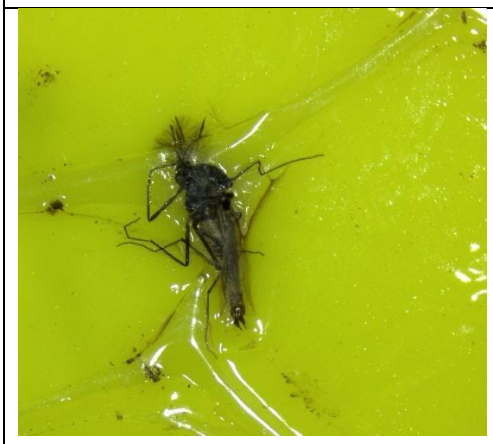
3. **Not a threat – likely beneficial**

4. **Brown lacewing - beneficial**

5. **Hoverfly - beneficial**



6. **Aphid - harmful**



7. **Midge – not of interest**

8. **Gnat – not of interest**

Figure 6. Common insects found on traps.

Table 2. Example sheet for recording trap and direct searching data.

					Pests		**Beneficials**										
Date	Farm	Paddock	Trap ID	Growth Stage	Aphid Winged	Aphid Wingless	Aphid mummies	Parasitic wasps	Lace-wing Egg	Lace-wing Larvae	Lace-wing Adult	Hover-fly Egg	Hover-fly Larvae	Hover-fly Adult	Lady-bird Egg	Lady-bird Larvae	Lady-bird Adult