



GOOD PRACTICE MANAGEMENT OF MANURES AND VEGETABLE CROP RESIDUE

Good management of animal manure and crop residue in vegetable production is critical to the control of Stable Fly and other nuisance flies.

The practices outlined in this document reflect current Good Practice for minimising fly breeding associated with the use of raw manure and crop residues. Adopting these practices will reduce the risk of excessive fly breeding and breaches of the Health (Fly Eradication) Regulations.

Good management of animal manure and crop residue includes aspects that are described as being either:

1. **Essential** and therefore required in all situations or;
2. **Advisory**, in which case they should be considered as a part of Good Practice.

It should be noted that the sale, supply, storage and use of poultry manure is restricted in localities included in the Health (Poultry Manure) Regulations 2001. If you are unsure if your property is located in a prescribed area, check with your local council environmental health officer.

1.0 STORAGE AND DELIVERY OF MANURE

Minimise storage time and ensure that manure is kept dry at all times. The vegetable producer is responsible for co-ordinating the delivery, storage, spreading and incorporation of the raw manure.

1.1 Storage area - essential

Provide adequate hard surface such as asphalt, concrete or compacted crushed limestone that:

- is outside the range of sprinklers.
- is located on high ground, well away (at least 30 metres) from any watercourse and not in any depression where surface water can accumulate.
- can be kept clean and free of raw manure between deliveries.

1.2 Delivery and application

- **Essential:** Coordinate delivery and spreading so that each consignment of raw manure will be spread within three days of the delivery to the storage area. Or if stored for longer than three days, the consignment will be covered and sealed so that flies and water cannot make contact with the manure.
- **Advisory:** Ensure that the manure is delivered in covered trucks and that it is dry, lump free and not infested with fly larvae.
- **Essential:** When the consignment of raw manure has been spread it shall immediately be incorporated or buried to a minimum of 100 millimetres.

- **Essential:** Any spillage of manure between the storage area and cropping area must be cleaned up immediately

2.0 USE OF MANURE – application timing and method

If your property is within a local government district included under the Health (Poultry Manure) Regulations, you are only permitted to use poultry manure for three months of the year (June to August). This applies until September 2011, after which a total ban will apply.

Essential: In all situations, manure rates should be adjusted to provide the crop's requirements and the fertiliser program should be reduced to allow for the nutrients supplied by the manure.

Advisory: The delay between incorporation and seeding or planting, should not exceed seven days.

3.0 CHEMICAL CONTROL OF FLY BREEDING - advisory

Insecticidal control of fly breeding is limited. To maximise their effectiveness, insecticides should be applied:

- within 3-5 days of manure application,
- late in the day when conditions are cool,
- to soil that is surface moist,
- in at least 700 to 800 litres of water per hectare.

Only use chemicals registered for use in vegetables to control fly breeding. Products must be applied in accordance with the label or with NRA Permit. For up to date information contact vegetablesWA or visit the APVMA website at www.apvma.gov.au

4.0 MANAGEMENT OF CROP RESIDUES

Significant levels of fly breeding (particularly stable fly), can occur from decaying vegetable material. Minimising fly breeding in crop residues relies on the application of a range of management practices. Highest risks are associated with:

- crops that leave large volumes of fleshy vegetative matter
- difficult to break up woody roots as in brassica, celery and lettuce
- high temperatures in spring, summer and autumn

4.1 Managing harvested field residues

In high risk situations, a combination of management practices are needed including the use of insecticides, mulching to break up crop waste, allowing the crop to dry out and regular monitoring.

- **Essential** In all situations minimise the number of harvests and time taken to complete harvests. This will reduce the amount of material that is exposed to fly breeding.

- **Essential** Thoroughly breaking up crop residues is a key management practice. The more effectively this is done, the less fly breeding will result.
- **Advisory** The use of following practices are determined largely by level of risk and should therefore all be used in high risk situations:
 - Apply an approved insecticide to the crop residue, before it is broken up with a flail or mulch mower.
 - Allow mulched crop residues to dry on the surface before rotary cultivating into the soil.
 - In low risk situations a single rotary cultivation will usually be sufficient; any elevation of risk may require more cultivations.

Essential in all situations, carry out regular monitoring – see Section 5.0 to assess management effectiveness in controlling fly breeding

4.2 Other crop waste disposal

Surplus or unmarketable produce must be handled in a manner that does not give rise to fly breeding. Recommended management practices are:

- **Essential** Spread the material thinly over a harvested area and treat as described in 4.1.
- **Essential** Feed to livestock, ensuring it is spread thinly so that it can be immediately consumed
- **Advisory** Compost the material either on site or remove to an off site facility.

Burial is NOT recommended.

5.0 MONITORING – Advisory

Regularly monitor fly breeding by checking for the presence of fly larvae, particularly in clumps of manure, decaying crop waste (stalks and roots) and other sources of organic matter on your property.

To monitor potential fly breeding sites, collect ten samples with a small garden trowel or equivalent. Count the number of fly larvae present and if there are more than ten larvae in two or more samples, take immediate steps to control them. If smaller numbers of fly larvae are present, re-sample within a week.

6.0 CONSIDERATIONS FOR NEIGHBOURS AND THE PUBLIC – Advisory

Locate manure storage away from boundaries and avoid applying on weekends, public holidays and windy conditions.