

Chapter 7 Air management



Objective – air pollution from odours, dust, smoke, noise and greenhouse gases is minimised

Air pollution issues, particularly odours, dust, smoke and noise, can often be of most significance to your immediate neighbours. Disputes involving environmental nuisance can arise as a result of the breakdown of good neighbourly relations. Considering impacts of farming activities on neighbours and, where appropriate, discussing aspects of farming with neighbours can help in their understanding of primary production. Similarly, primary producers need to recognise that some activities can negatively impact on their neighbours and that at times it may be appropriate to adjust activities as far as reasonable to minimise the impact.

Note that greenhouse gases are covered in Chapter 8 – Energy & greenhouse gas management.

Further references and resources can be located at the end of this chapter.

7a Odour management



Objective – odours from horticultural enterprises are managed to minimise potential conflicts

Odours can be caused by animal manures, fertilisers and chemicals, waste disposal sites for produce, composting sites and activities, mulches and waste management equipment.





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Relevant legislation and regulation

Legal requirements are subject to change. Regularly check with Federal, State and Local authorities for updated requirements. See here for links.



Suggested practices

Manure

For information on how to compost refer to NSW DPI Agnote on How to compost on farm and other documents in the References and other resources section.

Animal manure is often stored and used in horticulture. However, most people do not like the smell of raw manure. Growers must make sure manure is stored and used in a way to minimise the nuisance to neighbours.

Replacing raw manure

Growers can reduce the nuisance to neighbours by replacing raw animal manure with other less odorous products such as composted or dry manure. Although more expensive, using already composted manure greatly reduces any offensive odour. If fresh manure is used, growers must store and use it in the correct way.

Manure, fertiliser and chemical storage

Manure storage areas should be as far from neighbours as possible. If possible, storage areas should be located to prevent prevailing wind causing an odour issue for neighbours.

Visually screening the storage area can reduce the perception of odour problems. Providing a natural or artificial barrier between the storage area and the public eye can be very beneficial. Good ways of making a visual screen include planting a thick row of trees or putting up high solid fences.

Protection of stored manure (and compost) from rain, and containment of run-off effluent can avoid contamination of adjacent soils, work areas and waterways.

Manure application

Unfortunately, you cannot always keep a large distance between the area where manure is spread and the neighbours. The first thing that you can do is to always contact neighbours before spreading manure. This gesture will probably go a long way in maintaining good relationships with the public.

Whenever possible, you should schedule times to spread manure when it will have the least impact on neighbours. In general, manure spreading should be done on weekdays during office hours. At these times, neighbours are more likely to be away from home. If possible avoid spreading manure on weekends, holidays or when social events are taking place.

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Further references and

the end of this chapter.

resources can be located at

7a Odour management

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Carefully consider the weather before spreading manure. Manure should not be spread when the wind direction is going to take the smell to a neighbour. Even under appropriate weather conditions, the more manure used, the more likelihood that the smell will be excessive. Extra manure will not provide additional benefits to the crop and will only make the smell worse. Odours are reduced and drying is quicker when less manure is used and the manure is well spread out.

Another good practice is to dig the manure into the soil as quickly as possible. This practice also has positive implications for food safety. Ideally, manure should be incorporated as soon as spread. The best method is to incorporate it as it is put on, or to inject it. Adequate soil moisture to allow rapid initial breakdown of the applied manure helps to reduce odour. This is not possible or desirable in some permanent crop situations. Managers need to assess the risk of odour problems against the risk of soil compaction and loss of groundcover exposing the soil to erosion from incorporating manure.

As with the storage area, natural and man-made barriers between production areas and neighbours can greatly reduce the likelihood of complaints.

Produce waste disposal sites

Packing sheds often have produce waste disposal areas, which can produce odours. The same principles apply as for storage of animal manures:

- Disposal areas should be as far away as possible, and if possible, downwind of neighbours;
- Visual screening of the disposal area reduces the perception of odour problems.

Ideally, waste disposal sites should be regularly covered with soil to minimise odours and the risk of disease transmission, pest build-up and vermin.

Composting waste is also an option. Done correctly, aerated and balanced this is a low odour process. Adding gypsum to materials to be composted can cause strong sulphurous odours as the compost matures



Monitoring and recording

A farm map can be used to document sites of any manure storage areas, produce waste sites or other odour-producing activities and proximity of these areas to neighbours. Evidence of adequate recording and/or planning is beneficial.

Odours can be monitored by visiting these areas and smelling for yourself!

A complaints register can record the nature of complaints and how they were resolved.

Records of application date and cultivation date can be useful to substantiate prompt incorporation of



References and further resources

For access to relevant references and further resources click here.



Objective - to manage dust to minimise on and off site impacts

Excessive dust can cause annoyance and in some cases health problems to neighbours and staff. Dust created around packing sheds can also settle on packed produce, affecting visual quality and potentially having food safety implications.

The combination of soil type, farming system and weather patterns contributes to the risk of soil erosion by wind.



Risk assessment

Do any of the following apply to the site:

- soil is light/prone to erosion?
- cropping/harvesting activity will leave soil exposed during windy weather?
- site is particularly exposed?



Further references and resources can be located at the end of this chapter.



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7b Dust management



LOW RISK – You probably don't have a significant problem in this area. You may like to read the Suggested Practices to check your understanding

HIGH RISK - You need to take some action. Read the Suggested Practices for that chapter.

Further references and resources can be located at the end of this chapter





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Suggested practices

Control measures may include planting shelterbelts and windbreaks where practical, modifying cultural practices or reconsidering the appropriateness of particular cropping activities on exposed sites.

Constructing or planting a shelterbelt/windbreak will slow the velocity of wind across a site (shelterbelts/windbreaks should be designed to allow 30-50% of the wind to pass through). The protective effects from a shelterbelt/windbreak reduce with distance away from it (protection extends no more than 20 times the height of the vegetation).

Vegetation shelterbelts/windbreaks also provide wildlife habitat, assist in minimising spray drift, reduce the visual and noise impacts of site activity and can improve the quality of crops.

Choose cultivation practices carefully:

- Working soil to fine tilth in dry windy weather should be avoided if possible. Pre-irrigation to wet dry soil before cultivation will help to reduce dust;
- Use slower cultivation speeds when there is a risk of dust. Uncultivated crop stubble provides protection against wind erosion. Minimise the amount of time soil is left without vegetation or a cover crop. Minimum tillage techniques should be used where practical; and
- Inter-row spacings and headlands should have groundcover whenever possible.

Applying mulches to the surface of seedbeds after drilling on sandy soils is an effective control measure. Use of plastic mulch along plant rows will also contribute to dust control.

Wetting down, sealing and use of 'minimal dust materials' (for example blue metal or hardstand) for the surfaces of frequently used traffic ways (transport delivery and pickup areas, harvested produce delivery points and forklift routes at the packing shed) will dramatically reduce the dust problem. Do not apply oil to trafficways due to the potential for it to end up in waterways.



Monitoring and recording

See Topic 1a - Land and soil management, for details of ways to assess soil erosion by wind.

If dust is a major issue to neighbouring areas, cultivation records may be kept (as part of paddock records) to detail soil conditions when soils are worked and the equipment used.

Farm maps should show roads, sensitive areas and soil types and can be used to demonstrate the placement of current and planned shelterbelts and the direction of prevailing winds.

The effectiveness of these practices can be assessed by observing dust levels on windy days.



References and further resources

For access to relevant references and further resources click here.

Further references and resources can be located at the end of this chapter



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Chapter 7 Air management

7c Smoke management



Objective - to manage smoke to minimise on and off-site impacts

The on and off-site impacts of smoke need to be minimised through fire management techniques.



Risk assessment





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Suggested practices

If burning in the open is the only practical method of disposal of materials, and it is legal in your area, precautions should be taken to prevent producing dark smoke and causing a nuisance. Burning of waste is banned, or requires a permit, in many local government areas. Before burning check local bushfire restrictions/permits and local government restrictions and requirements.

Do not burn plastics, rubber, tyres or other materials known to produce dark smoke. Where possible recycle, reuse or dispose of these waste items at local authority waste depots. Do not burn plastics or chemicals under any circumstances as they release toxic fumes and residues.

Avoid burning if it will cause a nuisance to nearby residential areas. Check wind direction before burning - only burn when wind direction is away from neighbours.

As a courtesy, inform immediate neighbours before burning.

Be aware of localised landscapes that can induce smoke problems, such as valleys.

Materials should be dry and have low moisture content. Do not burn green vegetation. Keep fires small and continually add combustible material, minimising the depth of the combustion area. Minimise the quantity of incombustible material added to the fire. Wherever possible keep incombustible materials separate from materials to be burnt. For better combustion, agitate the base of the fire to improve air supply.

If fire produces dark smoke, don't add any more material that burns slowly.



Monitoring and recording

Further references and resources can be located at the end of this chapter.



The quantity of dark smoke produced during burning operations can only be assessed visually. Records of other disposal options for materials that are likely to produce dark smoke can also be retained.



References and further resources

For access to relevant references and further resources click here.

7c Smoke management

Further references and resources can be located at the end of this chapter





Objective - to manage noise to minimise on and off-site impacts

Noise is a form of pollution that may result in environmental harm. Assessments of environmental harm include consideration of:

- The degree and scale of impact;
- The health and safety of people;
- Property damage;
- Unreasonable interference with the amenity of an area.

The nature of the pollution and the sensitivity of the receiving environment is also a consideration. Noise pollution could be associated with excessive noise from farm machinery (such as pumps, harvesters and vehicles), bird scaring devices, and/or frost protectors. This could impact on people's enjoyment of their property, may affect their mental or physical health, and may have adverse impacts on local communities.

Noise many not seem like an environmental management issue for growers, however most State legislation for environmental protection includes noise as part of the definition of the environment. For this reason, noise management is included in the environmental assurance process for horticultural businesses.



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7d Noise management

Further references and resources can be located at the end of this chapter





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Suggested practices

Identify and consider local government regulations.

Buffer zones are useful to reduce noise and are also helpful to mitigate impacts of off-target spray application.

Where pumps are located close to residential areas, consider changing from diesel to electric pumps or creating a sound barrier around the pump. Electric pumps will most likely be run at night time, when electricity tariffs are lower.

Consider muffling equipment where daytime intermittent noise levels are excessive. Where normal methods are not sufficient to reduce noise to acceptable levels, equipment that is continuously operated may require soundproofing or artificial mounds to help absorb and deflect the noise.

Some forms of seasonal activity, or current and accepted industry practice like harvesting, may require the use of machinery at night. Where sensitive places are close to noise and night-time activities occur, consider starting work closer to the sensitive area and moving away as night falls. The converse applies for early morning activities.

Where noise may be an issue, keeping records of machinery use may be beneficial.

Use of bird deterrents, such as gas guns, and frost protectors in a considerate manner and in accordance with local bylaws, such as meeting maximum accumulated peak level (APL) for impulsive noise devices and guidelines on hours of operation.

Transport operators picking up packed produce should be reminded not to use exhaust brakes where this noise would create a nuisance to neighbours.

Given the potential for disturbance and misunderstanding associated with noise pollution, it is sound practice for operators to consult with neighbours about their planned operation, to explain the reason for their use, and to discuss options for their operation. In some cases this may not be feasible (e.g., the number of people involved, uncertainty about who may be able to hear the devices in different conditions, or historic bad relations) but, if possible, it could help in their understanding of the activity and potentially prevent some problems from arising.



Monitoring and recording

Records of machinery maintenance should be maintained. In situations where a more definitive measure of noise is required, organisations such as state OH&S agencies can assist with testing.



References and further resources

For access to relevant references and further resources click here.

Further references and resources can be located at the end of this chapter.



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Air management - references and further resources

(web links accurate as at 11 February 2014)

Note: A number of Horticulture Australia Limited (HAL)-funded project final reports have been identified as references within this document. This is by no means representative of all the research & development (R&D) or final reports available in this area. For full list of HAL final reports visit the HAL website www.horticulture.com.au. Alternatively, contact HAL or your peak industry body for more information on research & development outcomes specific to your industry.
Air Resources Board, California, Smoke Management Program www.arb.ca.gov/smp/smp.htm
Australian Centre for Agricultural Health and Safety – Noise Injury Prevention http://www.aghealth.org.au/index.php?id=5037
Australian Government Department of Environment - Air Quality http://www.environment.gov.au/topics/environment-protection/air-quality
Australian Government Department of Environment – Smoke from Biomass Burning http://www.environment.gov.au/resource/smoke-biomass-burning
Bureau of Meterology http://www.bom.gov.au
EPA South Australia (2007) Draft Environmental Noise Guidelines for Audible Bird Scaring Devices, Adelaide, SA. http://www.epa.sa.gov.au/xstd_files/Noise/Guideline/guide_bird.pdf
DEFRA (2011) Protecting our water, soil and air, Department of Environment Food and Rural Affairs, UK. https://www.gov.uk/government/publications/protecting-our-water-soil-and-air
DEHNSW (2012) DustWatch, Department of Enviornment and Heritage, Sydney, NSW. http://www.environment.nsw.gov.au/dustwatch
MODIS – Land Atmosphere Near Real-Time Data – NASA https://earthdata.nasa.gov/data/near-real-time-data/rapid-response/modis-subsets
NSW Department of Primary Industries (2003) How to compost on farm, Agnote DPI - 448 http://www.dpi.nsw.gov.au/data/assets/pdf_file/0003/166476/compost-on-farm.pdf
NSW Government – Air Quality Monitoring http://www.environment.nsw.gov.au/aqms/index.htm
Recycled Organics www.recycledorganics.com
Safe Work Australia – Agricultural Resources (noise management) http://www.safeworkaustralia.gov.au/sites/swa/whs-information/agriculture/pages/agriculture
State-specific information
NSW http://www.epa.nsw.gov.au/air/
NT http://www.ntepa.nt.gov.au/waste-pollution/air
QLD http://www.ehp.qld.gov.au/air/index.html
SA http://www.epa.sa.gov.au/environmental_info/air_quality
TAS http://epa.tas.gov.au/epa/air
VIC http://www.epa.vic.gov.au/your-environment/air/air-pollution
WA http://www.epa.wa.gov.au/Pages/default.aspx and http://portal.environment.wa.gov.au/portal/page?_pageid=54,34288&_dad=portal&_schema=PORTAL

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