

Best practice guidelines for bird scaring in orchards

Version 2.0 – May 2017

Purpose

These guidelines are intended to help fruit and nut growers, residents and local government authorities manage environmental noise from gas guns and other noisy devices used in orchards to prevent fruit and nut damage by black cockatoos. They have been developed in accordance with a commitment to protect threatened bird species, the viability of the fruit growing industry and the welfare and amenity of residents.

These guidelines apply specifically to situations where the bird species causing damage is classed as threatened under the *Wildlife Conservation Act 1950*. There is also potential application for controlling birds for which an open season applies where no approval for shooting to kill is required and for those situations where a damage licence would usually be obtained.

All black cockatoo species that occur in WA are listed as threatened and cannot be shot or killed as a means of reducing damage to crops.

Shooting to kill is not a management option for black cockatoos that cause damage to crops.

Alternative methods need to be considered and applied.



Best practice recommendations for reducing the impacts of black cockatoos on commercial fruit crops include techniques such as visual and auditory scaring devices and physical barriers such as wires and exclusion netting. The operation of noise-generating devices can create problems for neighbours and exceed maximum levels prescribed under the *Environmental Protection (Noise) Regulations 1997*. Local governments have the delegated responsibility of administering these noise regulations.

Background

There are three species of black cockatoo native to south-west Australia, which are listed as threatened species under state and national environmental legislation. Two of these species are known to enter orchards. Carnaby's cockatoo (*Calyptorhynchus latirostris*) has been recorded damaging nut (almond, pecan, pistachio and *macadamia*) and persimmon crops. Baudin's cockatoo (*Calyptorhynchus baudinii*) has a long history of damaging apple, pear and some stone fruit crops. The forest red-tailed black cockatoo (*Calyptorhynchus banksii naso*) has not been recorded damaging fruit or nut crops.

Damage to crops typically occurs in the first few hours after sunrise and the last few hours before sunset, but is not exclusively restricted to those periods. Peak damage is usually recorded during months of late summer and autumn, but may occur at other times during the fruit growing season.

Further information is provided in the answers to frequently asked questions in Appendix 1.



Noise and its effects

Noise is defined as unwanted sound. A fruit grower may not consider the sound of a gas gun as noise, yet a neighbour could consider it noise if it disturbs their rest or recreational activities. It would be reasonable to expect that a noise disturbance designed for birds would also disturb people.

A number of objective and subjective factors affect a person's response to noise.

Objective factors include:

- level of the noise;
- emergence of the noise above background levels;
- nature of the noise, its duration and how often it occurs;
- characteristics of the noise – tonality ('humming' or 'whining', some electronic bird scarers might contain this characteristic), modulation (regular changes in level or pitch, e.g. a siren, electronic bird scarers can fall into this category) or impulsiveness ('banging' or 'knocking', gas guns have this characteristic depending on how far the receiver is from the source); and
- time of day or week that the noise occurs.

Subjective factors include:

- activity of the person receiving the noise and their state of health or mind;
- attitude of the person receiving the noise to the noise source or noise emitter;
- information content of the source (a noise may be recognised and trigger fear, or alternatively, be familiar and comforting);
- controllability of the source (a noise source may be less annoying if it can be controlled by closing a window for example); and
- expectations of the community.

Managing noise

In some circumstances, and especially under certain weather conditions, bird scaring devices will breach noise regulations and will therefore cause problems for neighbours.

The *Environmental Protection Act 1986* defines 'unreasonable noise' in two main ways; subjectively or by breach of a prescribed standard.

1. The subjective definition looks at the nature and duration of the noise emissions, the frequency of similar emissions from the same source, the time of day at which the noise is emitted and whether the noise unreasonably interferes with the health, welfare, convenience, comfort or amenity of any person receiving the noise.
2. The *Environmental Protection (Noise) Regulations 1997* are the prescribed standard under the Act.

The noise regulations specify assigned noise levels that are the levels of noise allowed to be received at premises at a particular time of day. There are different assigned levels depending on the type of receiver. These are categorised as:

- noise-sensitive premises (residences);
- commercial premises (shops, offices); and
- industrial premises (factories, mines).

The assigned levels for noise-sensitive premises vary depending on the time of day, being lower at night when people are more sensitive to noise. For noise-sensitive premises, the assigned levels also depend on how close the house is to industrial and commercial areas and to major roads.

The noise regulations also require that the noise source be 'free' from annoying characteristics (specifically tonality, modulation and impulsiveness) and set out objective tests to assess whether the noise contains any of these characteristics. If these characteristics cannot reasonably and practicably be removed, then a series of adjustments are provided to add to the measured levels. The measured levels adjusted for the presence of annoying characteristics must then comply with the assigned levels.

The assigned noise levels are designed to provide a good level of noise amenity for occupiers of noise-sensitive, commercial and industrial premises.

Crop protection

Studies have shown that netting orchards is the best means of controlling the damage caused by black cockatoos. Netting also protects fruit from sunburn and hail damage, reduces water use and provides good quality fruit, but has a higher establishment cost (<https://www.agric.wa.gov.au/water-management/netted-apple-demonstration-final-summary>).

Scaring and repelling techniques that can be applied include the use of audible, visible, physical or chemical means to discourage or frighten birds away from crops. The birds may be frightened by something new and unusual in their environment (e.g. flashing lights or strange sounds) or by something that simulates a threat.

Early action should be taken before the birds become familiar with the orchard as a food source, as once birds are habituated to feeding on crops it is more difficult to scare them away.

Studies indicate that scaring devices used in isolation tend not to work, but when a number of devices are used in rotation, damage may be reduced. When the strategies outlined below are followed, scaring is more likely to be effective against parrots, cockatoos and other species.

It is also important that the birds associate human activity with danger. Birds lose their fear of humans if not harassed with real or simulated danger. Shooting to scare using pyrotechnic cartridges, should be initiated before using other scaring devices to establish an association between noise and real danger.

Scaring is safer in built-up areas and is a non-lethal method for dealing with bird damage. However, scaring devices are usually expensive and gas cannons and cracker cartridges can be a minor fire risk in dry conditions. Some devices may breach noise regulations and/or cause conflict between neighbours, so, if in doubt, enquiries should be made with your local government and neighbours.

Every situation is different. Scaring combinations that work at one orchard may not work in another, and not all bird species react the same way to a particular control option.

Scaring devices

There is a range of acoustic and visual bird scaring devices commercially available, including firearms, electronic noisemakers, recorded bird distress and predator calls, gas fuelled exploders (gas cannons) and motorcycles. The sound produced by stationary scaring devices can be maximised by pointing them downwind, raising them off the ground and camouflaging them so the birds do not associate the sound with the device. Gas cannons and pyrotechnic cartridges can be an effective means of dispersing birds from crops and orchards.

Gas (propane) cannons are powered by LP gas cylinders and are available in a range of configurations from mechanically controlled single-shot units to others that produce random series of single, double, and triple-shot clusters, adjustable from every 30 seconds to every 20 minutes. The gas cannon can be mounted so that it rotates to improve effectiveness. The use of a pre-set timer allows selection of activation times. Gas-cannons are safe, and cost- and time-effective, as they do not require the presence of an operator.

Pyrotechnic cartridges are used to reinforce the effect of gas cannons and are usually fired from shotguns. They either make a siren-like sound as they fly or travel 30 to 50 metres before exploding with a loud bang. Cartridges can be costly, there is some fire risk associated with their use, and they require an operator.

Electronic noisemakers broadcast synthetic electronic sounds that are claimed to be unsettling for birds and can either be distress calls or mimic the sound of birds of prey. As some devices produce sounds like real birds they may be considered less irritating to neighbours than propane cannons. Other devices produce artificial sounds.

Any human activity in orchards, such as operating vehicles or trail bikes, has been shown to be effective in displacing birds from orchards.

Hand-held lasers, visible in low light conditions, may be useful in deterring some bird species from orchards. Lasers are simple to use, require an operator and may require a licence depending on the laser type, but birds supposedly do not get used to the laser beam.

Important things to remember when using bird scaring devices

- Persistence is required. Scaring devices should be used throughout the damage period, but only during the periods of the day when the birds are likely to be feeding in the area.
- When birds causing the problem are nomadic, crops should be regularly checked for signs of damage. Early action can then be taken before the birds become reliant on the crop for food or develop a habit of coming to that crop.
- When birds are resident, scaring devices or shooting to scare should be used occasionally throughout the year to maintain a degree of wariness in birds and to indicate that the area is not safe for feeding.

- Dropped fruit should be removed promptly, and birds should not be allowed to eat fallen fruit or reside on the orchard in the non-fruiting season, as the orchard will become recognised as a food source and birds will adapt to feeding on fruit left on the ground.
- Shooting to scare only should be initiated before using other scaring devices to establish an association between noise and real danger, and only with a licence from the Department of Biodiversity, Conservation and Attractions (DBCA).
- Noise scaring devices should be introduced after the birds have developed a fear of the gun. Some shooting to scare may need to be maintained to reinforce the effect of the scaring devices.
- To maximise the effectiveness of bird scaring, noises should be irregular or random, change direction and location often and be integrated with other types of noises and bird scaring tactics.
- Once birds start to ignore a particular device, it should be removed immediately, otherwise the birds may begin to associate the device with a good food source.
- Combining a number of devices and using them in rotation maintains variety and improves effectiveness. This reduces the likelihood of birds becoming used to the devices.
- Collaboration with neighbouring growers can ensure that methods complement each other.
- Many scaring programs fail because damage usually occurs at a busy time of year and producers do not feel they can afford the time for intensive control efforts. Consideration should be given to employing someone just to run the crop protection program – a full-time person may not be required and consider sharing the cost with neighbours.

Use of firearms

The department recognises that a number of native bird species are pests in commercial fruit crops. According to the *Wildlife Conservation (Open Season for Birds Causing Damage) Notice 1998*, provision has been made for landowners, occupiers or authorised agents to shoot some pest birds in some parts of the State when they are causing damage or likely to cause damage to scare the rest of the flock. To find out more information about pest birds and their management please contact DBCA. Damage licences to shoot to scare black cockatoos can be obtained from the department but shooting to kill is illegal and is not a management option for any of the three black cockatoo species.

Only licensed firearms can be used to shoot or scare pest birds causing damage to crops. Only persons holding a licence or permit issued under the *Firearms Act 1973* may use a firearm for this purpose. The safety of the public is essential and firearms should only be used where it is safe to do so.

Best practice noise management

In the first instance, consider and adapt bird scaring methods that minimise noise impacts. Depending on the device, its orientation and surrounding topography, gas guns or other acoustic methods could comply with noise regulations if noise-sensitive receivers are at least one kilometre away from the device.

When using acoustic methods, best practice noise management needs to be followed.

1. Communication

Growers are encouraged to develop a simple communication program to ensure affected neighbours are informed of any bird scaring activities.

The communication program should include the following:

- Discuss the bird scaring alternatives and potential noise with neighbours who may be affected.
- At the beginning of the damage season, provide neighbours and local residents a letter that includes the following:
 - name and contact details of the grower;
 - location of orchard;
 - dates of the damage season; and
 - times when bird scaring devices will be operated.

A letter template is provided as Appendix 2. The *Birds in orchards Fauna Note*, available on the Parks and Wildlife website (<https://www.dpaw.wa.gov.au/plants-and-animals/animals/living-with-wildlife>) can accompany the letter to provide further information about bird scaring and noise management.

- Consider signage along the property boundary, with local government approval, that would alert nearby residents to the possibility that they may experience noise during the fruit growing season.

2. Managing early morning noise

People are more sensitive to noise in the early morning, especially noise from unattended equipment like gas guns and electronic devices.

For effective scaring and minimal noise, a grower should be present and use a manual method such as motorbikes (or similar vehicles) or shotguns (shooting to scare). This ensures that noise is only emitted when necessary. If a grower is unable to be present, consideration should be given to hiring people trained in manual scaring.

Other automatic acoustic devices should be used only after manual scaring methods have been exhausted.

3. Best practice management of using gas guns

- Use only after manual scaring has taken place for an extended period of time.
- Use no more than two continuous periods per day, and not before sunrise or after sunset.
- Best results will be achieved by preventing habituation to the device. Turn the device off when birds are not actively feeding during the day.
- Acceptance by neighbours of early morning use could be more forthcoming if the grower is in attendance while the gas guns are in operation.
- Ensure the firing rate is as low as possible to maintain the 'startle' effect. Several blasts in quick succession with 10 to 15 minutes between volleys are effective with no more than six volleys per hour. For the greatest effect, all devices around the crop and on adjacent properties should be synchronised to fire at the same time.
- Regularly move gas guns around the orchard. Ensure the gas guns are orientated in a fixed direction away from the nearest neighbour.
- Devices should be placed on the ground, ideally facing upwind. This uses the benefits of ground absorption and wind direction to reduce the noise received at greater distances. Wind direction has little effect on the noise levels received close to the gas gun.
- Attempts should be made to place barriers (such as hay bales) as close as possible to the gas gun and interrupting line-of-sight to the nearest residence. The gas gun should also be camouflaged so the birds do not associate the sound with the device.

4. Long-term strategy

Commit to reducing the impact of acoustic bird scaring devices on the nearby residents over subsequent years.

A checklist to provide guidance as to whether fruit and nut growers are following best practice methods for scaring birds is provided as Appendix 3.

Local government authority procedure

Local government authorities aim to protect the noise environment while allowing the protection of black cockatoos and fruit crops.

The recommended procedure for local government when dealing with noise complaints includes:

1. The local government should ensure both complainants and growers have the available information about bird scaring in orchards (e.g. pamphlet, Best Practice Guidelines for Bird Scaring in Orchards, Parks and Wildlife/Ag Notes).
2. Use informal mediation to achieve acceptable bird-scaring regimes based on the best practice guidelines.
3. If damage mitigation methods or compliance with noise regulations are in dispute, the local government should assess the impact of noise emission with regard to:
 - the type of scaring method and duration, time of day; and
 - the noise level, and presence of tonality or impulsiveness.
4. The local government should encourage the fruit grower to explore ways of reducing noise in accordance with the guidelines by:
 - reducing use of acoustic methods by using other methods, including both short and long term, such as using visual scarers or netting; and
 - reducing the noise emissions from acoustic methods, such as using barriers or placement to reduce the noise level or by reducing the number of blasts from gas guns.
5. The local government or an independent mediator should arrange formal mediation to develop a mutually agreed noise management plan for bird scaring for the orchard.

A Noise Management Plan for acoustic bird scaring devices is a document outlining negotiated conditions designed to minimise the impact of bird scaring devices on neighbours. A plan should be specific to one orchard (or a collection of adjacent orchards) and the surrounding neighbours.

The conditions in the plan will follow the guideline and should include:

- limits on the days and times of operation of the bird scaring devices;
- limits on the operating rate of the bird scaring devices;
- orientation and rotation of the devices;
- timing, amount and method of notification of operating times provided to neighbours;
- complaint response procedure; and
- commitment to a strategy to reduce the impact of the bird scaring devices over time.

The Noise Management Plan is not a legal document and is intended only to record the conditions considered acceptable to all parties involved.

Where best practice is not followed, the local government should insist that the grower comply with the provisions of the noise regulations. The local government retains the discretion to exercise the relevant powers under the *Environmental Protection Act 1986*.

For more information

- Visit the 'living with wildlife' section of the Parks and Wildlife website: <http://www.dpaw.wa.gov.au/plants-and-animals/animals/living-with-wildlife>.
- Contact the Department of Biodiversity, Conservation and Attractions:

State Operation Headquarters

17 Dick Perry Avenue
Technology Park, Western Precinct
KENSINGTON WA 6151
Phone: (08) 9219 9000
Email: info@dbca.wa.gov.au
Website: <https://www.dpaw.wa.gov.au>

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Department of Biodiversity, Conservation and
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Locked Bag 104
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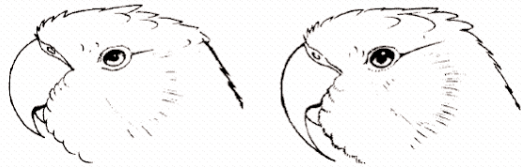
Visit <https://www.dpaw.wa.gov.au/about-us/contact-us> for regional office contact details

Acknowledgments

Previous versions of this document were prepared by the Black Cockatoo/Fruit Protection Technical Advisory Committee, comprised of representatives from state and local government and the fruit and nut grower industries.

What species of black cockatoo occur in the south-west?

There are two species of white-tailed black cockatoo and one species of red-tailed black cockatoo in south-west WA. The white-tailed black cockatoo with the short bill is Carnaby's cockatoo and the white-tailed black cockatoo with the long bill is Baudin's cockatoo. The forest red-tailed black cockatoo is the only red-tailed species in the forests of the south-west.



Comparison of the heads of a Carnaby's cockatoo (left) and a Baudin's cockatoo (right), showing the longer and finer upper bill in Baudin's cockatoo. (Image reproduced with permission from the Museum of Western Australia.)

Are our black cockatoos really threatened with extinction?

Yes. The conservation status of these cockatoos has been assessed by experts from the state and national Threatened Species Scientific Committees. All three black cockatoo species in the south-west meet the criteria for threatened species and are listed as 'rare or likely to become extinct' under the *WA Wildlife Conservation Act 1950* and are also listed as threatened under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*.

Under the World Conservation Union (IUCN) categories, Carnaby's cockatoo and Baudin's cockatoo both meet the criteria for endangered and the forest red-tailed black cockatoo meets the criteria for vulnerable. The cockatoos fit into these categories because they have declined across a significant portion of their range during the past 50 years. The factors that caused the decline of the cockatoos include habitat loss, competition for nest hollows with feral honeybees and other birds, legal shooting (prior to 1989) and illegal shooting that has continued since then.

Which crops do white-tailed black cockatoos damage?

Carnaby's cockatoo can feed on a range of fruits and nuts, including sweet persimmons, almonds, pecans, pistachio, macadamias and pines. Baudin's cockatoo can feed on apples and pears. The forest red-tailed black cockatoo is not known to damage any commercial crops in the south-west. This species can feed on the fruits of some ornamental garden plants.

Why do white-tailed black cockatoos damage crops?

White-tailed black cockatoos damage crops because the south-west landscape has changed since European settlement. These cockatoos once roamed over larger areas of the south-west, feeding on a wide range of native plant seeds (particularly marri or red gum and jarrah). However, their natural habitat has declined as a result of clearing for agriculture and commercial timber production. As the landscape has changed, the distribution, abundance, movements, feeding and breeding behaviour of the cockatoos has also changed.

Are white-tailed black cockatoos a 'pest'?

Baudin's cockatoo is declared as a pest of agriculture under the provisions of section 22 of the *Biosecurity and Agriculture Management Act 2007* in selected local government areas because it damages apple and pear crops in commercial orchards. It is listed under Control Category C3 (Management). This means that control may be applied in accordance with any management program or requirements in place, which may outline the area and conditions under which controls may be applied. Carnaby's cockatoo is not a declared pest of agriculture, but is known to damage fruit and nut crops. The forest red-tailed black cockatoo is not a declared pest of agriculture and is not known to be a pest of any commercial crops. Regardless of the pest status, these species are protected and it is illegal to harass or harm them, without a licence.

Are white-tailed black cockatoos the only birds that cause damage in orchards?

No. Other damage-causing species in the orchards of south-west WA include the silvereye, Australian ringneck or twenty-eight parrot, red-capped parrot or western king parrot and regent parrot.

Is my fruit likely to be damaged by white-tailed black cockatoos in the future?

Yes. White-tailed black cockatoo species are known to have fed in orchards since the early 1900s and probably since the early days of European settlement. Fruit damage by white-tailed black cockatoos is likely to continue so all growers should have a damage control program in place.

How much damage do white-tailed black cockatoos cause?

In most cases, the damage level is low but it can vary widely between years and properties. Several studies have now been conducted into the amount of damage caused by Baudin's cockatoo in pome fruit orchards of south-west WA. A study between 1973 and 1975 recorded 1.4 per cent fruit loss per orchard, a study in 1984 recorded 16.9 per cent fruit loss and a survey during the 2004/2005 season recorded an estimated 6 per cent loss of farmgate income. In the majority of cases, those properties that received high levels of damage had not prepared a damage control program and the cockatoos had become habituated to the orchard.

I have heard reports that white-tailed black cockatoos can cause high levels of damage in pome fruit orchards. Is this true?

Yes. While damage across the apple and pear growing industry was low in 2004/2005, it was very high for some orchards. For example, one grower lost an estimated \$150,000 in fruit due to damage by birds (including Baudin's cockatoo). This orchard had 5000 Pink Lady apple trees and the farmgate value of the trees was approximately \$234,000. These figures show that an estimated 64 per cent of farmgate value was lost.

There may be a number of reasons why some orchards experience high losses, including orchard location and variation in natural food supply in the surrounding forests for the cockatoos. Some growers may not have prepared an effective control program in advance and the cockatoos have become habituated to feeding in their orchard. Other growers (including the one in the example above) concede the economic losses they incur. Some growers have relied on shooting in the past and have not developed an alternative damage control program. But shooting of black cockatoos is illegal, so fruit growers must use other methods to protect their crop.

Is shooting to kill black cockatoos illegal?

Yes. Shooting was permitted up until 1989, but is no longer legal because the cockatoos are now regarded as being threatened. Killing, harming or taking of white-tailed black cockatoos (or any black cockatoo) from the wild without a permit is an offence under the *Wildlife Conservation Act 1950*. Wildlife Officers investigate all reports of shooting black cockatoos in WA, and offenders face penalties of up to \$10,000 per offence.

What can I do if I know of someone who has killed or injured a black cockatoo?

Report it. Anyone who unlawfully kills or injures any black cockatoo in WA is committing an offence. Contact a Wildlife Officer at the nearest Department of Biodiversity, Conservation and Attractions (DBCA) or Parks and Wildlife Service office, and the matter will be investigated (see the last page of this booklet for contact details).

Are there any effective techniques to protect crops from damage by white-tailed black cockatoos?

Yes. Scaring and netting. Scaring techniques are effective for protecting fruit from damage by white-tailed black cockatoos. Scaring can be highly effective if a number of techniques are used together as part of a well-planned and managed program. A grower survey in 2004/2005 showed the most effective techniques were:

- Gas guns as the primary technique in combination with motorcycle (harassment) and/or shooting to scare.
- Motorcycle (harassment) as the primary technique in combination with gas guns and/or shooting to scare.

Netting orchards has been shown to be effective in reducing crop losses by protecting fruit from bird damage, sunburn and hail damage whilst reducing water use and providing good quality fruit, but has a higher establishment cost. The use of nets should also be coordinated with neighbouring industry partners as the total exclusion of birds from one orchard can result in increased pressures on neighbouring orchards. Netting should thus be considered as part of an integrated regional control strategy.

Do I need a permit/licence to scare white-tailed black cockatoos?

Yes. Growers must hold a damage licence issued by DBCA to undertake scaring of black cockatoos in orchards as this is regarded as 'taking' the birds under the legislation. These licences are free and not difficult to obtain where there is a legitimate need. Contact your local DBCA or Parks and Wildlife Service office or email wildlifelicencing@dbca.wa.gov.au for further details.

Scaring of white-tailed black cockatoos is effective, but is it expensive?

No. A survey of pome fruit growers during the 2004/2005 season showed that they spent an average of \$5041 on pest control per property, including labour and consumables. This represented 2 per cent of average farmgate income per property. The initial purchase price of equipment used to protect crops averaged around \$9000, but once purchased this equipment can be used on an ongoing basis. In addition, many growers included vehicles used to scare the cockatoos in the cost. Damage control was fairly labour intensive as it was employed for an average of two hours per day, on 83 days during the 2004/2005 season. To minimise the cost and labour dedicated to damage control, all growers in WA should develop a damage control program to prevent the cockatoos from becoming habituated to their orchards, resulting in less work in the long-term.

But, if I use scaring devices, the neighbours complain...

This is an issue that needs to be managed through consultation and planning. Information on this issue is available in the *Best practice guidelines for scaring birds in orchards*. You can also obtain advice from Wildlife Officers.

Why should I have to pay the cost of protecting my fruit from birds?

Black cockatoos are a natural part of our environment, and their potential impact on orchards has been known since the early days of colonisation. All primary producers have to spend money to manage pests and diseases. The cost of protecting fruit from birds is no different, and is an important factor that should be included in any orchard business plan.

Our black cockatoos are very important to the people of WA, because they are iconic and they occur nowhere else in the world. Managing black cockatoos in an ethical manner that does not result in the death of the birds, can also benefit the fruit and nut growing industry by maintaining its 'green' image and producing fruit sustainably for the benefit of all growers in the industry. Developing a clean, green product brand is likely to provide significant marketing benefits to fruit growers, especially in export markets.

Do I have to net my orchard to protect my fruit from white-tailed black cockatoos?

That depends on your situation. It is generally accepted by horticultural research experts that if growers are losing 30 per cent or more of their crop, they would benefit from netting in the long-term. In addition, netting has the advantage that it pays for itself (in increased harvest) in a few years, is tax deductible and the grower and their family do not have to be present in the orchard to protect the fruit. Netting can also protect fruit from sunburn and hail damage whilst reducing water use and providing good quality fruit (<https://www.agric.wa.gov.au/water-management/netted-apple-demonstration-final-summary>). However, since damage is usually low across the industry, and scaring techniques can be highly effective if used correctly, many growers may not have to net at this stage. This is provided they have developed a well-planned, executed and monitored program to prevent the cockatoos from becoming habituated to the orchard.

How much does netting cost?

This is difficult to answer because it depends on the size and topography of the orchard to be protected and the materials used. Like any capital works on the property, it is essential to get several quotes and make your own decision about the best option for you.

If I do not have a damage control program in place, where do I start and where can I get advice?

Effective bird damage management programs are those that are well planned, executed, monitored and evaluated. A good place to start is to read *Guidelines for Best Practice Bird Management* produced by the Animal and Plant Control Commission of South Australia. The guidelines provide a good summary of Australian standards for bird damage control and are available (along with a range of materials on pest bird management) on the Parks and Wildlife website (www.dpaw.wa.gov.au). You can also obtain advice from the department's Wildlife Officers.

Remember...

All sectors of the community must work together to conserve WA's unique biodiversity and ensure that fruit and nut production is ecologically sustainable. If you do not have access to the internet, the materials mentioned can be obtained from DBCA or your local Parks and Wildlife Service office.



Dear Neighbour

Now that the fruit/nut season has begun, I will be using a variety of bird scaring techniques to prevent damage to my crop. These scaring techniques are being undertaken in accordance with a damage license (No _____) issued by Parks and Wildlife.

As you can see from the enclosed pamphlet, I am required to use methods that do not harm black cockatoos, which are threatened species. I will be following the recommended best practices mentioned in this pamphlet and will work to minimise any potential disturbance to you.

Please feel free to contact me to discuss this matter further. Thank you for your understanding.

Grower's name: _____

Contact details: _____

Address of orchard: _____

Dates the bird scaring methods will be used: _____

Times of use: _____

Bird scaring in orchards

Checklist for fruit and nut growers

Are my bird scaring methods following best practice?

I have contacted my local Parks and Wildlife office and hold a damage licence to undertake scaring of black cockatoos in my orchard.

Tick

My noise management strategy involves a diverse number of methods as outlined in the *Best Practice Guidelines for Bird Scaring in Orchards*.

My noise management strategy is workable, realistic and prevents the birds getting used to the scaring methods I use.

I have a communication plan for informing my neighbours about my noise management strategy.

At the beginning of the damage season I informed all my neighbours about the bird scaring methods I use and provided them with informational materials.

At the beginning of the damage season I provided other residents in the area with informational materials.

For more information, contact:

Department of Primary Industry and Regional Development – 9368 3333

Department of Biodiversity, Conservation and Attractions – 9219 9000

WA Fruit Growers Association – 9455 2075

Your local government authority

