FACTSHEET 11/15
Field Vegetables

AHDB HORTICULTURE

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# Woodpigeon management strategies and their effectiveness in reducing crop damage in Brassicas, salad crops, peas and oilseed rape

The UK woodpigeon, *Columba palumbus*, population was last estimated at 5.4 million pairs in 2009. The UK population increased by 40% between 1995 and 2011 and by 134% between 1970 and 2011, the size of the increase varied regionally. Densities of woodpigeons are highest in the eastern half of England, coinciding with the highest concentration of horticultural production.

The woodpigeon is recognised as a major agricultural pest in the UK, feeding on a range of arable crops including cereals, oilseed rape (OSR), Brassica vegetables, leafy salads and peas. Not only may yield be reduced by woodpigeon damage but also the quality, appearance and eventual saleability of the crop.


Figure 1: Oilseed rape damaged by woodpigeons


Figure 2: A woodpigeon

## Action points

- When deciding where to locate crops, consider the local landscape and grow susceptible crops away from the most vulnerable areas – these areas are near woodland and tree lines or in isolated fields.
- Increase the area of crops under cover (eg netting and fleece) or where possible prolong the time that crops are covered.
- Use sacrificial crops located away from vulnerable fields; ensuring that sufficient resources are available throughout the susceptible crop growing period.
- Ensure that deterrent techniques are used according to best practice guidelines; they should be unpredictable, threatening, reinforced and/or switched with alternative deterrents, so that habituation is delayed.

- Use an integrated management strategy that incorporates different mitigation techniques, ie deterrents, exclusion, habitat management, planting regimes, sacrificial crops and shooting.
- Coordinate management activities with neighbouring growers so that control is undertaken at the landscape-level.
- Use a mixed shooting strategy that incorporates overt shooting (highly visible shooters) associated with visual cues to maximise the scaring effect and the numbers of birds deterred from fields, and covert shooting (concealed shooters) to reduce woodpigeon numbers; which should be concentrated during the spring and summer rather than the winter.

## Crop damage

Historical estimates of woodpigeon crop damage in England were £1–2 million per annum to cereals and £2.2 million to OSR. These estimates pre-dated the marked expansion in planting of OSR and some horticultural crops and the dramatic growth in the woodpigeon population since that time. Contemporary estimates for damage nationally are not available.


Figure 3: Brassica woodpigeon damage


Figure 4: Lettuce woodpigeon damage


Figure 5: Peas woodpigeon damage

In order to produce cost-effective management strategies, accurate information on the costs of crop damage is needed as a baseline against which to evaluate the costs of putting control measures in place.

Consultations with a small sample of growers indicate that the majority consider woodpigeons to be a major and increasing problem. Woodpigeons were estimated to cause in the order of 10–40% loss in yield; equivalent to a loss of £125/ha for OSR, £250/ha for peas and £330-£1,250/ha for Brassicas.

### Factors associated with crop damage

- Woodpigeons tend to select plants that are different from the rest of the crop, particularly plants that are smaller than average. Disease or other factors resulting in stunted plant growth make the plants more attractive to birds
- Crops are more at risk of damage if they are:
  – Closer to woodpigeon roosts
  – On the edge of the main concentration of the crop
  – Away from buildings and/roads
- Crops near an area of woodland are more likely to suffer woodpigeon problems than crops situated away from woodland.

## Control methods

A number of techniques are available to reduce crop damage by birds, including plant selection, horticultural practice, field selection, audiovisual scaring devices, exclusion methods, sacrificial crops and shooting. The use of these techniques against pigeons and evidence for their effectiveness is summarised in table 1.

### Plant quality:

Select fast growing varieties and minimise plant stress through appropriate planting schedules and applications to encourage rapid plant establishment.

### Landscape:

Avoid planting vulnerable crops in fields that are close to woodland, tree lines and mature bushes. Telegraph lines above vulnerable crops also provide roosting opportunities for woodpigeons. Avoid secluded fields in preference for those in closer proximity to human activity such as buildings that are in use, and roads. Where this is not possible, extra vigilance and attention to the use of deterrent measures is necessary.

## Shooting:

Use a mixed shooting strategy that incorporates overt shooting (highly visible shooters) associated with visual cues to maximise the scaring effect and the numbers of birds deterred from fields, and covert shooting (concealed shooters) to reduce woodpigeon numbers.

A highly visible gunman roving around fields may be a less effective method of killing woodpigeons, but it is more effective in keeping birds off the crops than covert shooting. Therefore, it is important to judge the effectiveness of woodpigeon control in terms of crop damage prevented and not the numbers of birds killed.

Although traditionally shooting is overall most frequent during the winter months, research has shown that shooting during summer has the potential to have a far greater influence on reducing population size than winter shooting.

## Visual and auditory deterrents:

All visual and auditory deterrents are subject to habituation (ie birds gradually ignore the deterrent) and hence, the benefit is short-term. To maximise effectiveness, deterrents should:

- Be as realistic as possible
- Be unpredictable, in both space and time
- Present as real a threat as possible
- Be presented as infrequently as possible
- Be reinforced or replaced with alternative types of devices.

Figure 6: Realistic scarecrow (mannequin). Most effective if moved regularly and intermittently reinforced by presence of real marksman (identically dressed)

Deterrence using visual and auditory techniques is an ongoing process in which a proactive and integrated approach is necessary.

A number of different scaring devices should be deployed. Research has shown that growers who use several different scaring devices suffer less damage than growers using only a single device (almost invariably a gas cannon), who in turn suffer less damage than growers using no scarers.

Figure 7: Mannequin along with a gas cannon

Growers considered gas cannons, pyrotechnics, human disturbance, kites, falconry and shooting to be moderately effective (ie at least 25% decrease in woodpigeon numbers or crop damage).

Figure 8: A gas cannon

## Exclusion techniques:

Nets, covers and wires are generally very effective in reducing crop damage caused by birds. Netting is often the only technique that is consistently effective in preventing bird damage, but it is expensive.

Figure 9: Net covers

**Decoy crops:**

Planting decoy or sacrificial crops can divert feeding flocks away from the vulnerable crop. Strips of kale planted along the edges of fields for use by game birds can also act as valuable decoy crops for woodpigeons. A sacrificial crop can be created along the edges of OSR fields by simply sowing the rape at a lower density in these areas; woodpigeons prefer to forage in the lower density areas of the crop.

## Developing a management plan

**Developing a woodpigeon management plan involves:**

- Evaluating the crop damage
- Selecting and implementing specific damage reduction measures
- Monitoring and evaluating the outcome
- Adjusting the management plan as appropriate – through consideration of the effectiveness of control measures and the relative costs of damage and control.

**An individual management strategy will involve:**

- Choosing fields least likely to be subject to woodpigeon damage (eg away from woods, close to human disturbance)
- Encouraging rapid plant establishment
- Combining and interchanging a range of spatially and temporally unpredictable visual and acoustic deterrents
- Reinforcing deterrents with overt and covert shooting
- Supplementing with habitat-based (eg sacrificial crops) and exclusion-based (eg netting) techniques.

Figure 10: Woodpigeon damage to peas

**Table 1: Summary of bird control techniques, overall general perceptions of effectiveness and whether studies have been undertaken on pigeons and doves (DD = data deficient)**

| Technique | Effective | Notes |
|---|---|---|
| Auditory | | |
| Gas cannons | Yes | Effectiveness depends on number and mode of deployment; has been used effectively against woodpigeons as part of an integrated strategy. |
| Pyrotechnics (bangers etc) | Yes | Effectiveness depends on number and mode of deployment; increased firings can become expensive; no examples of studies with pigeons. |
| Bioacoustics | Varied | Distress calls effective against gulls and corvids (mainly crows and jackdaws) at landfill sites; used globally at airfields to disperse gulls; woodpigeons have no such calls. |
| Acoustics | Varied | Habituation is quick. Electronically synthesised sound protected Brussels sprouts from woodpigeon damage but habituation occurred within three weeks. |
| Ultrasonics | No | No biological basis for birds to detect ultrasonics; pigeons undeterred. |
| Visual | | |
| Lasers | Varied | Successfully dispersed a number of species; context and species-specific response; in captivity rock doves habituated within several minutes. |
| Human-scarer | Yes | Brent geese cost-effectively deterred from winter crops by full-time scarer; human presence more effective than goshawk at deterring woodpigeons from Brassica fields. |
| Scarecrows | Varied | Short-term (days); best combined with other visual and auditory techniques; as such woodpigeons deterred from large area of OSR for four weeks. |
| Predator/bird of prey model | Varied | Need to be realistic and incorporate movement and 'threat'; a model vaguely resembling a bird of prey was ineffective against woodpigeons on clover ley. |
| Woodpigeon models | Yes | 3D-models of woodpigeons (with outstretched wings to show white marks), single wings and pairs of wings shown to be effective in deterring woodpigeons from landing; silhouettes were not effective. |
| Painted eye-spots | Limited | Can deter starlings; habituation rapid; no examples with pigeons. |
| Balloons | Varied | Plain balloons not very effective (rapid habituation); eye-spots printed on balloons may increase effectiveness; no examples with pigeons. |
| Kites/hawk-kites | Yes | Reduced woodpigeon damage considerably over extended period of three months; labour intensive (re-launching). |

**Table 1: Summary of bird control techniques, overall general perceptions of effectiveness and whether studies have been undertaken on pigeons and doves (DD = data deficient)** *(continued)*

| Technique | Effective | Notes |
|---|---|---|
| Falconry | Varied | Promising at airports; relatively expensive (handler required); goshawk failed to deter woodpigeons from Brassica fields for any length of time. |
| Radio-controlled aircraft | DD | Claimed to be relatively effective over airfields, agricultural areas, fisheries and landfill sites; no examples with pigeons. |
| Radio-controlled raptor model | DD | Claimed to be relatively effective; improved when distress calls of target species played; no examples with pigeons. |
| Mirrors/reflectors | Limited | Only effective in sunlight; some indications that red mirrors are more effective than plain; no examples with pigeons. |
| Tapes | Varied | Species and context specific; humming line protected field of cabbage for one week; no examples with pigeons. |
| Flags, rags, streamers | DD | No examples with pigeons. |
| Habitat | | |
| Vegetative management | Yes | Used extensively on airfields. |
| Decoy crops | Yes | Species and context specific; used in conjunction with deterrence on vulnerable crop; no examples with pigeons. |
| Perch removal | DD | Deter birds from perching/roosting near vulnerable resources; no examples of studies with pigeons. |
| Nesting habitat | DD | Limit availability of preferred nesting habitat; for woodpigeons plant single large woodland rather than many dispersed small woodland blocks; but detrimental in terms of ecological networks. |
| Crop management | DD | For woodpigeons, avoid planting susceptible crops in vulnerable areas (eg next to woodland, isolated fields). |
| Exclusion | | |
| Nets | Yes | Effective but costly; cost-effective where high damage levels and/or high value crops; no examples of studies with pigeons. |
| Lines/tapes | Varied | Effectiveness related to coverage and configuration; indications that the colour of the lines affects deterrence; no examples with pigeons. |
| Lethal | | |
| Shooting | DD | Although perceived to be effective, there is no objective data to compare the effectiveness of shooting as a means of crop protection with that of other techniques; despite heavy shooting the woodpigeon population has increased consistently; spring/summer shooting has the potential to have a far greater influence on population size than winter shooting. |
| Nest/egg destruction | Yes | Woodpigeon nests and contents historically undertaken as part of rabbit clearance scheme; labour intensive; requires coordination over large area. |
| Trapping | DD | Feral pigeons controlled in urban areas using cage traps. |

## Legal aspects

The Wildlife and Countryside Act 1981 protects all wild birds but allows, under general licence, landowners, occupiers or other authorised persons to carry out a range of otherwise prohibited activities against certain wild birds.

It is an offence to intentionally or recklessly disturb certain specially protected species when they are nest building, near their nest with eggs or young or disturb their dependent young.

The Environmental Protection Act 1990 includes powers to control noise, including from auditory bird scarers. Non-compliance with any abatement order arising from an investigation of a complaint by a council officer can result in a fine imposed by a magistrates' court.

The National Farmers Union has produced a code of practice nfuonline.com/assets/4662 on the use of bird deterrents and bird scarers.

## Further information

### Useful AHDB project reports

AHDB Factsheet 04/05 Woodpigeon control in field Brassicas.

FV 426 Review of the costs of woodpigeon damage on Brassicas, salad crops and oilseed rape and effectiveness of management activities.

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