

# BIRD PREDATION MANAGEMENT PLAN

## ◆ BLUEBERRIES ◆

### ① FARM OR FIELD

**a** NAME \_\_\_\_\_ **d** DATE \_\_\_\_\_

**b** LOCATION \_\_\_\_\_

**c** CANNON CONTACT PERSON AND TELEPHONE NUMBER \_\_\_\_\_

### ② FARM OR FIELD SIZE

*Acres*

**a** TOTAL ACREAGE

**b** ACREAGE BY HARVEST SEASON

Early season varieties	<input style="width: 60px;" type="text"/>
Mid season varieties	<input style="width: 60px;" type="text"/>
Late season varieties	<input style="width: 60px;" type="text"/>

### ③ PEST BIRDS

<b>a</b> FRUIT DAMAGE	<i>Low, Medium or High</i>	<b>b</b> COMMENTS
Starlings	<input style="width: 60px;" type="text"/>	<input style="width: 100%; height: 20px;" type="text"/>
Robins	<input style="width: 60px;" type="text"/>	<input style="width: 100%; height: 20px;" type="text"/>
Small song birds	<input style="width: 60px;" type="text"/>	<input style="width: 100%; height: 20px;" type="text"/>
Crows	<input style="width: 60px;" type="text"/>	<input style="width: 100%; height: 20px;" type="text"/>
Other (specify) _____	<input style="width: 60px;" type="text"/>	<input style="width: 100%; height: 20px;" type="text"/>

### ④ BIRD CONTROL TECHNIQUES

**b** NOISE *Number*

Propane cannons	<input style="width: 60px;" type="text"/>
Electronic noise makers	<input style="width: 60px;" type="text"/>
Bird distress and predator calls	<input style="width: 60px;" type="text"/>
Orchard pistol	<input style="width: 60px;" type="text"/>
Other (specify) _____	<input style="width: 60px;" type="text"/>

**a** NETTING  *Acres*

**c** VISUAL *Number*

Scarecrows	<input style="width: 60px;" type="text"/>
Scare-eye balloons	<input style="width: 60px;" type="text"/>
Streamers and flash tape (ft)	<input style="width: 60px;" type="text"/>
Hawk kites and plastic owls	<input style="width: 60px;" type="text"/>
Other (specify) _____	<input style="width: 60px;" type="text"/>

### ④ BIRD CONTROL OPERATION

**a** NETTING

Estimated date of installation \_\_\_\_\_

Maintenance by \_\_\_\_\_

**c** VISUAL DEVICES

Estimated date of installation \_\_\_\_\_

Frequency of moving the devices, every \_\_\_\_\_ days

Maintenance by \_\_\_\_\_

**b** NOISE DEVICES

Estimated start date \_\_\_\_\_

Frequency of moving the devices, every \_\_\_\_\_ days

Propane cannon firing frequency (single or tripe-fired)

Low bird pressure	fire 1-cycle per _____ minutes
Medium bird pressure	fire 1-cycle per _____ minutes
High bird pressure	fire 1-cycle per _____ minutes

Maintenance by \_\_\_\_\_

Contact \_\_\_\_\_

Telephone \_\_\_\_\_

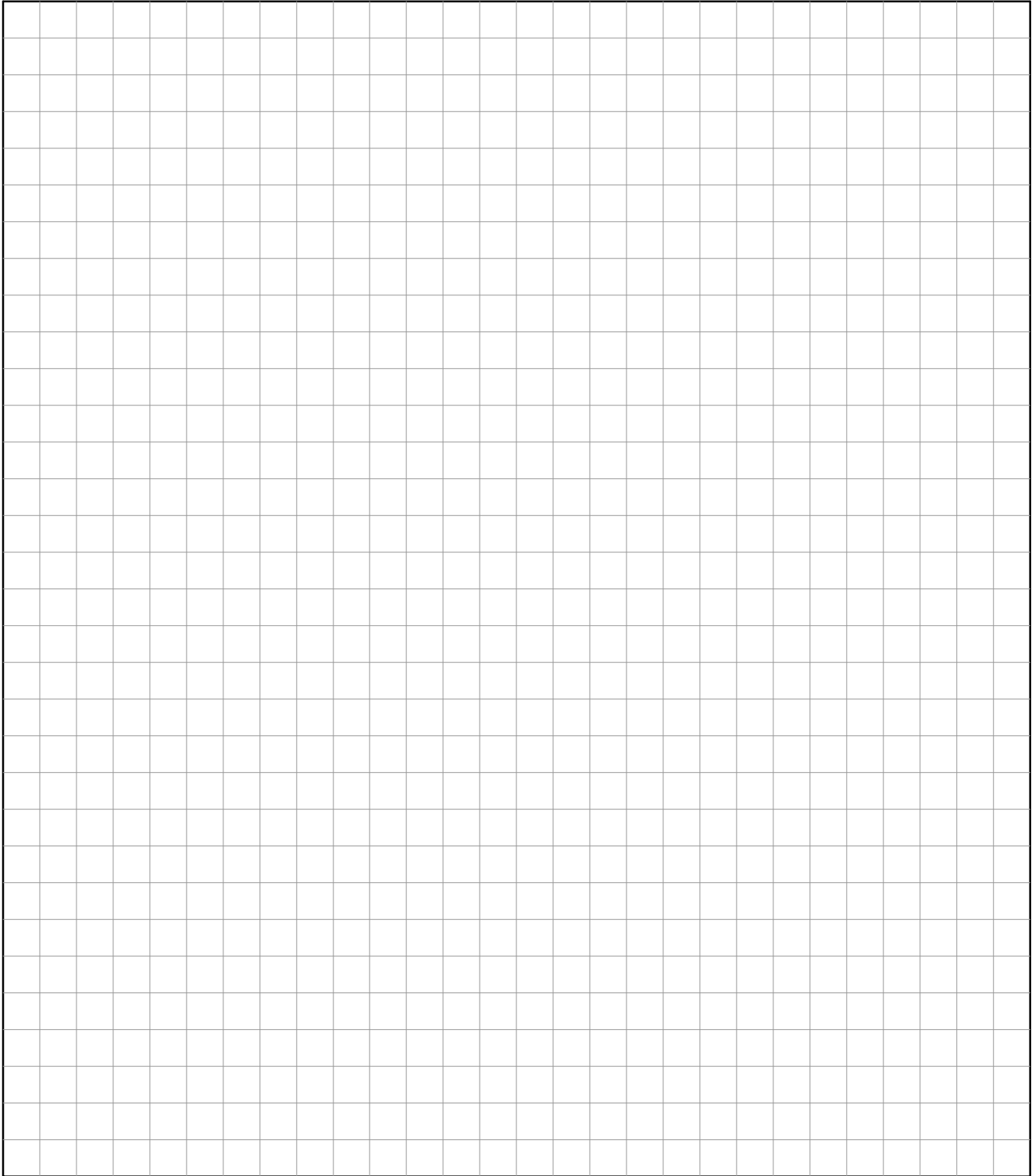
### ⑥ FARM OR FIELD SIZE

**a** OBSERVATIONS \_\_\_\_\_

**b** TOTAL ACREAGE \_\_\_\_\_

**c** CHANGES FOR NEXT YEAR \_\_\_\_\_

## ⑦ FIELD MAP



Draw in the blocks of different varieties. Include trees, powerlines, buildings and other areas where birds perch. Locate the neighbouring houses. Mark the prevailing wind directions (sound travels). Mark the areas where bird control devices are to be located.


B = scare-eye balloon


C = cannon


D = bird distress or predator calls

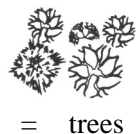
E = electronic noisemaker

R = hawk, kites, silhouettes or stuffed owls

 = house

 = powerline

 = property line



= trees

## BIRD PREDATION MANAGEMENT PLAN ◆ BLUEBERRIES ◆

### What is the Problem?

Birds eat an estimated 10% of the blueberry crop in British Columbia. Large flocks of birds, especially starlings, are capable of destroying entire blueberry crops in a few days. Some bird damage is obvious – pecked fruit which is unmarketable or clusters of ripening berries torn from the bush. Not as obvious is the loss of berries that are totally consumed by birds. Many farmers don't realize the extent of their crop losses – and lost profits!

Some of the techniques farmers use to keep birds away from their crops can be of concern to those living near farms. The noise of propane cannons can be disturbing as can the sight of birds entangled in protective netting.

Good bird management that minimizes crop losses and disruption to neighbours is critical to the operation of a profitable blueberry farm.

### What is Integrated Bird Management?

Good bird management, like managing other blueberry pests, requires an integrated approach. This approach requires knowing the bird species that are damaging the crop and their behavior patterns – information gained by frequent field observations. It also requires selecting the most appropriate combination of scaring devices or protective netting to keep the birds away from the crop, and using the devices in a way that maximizes their effectiveness and minimizes disruption to neighbours. The most potentially disruptive devices like propane cannons should only be used when flocks of birds are present in the area. Finally, an integrated approach requires evaluating and making necessary changes to the program to make sure it remains effective.

### Why a Bird Predation Management Plan?

This guide is designed to assist in developing and maintaining an effective bird management plan on a blueberry farm. The enclosed form can be completed yearly and the previous years' plans kept for reference when making changes to the bird management program.

Planning for bird control well ahead of harvest season minimizes the work needed during the busy harvest period. A well-planned program leads to better bird control and fewer crop losses, in addition to good neighbour relations.

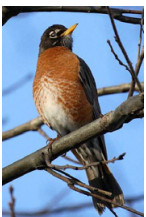


Photo Credits: see page 3

# GUIDE TO A BIRD PREDATION MANAGEMENT PLAN (“PLAN”)

Use this guide to complete the “Bird Predation Management Plan” form accompanying this fact sheet. The numbers below correspond to the numbers on the form. Also refer to the example on the back page.

## ① FARM OR FIELD

- a NAME.** Give the name you use to identify the farm. A separate form should be used for each field.
- b LOCATION.** Give the street address or a descriptive location of the farm or field.
- c CANNON CONTACT PERSON AND TELEPHONE NUMBER.** If propane cannons are used, assign a person who will attend to them should they discharge during non-operating hours.
- *To be protected by the Farm Practices Protection (Right to Farm) Act, cannons must not be operated before 6:30 a.m. or after 8:00 p.m. In addition, they must not operate between noon and 3:00 p.m.*
- d DATE.** Give the Plan year.

## ② FARM SIZE

- a TOTAL ACREAGE.** Give the total acreage of blueberries in the field covered by the Plan.
- b ACREAGE BY HARVEST SEASON.** Give the number of acres planted to varieties that ripen in the early, mid and late seasons.
- *Bird control will be first needed in the fields or areas planted to early season varieties-followed by areas planted to mid-and late season varieties.*

## ③ PEST BIRDS

- a FRUIT DAMAGE.** Rate the severity of berry losses expected by the types of birds. Use your observations from past years to make this estimate. Use “L”, “M” or “H” to indicate low, medium and high pressure respectively.
- *Starlings usually are the most destructive birds but robins, songbirds and crows can also cause damage. Starlings gather in flocks of varying sizes – serious losses can occur quickly with large flocks. These birds eat whole berries from the bush – making yield losses difficult to estimate – or damage the fruit with peck marks. Robins and small songbirds do not flock and tend to be “ground-feeders”, eating berries on the lower portions of the bushes. Crop losses from robins or small songbirds is often less noticeable.*
- b COMMENTS.** Make comments based on your observations about the types of birds present or the differences in numbers due to the time of day, areas within the field or year-to-year changes. Use more space if required.

## ④ BIRD CONTROL TECHNIQUES

- a NETTING.** Record the number of acres of blueberries covered by nets.
- *Overhead nets are the most effective method to protect berry crops. A mesh size of 20X20 mm is best for excluding birds while minimizing the number of birds getting caught in the net. Proper net installation and maintenance is critical.*
- b NOISE.** List the noise-scaring devices that will be used in the field including propane cannons, electronic devices and orchard pistols.
- *To be protected by the Farm Practices Protection (Right to Farm) Act, use no more than 1 propane cannon per 5 acres (1 per 2 ha) of cropland at any one time. Propane cannons should only be used when birds are present in the area.*
  - *Devices with random, unpredictable sounds are more effective at scaring birds than ones with regular noises.*
  - *The noise of cracker or whistler shells occasionally fired near flocks of birds helps to reinforce the scaring effect of propane cannons or electronic noise makers.*
- c VISUAL.** List the number and types of visual scaring devices that will be used in the field including reflective tape, balloons, hawk-kites and scare-crows.
- *Visual devices are often more effective when used with noise devices. Visual devices help to increase the effectiveness of noise devices. Recent local research has demonstrated that hawk-kites can be particularly effective in reducing starling feeding.*

## ⑤ BIRD CONTROL OPERATION

- a NETTING.** Give the date you expect to install the nets. Name the person assigned to maintain the nets during the harvest period.
- *Maintenance includes repairing holes in the nets, repositioning poorly hung nets to make sure birds cannot gain entry to bushes, making sure the nets are relatively tight to minimize the incidence of birds getting caught in the nets, and removing caught birds in a timely way.*
- b NOISE DEVICES.** Give the date you expect to start the noise devices.
- *Noise devices should be started when the berries begin to ripen and the birds first begin to visit the field. This will help prevent the birds from establishing a feeding pattern.*
- Give the frequency (in days) when the devices will be moved to new locations in the field.
- *Scaring devices must be moved frequently to prevent birds from becoming used to the location of the noise. This will help maintain the effectiveness of the devices.*
- Give the expected setting for firing the propane cannon under low, medium and high bird pressure.

- *Start propane cannons with infrequent firings at the beginning of the harvest season. Increase the firing frequency as the feeding pressure increases – usually as the harvest season progresses. This should help maintain the effectiveness of the propane cannon in scaring the birds. Ensure that single shot cannons do not fire more frequently than once every 5 minutes and multiple-shot cannons do not fire more than 33 times per hour.*
- *Use less frequent firings during periods of the day when the bird pressure is low – such as in the mid-afternoon periods. More frequent firings are most necessary when bird pressure on the crops is more intense. Bird pressure is usually most severe in the early morning and again in the late afternoon through to dusk. Cannons must be set to shut off between noon and 3 p.m. Other devices may be used during this period.*
- *Do not fire cannons when birds are not present in the area.*

Assign a person to manage and maintain the devices throughout the season.

- *Noise devices should be moved frequently throughout the harvest season, for best bird control. Cannons should be shut off when birds are not present in the area.*
- *Locate noise devices to best scare the birds while minimizing the impact on neighbours. Ensure a separation distance to residences of 200 m for propane cannons and 100 m for electronic devices. Propane cannons and speakers should be located above the bushes. Restrict the rotation of cannons or point stationary cannons away from neighbouring houses or work areas.*
- *Propane cannon maintenance includes checking timers to ensure proper functioning. When the propane is shut off at night to prevent the cannon from firing, close the valve tightly and make sure it doesn't leak. Disconnect the hose if the valve leaks.*

Name a person, and list their telephone number, who will attend to the cannon should it mistakenly discharge before 6:30 a.m. or after 8:00 p.m or during the mid-day break. (the same name as in “1.c” above.)

- *This person should be able to attend to the propane cannon at any time during the off hours, if necessary.*

**c** **VISUAL DEVICES.** Give the date you expect to install the devices.

- *Devices should be installed when the berries start ripening to prevent the birds from establishing a feeding pattern. Once used to the field, the birds will be more difficult to scare away.*

Give the name of the person assigned to putting the devices in the field and maintaining them throughout the season.

- *Maintenance includes changing the scaring devices. Do not always use the same scare device. The first response of birds to an unexpected object is to flee. As the birds get used to the object, they start to explore it, then finally the object is ignored. Visual scare devices should be removed as soon as they appear to lose effectiveness.*
- *Maintenance also includes moving scaring devices to new locations in the field throughout the harvest period.*
- *Scaring devices should also be checked frequently to ensure they remain in good working condition.*

## ⑥ EVALUATION

**a** **OBSERVATIONS.** Watch the birds throughout the season and note such items as changes in the type of birds in the fields, areas with intense bird pressure or little bird pressure, times of the day when birds are most present or are not present, places birds tend to perch in the day or roost at night, and scare devices that work well or appear ineffective.

**b** **PLAN REVIEW.** Make comments on the effectiveness of your bird control program. Include comments on the overall effectiveness of the combination of scaring devices used as well as comments on individual devices.

**c** **CHANGES FOR NEXT YEAR.** Make notes on changes you want to make in your strategy for next year based on your observations and Plan review. The notes can include new bird control techniques or locations for scaring devices as well as changes to modify perching sites. For example, a lone tree may need to be removed or strips of spikes placed along roof ridges. These changes will become part of next year's Plan.

## ⑦ FIELD MAP

Draw a diagram of the field that shows your Plan. Include buildings, neighbouring houses, blocks of early, mid and late season blueberries and bird perching sites (e.g. power lines and trees). Also include the prevailing wind direction as noise is carried by the wind. Mark the location of the various scaring devices at the start of the season. Be sure to adhere to required separation distances between noise devices and neighbouring residences (200 m for propane cannons, 100 m for electronic devices). Locate the scaring devices where high bird pressure is expected and birds perch.

Photo Credits: Robin image from [www.symbolic-meanings.com](http://www.symbolic-meanings.com)  
Starling image from University of Washington

## FOR MORE INFORMATION . . .

### BCMAL contacts

Mark Sweeney, Berry Industry Specialist. (604) 556-3056

Bert van Dalfsen, Manager, Strengthening Farming Program (604) 556-3109

### BCMAL publications

**Available from offices of the BC Ministry of Agriculture and Lands:**  
Berry Production Guide for Commercial Growers (2009/2010, pg. 18-20, \$30.00)  
Suppliers of Bird Control Materials & Equipment for BC Producers (2004, free)  
Netting for Bird Control in Blueberries—A Decision Making Guide (2002, free)  
Installation of Bird-proof Netting for Horticultural Crops  
(2004, factsheet 336.100-1, free)

**Available from the BC Farm Industry Review Board: (250) 356-8945**  
Review of the Use and Regulation of Propane Cannons in the South Coastal Region (March 2009, free).

# BIRD PREDATION MANAGEMENT PLAN

## ◆ BLUEBERRIES ◆

**1 FARM OR FIELD**  
**a** NAME Blue's Berry Farms Ltd. **d** DATE May 16, 2009  
**b** LOCATION 321 Berry Road, Surrey, B.C.  
**c** CANNON CONTACT PERSON AND TELEPHONE NUMBER Bob Blues, (604) 909-1111

**2 FARM OR FIELD SIZE**

TOTAL ACREAGE	<u>18.5</u> Acres
ACREAGE BY HARVEST SEASON	
Early season varieties	<u>8.5</u>
Mid season varieties	<u>5</u>
Late season varieties	<u>6</u>

**3 PEST BIRDS**

<b>a</b> FRUIT DAMAGE	Low, Medium or High	<b>b</b> COMMENTS
Starlings	<u>H</u>	<u>Sometimes get</u>
Robins	<u>M</u>	<u>large flocks</u>
Small song birds		<u>of starlings</u>
Crows	<u>L</u>	
Other (specify)		

**4 BIRD CONTROL TECHNIQUES**

<b>a</b> NETTING	Acres	<u>0</u>
<b>b</b> NOISE	Number	
Propane cannons	<u>2</u>	
Electronic noise makers		
Bird distress and predator calls	<u>1</u>	
Orchard pistol	<u>1</u>	
Other (specify)		
<b>c</b> VISUAL	Number	
Scarecrows		
Scare-eye balloons		
Streamers and flash tape (ft)		
Hawk kites and plastic owls		<u>2</u>
Other (specify)		

**4 BIRD CONTROL OPERATION**

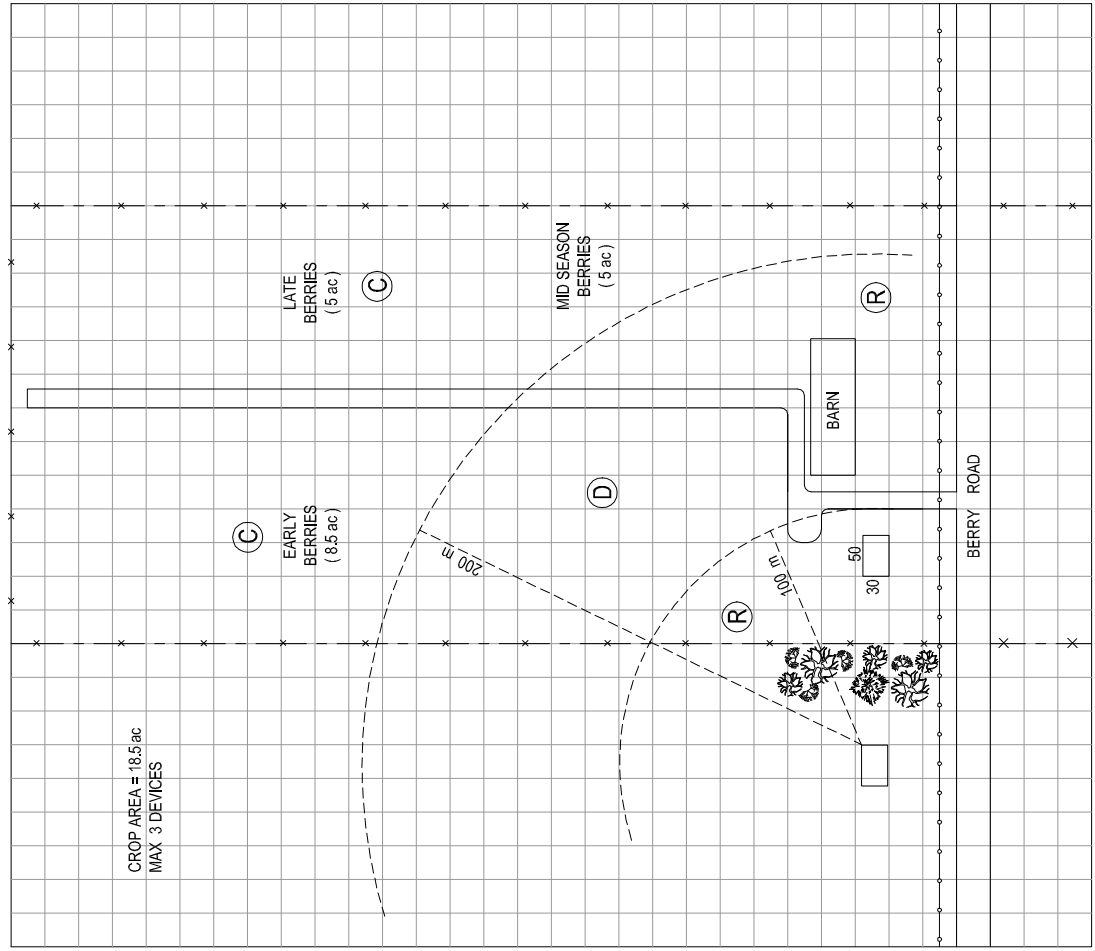
**a** NETTING  
 Estimated date of installation \_\_\_\_\_  
 Maintenance by \_\_\_\_\_

**c** VISUAL DEVICES  
 Estimated date of installation June 24  
 Frequency of moving the devices, every 4 days  
 Maintenance by \_\_\_\_\_

**b** NOISE DEVICES  
 Estimated start date June 24  
 Frequency of moving the devices, every 4 days  
 Propane cannon firing frequency (single or triple-fired) Bob Blue  
 Telephone (604) 909-1111  
 Low bird pressure fire 1-cycle per 8-16 minutes setting #3  
 Medium bird pressure fire 1-cycle per 8-16 minutes setting #3  
 High bird pressure fire 1-cycle per 4-8 minutes setting #2

**6 FARM OR FIELD SIZE** (to be completed by end of season)

**a** OBSERVATIONS \_\_\_\_\_  
**b** TOTAL ACREAGE \_\_\_\_\_  
**c** CHANGES FOR NEXT YEAR \_\_\_\_\_



Draw in the blocks of different varieties. Include trees, powerlines, buildings and other areas where birds perch. Locate the neighbouring houses. Mark prevailing wind directions (sound travels). Mark the areas where bird control devices are to be located.

B = scare-eye balloon  
 C = cannon  
 D = bird distress or predator calls  
 E = electronic noisemaker  
 R = hawk, kite, silhouettes or stuffed owls

[ ] = house  
 [ ] = trees  
 --- = powerline  
 ---x--- = property line

# BIRD PREDATION MANAGEMENT PLAN

## ◆ BLUEBERRIES ◆

### ① FARM OR FIELD

**a** NAME \_\_\_\_\_ **d** DATE \_\_\_\_\_

**b** LOCATION \_\_\_\_\_

**c** CANNON CONTACT PERSON AND TELEPHONE NUMBER \_\_\_\_\_

### ② FARM OR FIELD SIZE

*Acres*

**a** TOTAL ACREAGE

**b** ACREAGE BY HARVEST SEASON

Early season varieties	<input style="width: 50px;" type="text"/>
Mid season varieties	<input style="width: 50px;" type="text"/>
Late season varieties	<input style="width: 50px;" type="text"/>

### ③ PEST BIRDS

<b>a</b> FRUIT DAMAGE	<i>Low, Medium or High</i>	<b>b</b> COMMENTS
Starlings	<input style="width: 50px;" type="text"/>	<input style="width: 100%; height: 20px;" type="text"/>
Robins	<input style="width: 50px;" type="text"/>	<input style="width: 100%; height: 20px;" type="text"/>
Small song birds	<input style="width: 50px;" type="text"/>	<input style="width: 100%; height: 20px;" type="text"/>
Crows	<input style="width: 50px;" type="text"/>	<input style="width: 100%; height: 20px;" type="text"/>
Other (specify) _____	<input style="width: 50px;" type="text"/>	<input style="width: 100%; height: 20px;" type="text"/>

### ④ BIRD CONTROL TECHNIQUES

<p><b>b</b> NOISE <span style="float: right;"><i>Number</i></span></p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 80%;">Propane cannons</td> <td style="width: 20%;"><input style="width: 50px;" type="text"/></td> </tr> <tr> <td>Electronic noise makers</td> <td><input style="width: 50px;" type="text"/></td> </tr> <tr> <td>Bird distress and predator calls</td> <td><input style="width: 50px;" type="text"/></td> </tr> <tr> <td>Orchard pistol</td> <td><input style="width: 50px;" type="text"/></td> </tr> <tr> <td>Other (specify) _____</td> <td><input style="width: 50px;" type="text"/></td> </tr> </table>	Propane cannons	<input style="width: 50px;" type="text"/>	Electronic noise makers	<input style="width: 50px;" type="text"/>	Bird distress and predator calls	<input style="width: 50px;" type="text"/>	Orchard pistol	<input style="width: 50px;" type="text"/>	Other (specify) _____	<input style="width: 50px;" type="text"/>	<p><b>a</b> NETTING <input style="width: 50px;" type="text"/> <i>Acres</i></p> <p><b>c</b> VISUAL <span style="float: right;"><i>Number</i></span></p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 80%;">Scarecrows</td> <td style="width: 20%;"><input style="width: 50px;" type="text"/></td> </tr> <tr> <td>Scare-eye balloons</td> <td><input style="width: 50px;" type="text"/></td> </tr> <tr> <td>Streamers and flash tape (ft)</td> <td><input style="width: 50px;" type="text"/></td> </tr> <tr> <td>Hawk kites and plastic owls</td> <td><input style="width: 50px;" type="text"/></td> </tr> <tr> <td>Other (specify) _____</td> <td><input style="width: 50px;" type="text"/></td> </tr> </table>	Scarecrows	<input style="width: 50px;" type="text"/>	Scare-eye balloons	<input style="width: 50px;" type="text"/>	Streamers and flash tape (ft)	<input style="width: 50px;" type="text"/>	Hawk kites and plastic owls	<input style="width: 50px;" type="text"/>	Other (specify) _____	<input style="width: 50px;" type="text"/>
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### ④ BIRD CONTROL OPERATION

<p><b>a</b> NETTING</p> <p>Estimated date of installation _____</p> <p>Maintenance by _____</p>	<p><b>c</b> VISUAL DEVICES</p> <p>Estimated date of installation _____</p> <p>Frequency of moving the devices, every _____ days</p> <p>Maintenance by _____</p>						
<p><b>b</b> NOISE DEVICES</p> <p>Estimated start date _____</p> <p>Frequency of moving the devices, every _____ days</p> <p>Propane cannon firing frequency (single or tripe-fired)</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%;">Low bird pressure</td> <td style="width: 30%;">fire 1-cycle per _____ minutes</td> </tr> <tr> <td>Medium bird pressure</td> <td>fire 1-cycle per _____ minutes</td> </tr> <tr> <td>High bird pressure</td> <td>fire 1-cycle per _____ minutes</td> </tr> </table>	Low bird pressure	fire 1-cycle per _____ minutes	Medium bird pressure	fire 1-cycle per _____ minutes	High bird pressure	fire 1-cycle per _____ minutes	<p>Maintenance by _____</p> <p>Contact _____</p> <p>Telephone _____</p>
Low bird pressure	fire 1-cycle per _____ minutes						
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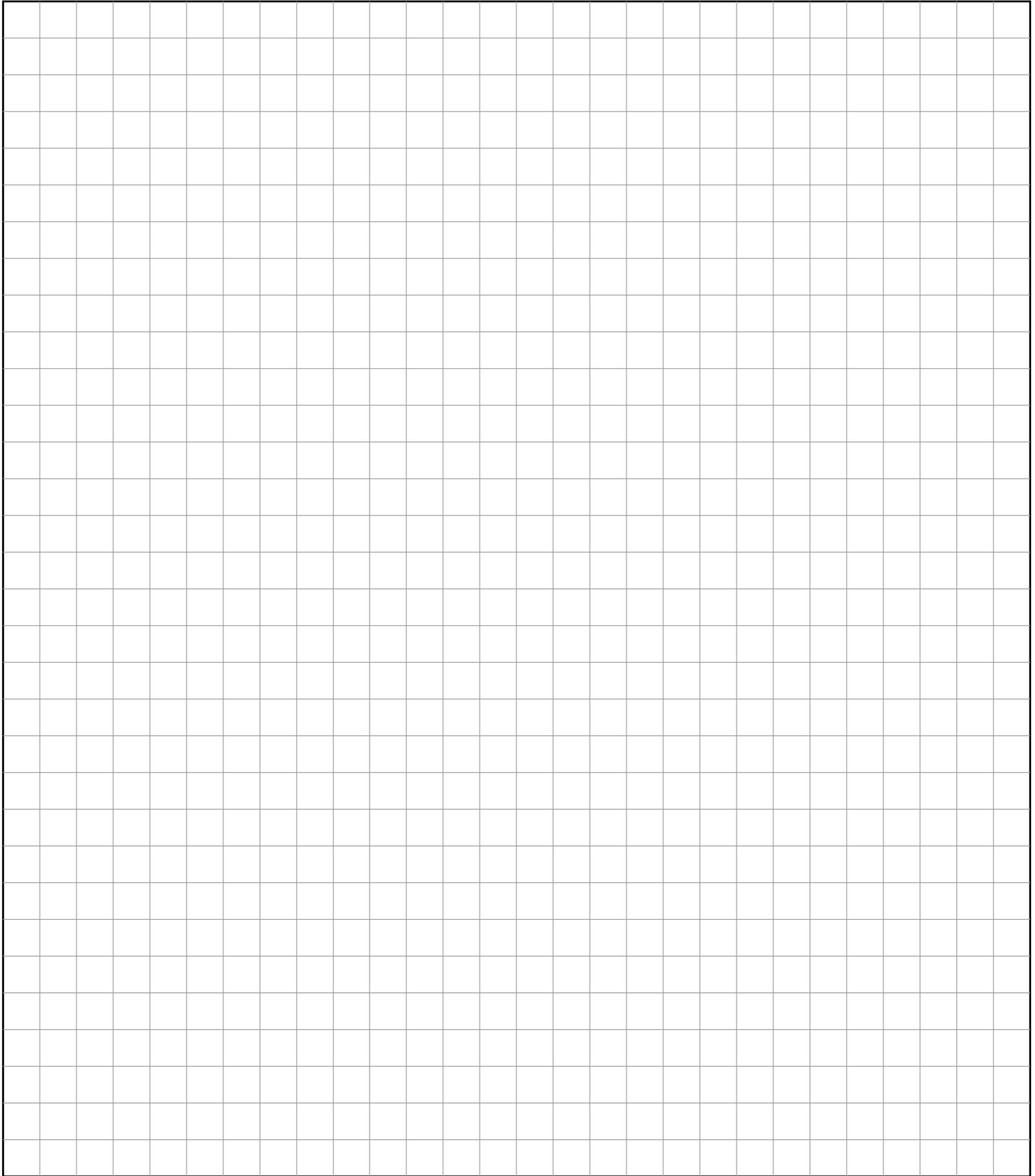
### ⑥ FARM OR FIELD SIZE

**a** OBSERVATIONS \_\_\_\_\_

**b** TOTAL ACREAGE \_\_\_\_\_


**c** CHANGES FOR NEXT YEAR \_\_\_\_\_


## ⑦ FIELD MAP





Draw in the blocks of different varieties. Include trees, powerlines, buildings and other areas where birds perch. Locate the neighbouring houses. Mark the prevailing wind directions (sound travels). Mark the areas where bird control devices are to be located.

- B = scare-eye balloon
- C = cannon
- D = bird distress or predator calls
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 = house

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 = property line

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