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## 4-H ONTARIO PROJECT



**Field Crops  
Weeds, Insects and Diseases**

**RECORD BOOK**



**4-H Ontario**

## **The 4-H Pledge**

I pledge my Head to clearer thinking,  
my Heart to greater loyalty,  
my Hands to larger service,  
my Health to better living  
for my club, my community and my country.

## **The 4-H Motto**

Learn To Do By Doing

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## **Project Resource Information:**

Manual originally written by Johanne Beasley. Update in 1998 by Donna Speranzini

2013 Update by: Melanie Hunter, 4-H Ontario

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Cover Photo by: Elizabeth Johnston

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All information presented in this Project Resource was accurate at the time of printing.

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# Record Keeping - Why?

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Record Books are to document time and money spent, what you have learned, your ideas, memories and what you liked and didn't like. Your Record Book also....

- Helps you set goals for this project
- Has space to record important dates, your elected executive and the names and contact information of your leaders and club members
- Is a great way to get and stay organized

Down the road when you look back on your 4-H projects these books will be able to remind you what you learned so you can use those skills later in life. It will bring back memories of the project, your 4-H friends, your story and thoughts at the time of the project. You will never forget because this book will act as a reminder! It will also be useful at the Achievement Program, when looking at your progress and when reviewing your accomplishments.

## ***How do I organize my materials?***

1. Make your records neat and easy to read. This will make it easier to find information later on, and to share your information with others.
2. Use a three ring binder or duotang to hold your materials and divide your information into sections using dividers. This will keep things from becoming lost and will it easier to find what you need later on. This will also allow you to add extra pages later.

## ***How do I keep good records?***

1. Keep track of activities throughout the meetings, as you complete different parts of the project. It's often difficult to remember things that happened in earlier meetings.
2. Make sure the information you write in your Record Book is complete and accurate. If you're not sure about something, ask your leader for help before writing it in your book. You can also consult people in your community or do some research on your own. If you borrow information from someone or someplace else, make sure you write down where you found it.

*Remember that this is YOUR Record Book so make it your own! And, remember to bring your Record Book to every meeting!*



# Who's Who

Club President: \_\_\_\_\_ Ph. # / E-mail: \_\_\_\_\_

Vice President: \_\_\_\_\_ Ph. # / E-mail: \_\_\_\_\_

Secretary: \_\_\_\_\_ Ph. # / E-mail: \_\_\_\_\_

Treasurer: \_\_\_\_\_ Ph. # / E-mail: \_\_\_\_\_

Press Reporter: \_\_\_\_\_ Ph. # / E-mail: \_\_\_\_\_

## Meeting Dates:

	DATE & TIME	PLACE	NOTES (Things to bring, remember, etc)
<i>Meeting 1</i>			
<i>Meeting 2</i>			
<i>Meeting 3</i>			
<i>Meeting 4</i>			
<i>Meeting 5</i>			
<i>Meeting 6</i>			
<i>Achievement Program</i>			

LEADER NAME & CONTACT INFORMATION	LEADER NAME & CONTACT INFORMATION

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# Member Expectations and Goals

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Why did you join the Field Crops: Weeds, Insects & Diseases club?

What is one goal that you want to achieve in this project?

Do you have any ideas for fun things to do during the project?

Do you have any ideas for an Achievement Program for the Field Crops club? (Keep in mind that an Achievement Program should include the community in some way).

## ***Member Responsibilities***

- Be a current paid member of 4-H Ontario
- Attend at least 2/3 of the meeting time allotted for this project
- Complete the Record Book for this project. Bring it with you to each meeting!
- Put your Record Book in a binder or duotang so you don't lose any of the pages.
- *Remember the more you put into your 4-H club the more you will get out of it!*

## Roll Calls - In My Opinion...

Meeting	Roll Call	My Answer
1		
2		
3		
4		
5		
6		

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# Project Summary

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## Field Crops: Weeds, Insects & Diseases Project

### A. Member Comments

1. What did you gain from taking this project?
  
  
  
  
  
  
  
  
  
  
2. Which meeting or topic was the most/least interesting? Why?
  - a. Most:
  
  
  
  
  
  
  
  - b. Least:
  
  
  
  
  
  
  
  
  
  
3. Comment and/or give suggestions for improvements on the overall project (eg. Activities, tours, achievement program plans, member presentations, special activities, judging information).
  
  
  
  
  
  
  
  
  
  
4. What interests would you like to explore through future 4-H projects?

### B. Parent/Guardian Comments:

### C. Leader Comments:

***This project has been completed satisfactorily!***

Member: \_\_\_\_\_ Leader: \_\_\_\_\_

Date: \_\_\_\_\_ Leader: \_\_\_\_\_





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# Field Plot Notes

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## *Planting Information*

Tillage Method(s) Used: \_\_\_\_\_

Type of Crop Planted: \_\_\_\_\_

Hybrids/Varieties Planted: \_\_\_\_\_

Seeding Rate/Population: \_\_\_\_\_

Planting Date: \_\_\_\_\_

***Affix Seed Tag here:***





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# Field Plot Notes

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***Harvest Data***

Harvest Date: \_\_\_\_\_

Yield/Acre: \_\_\_\_\_

Total Yield: \_\_\_\_\_

Moisture: \_\_\_\_\_

Test Weight: \_\_\_\_\_

Crop Quality: \_\_\_\_\_

\_\_\_\_\_

Dry Weight: \_\_\_\_\_

Was your crop contracted: \_\_\_\_\_

Selling Price: \_\_\_\_\_

Additional Information:

# Business Sense!

## Did the crop make money?

Determine your net profit by determining your gross profit and deducting the cost of expenses from it.

The Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA) has crop budget calculators available that will assist with this process. They can be found at: <http://www.omafra.gov.on.ca/english/busdev/bear2000/Budgets/budgettools.htm>.

OMAFRA also has crop budget worksheets available that are specific to each field crop. For a copy of one of these specific worksheets (which gives estimations of various expenses) go to: <http://www.omafra.gov.on.ca/english/busdev/facts/pub60a11.htm#introduction>

Alternatively, you can complete the following generalized chart to determine the income from your field plot:

Item	Cost/Income
Seed	
Fertilizer	
Pesticides	
<b>Total Inputs</b>	
Tillage	
Planting	
Spraying	
Fertilizing	
Harvesting & Trucking	
<b>Total Machinery</b>	
Drying	
Crop Insurance	
Interest @ 4.0%	
Marketing & Other	
<b>Total Costs</b>	
Yield	
Price	
<b>Gross Return</b>	
Net Margin /Acre	
Less: Land Cost/Rent	
Less: Utilities/ Acct/Misc.	
Net Return /Acre	

# Judging Reasons Worksheet

Sir/Madam, I place this class of

\_\_\_\_\_ , \_\_\_\_\_ , \_\_\_\_\_ , \_\_\_\_\_

I place \_\_\_\_\_ on the top because

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

I place \_\_\_\_\_ over \_\_\_\_\_ because

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

I place \_\_\_\_\_ over \_\_\_\_\_ because

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

I place \_\_\_\_\_ over \_\_\_\_\_ because

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

For these reasons, I place this class of

\_\_\_\_\_ , \_\_\_\_\_ , \_\_\_\_\_ , \_\_\_\_\_

# Soybean Field Crop Budget

## Meeting 1 Activity 3

(Source of budget: <http://www.omafra.gov.on.ca/english/busdev/facts/pub60a11.htm#introduction>)

Operating Expenses (costs based on projected yield of 1.14 tonne/ac (42 bu/ac))	Tillage System			Your Farm Budget
	Conventional No-Till	Roundup Ready®	No-Till	
	Sample Costs/Acre	Sample Costs/Acre	Sample Costs/Acre	
Seed - 177,000 seeds/acre in 15-in. rows - drill  (165,000 seeds/acre in 15-in. rows - planter)	51.30	51.30	80.45	
Fertilizer - Nitrogen, if required				
Fertilizer - 20 kg/ha P	9.65	9.65	9.65	
Fertilizer - 40 kg/ha K	18.80	18.80	18.80	
Herbicide - annual grass and broadleaf weeds	36.90	36.90	6.90	
Herbicide - burndown		6.90	6.90	
Herbicide - other weed control, if required				
Seed treatment/inoculant, if required				
Tractor and Machine Expenses - Fuel (17 L conv., 8L no till) and lubricants	19.75	10.40	10.40	
Tractor and Machine Expenses - Repairs and Maintenance	15.90	11.90	11.90	
Marketing fees (\$1.10/tonne)	1.25	1.25	1.25	
Crop insurance	11.25	11.25	11.25	



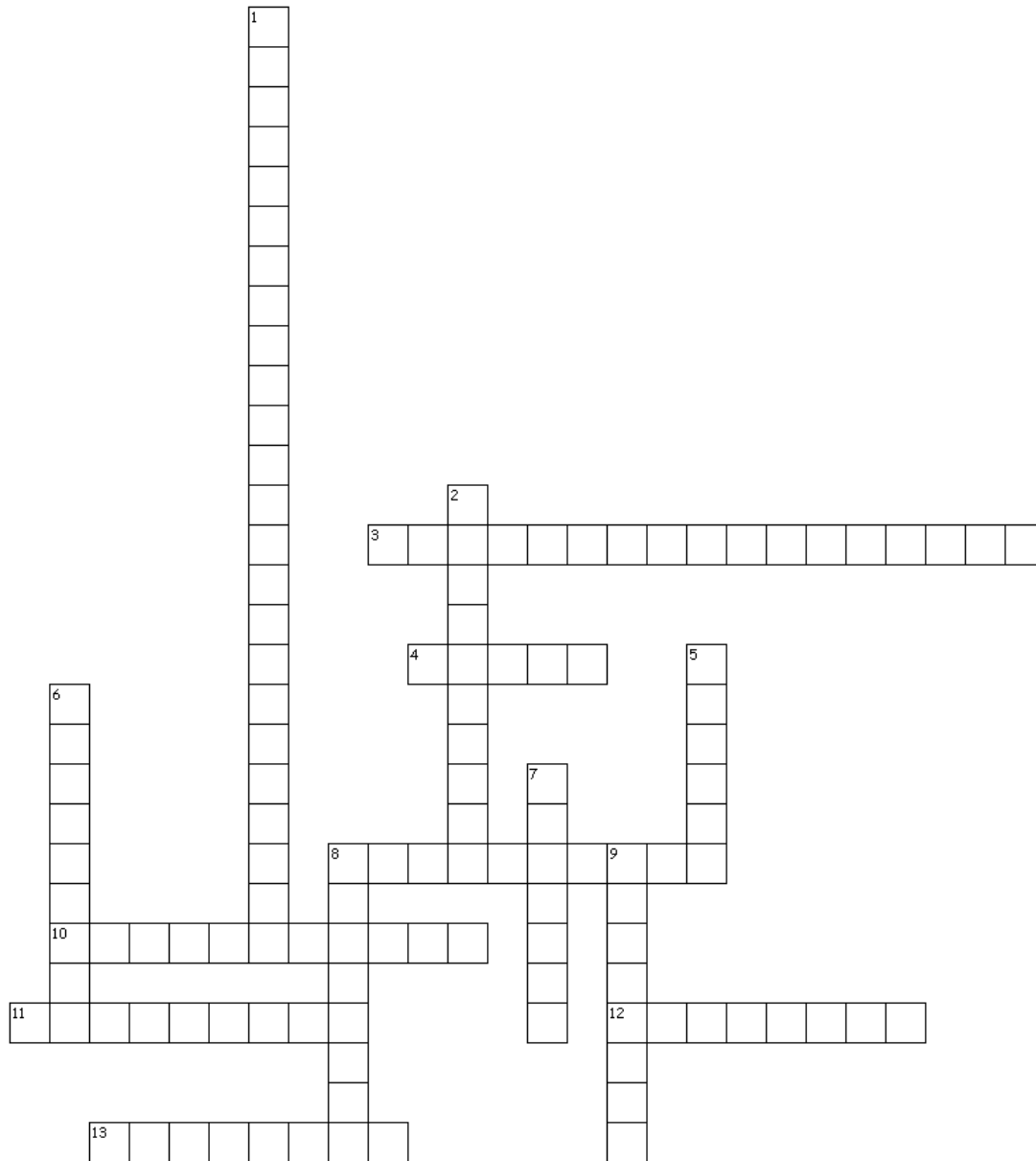
Drying (\$11.17/tonne)	12.15	12.15	12.15	
Custom work (pesticide applications)	10.20	20.40	20.40	
Custom work (fertilizer appl., mixing & delivery)	10.20	10.20	10.20	
Added expense for IP				
Trucking (\$8.35/tonne)	9.60	9.60	9.60	
Storage (\$2.06/month/tonne x 4 months)	9.45	9.45	9.45	
Land rent				
Operator labour (self or hired)	12.45	6.45	6.45	
Interest on operating	4.60	4.55	4.50	
Total Operating Expenses	233.45	231.15	230.25	

Revenue	Your Farm Budget
Expected yield _____	
Expected price _____	
Total Market Revenue (Yield x Price)	
Additional revenue from IP	
Program payment	
Total Revenue	
Gross Margin (Revenue - Operating Expenses)	

Overhead Expenses	Conventional Sample Costs/Acre	No-Till Sample Costs/Acre	Roundup Ready® No-Till Sample Costs/Acre	Your Farm Budget
Machinery - Depreciation	29.65	18.45	18.45	
Machinery - Interest on investment	15.25	10.25	10.25	
Land				
Other overhead	11.50	7.15	7.15	
<b>Total Expenses</b>	<b>289.85</b>	<b>267.00</b>	<b>266.10</b>	
<b>Breakeven price on your farm is: (total expenses/expected yield)</b>				

# Pest Management Crossword

## Meeting 2 Activity 9



**Across**

3. step by step method used to identify pests
4. read this before using pesticides
8. planting a cover crop to choke out weeds is this type of pest control
10. a chemical used to kill insects
11. a chemical used to kill weeds
12. first step in selecting an IPM program
13. crop rotation is this type of pest control

**Down**

1. IPM is the acronym for this
2. Cultivating weeds from a garden is this type of pest control
5. a plant that lives for only one growing season
6. a chemical used to kill fungus
7. type of agriculture involving no pesticide use
8. a type of organism that causes disease
9. spraying herbicides is this type of pest control

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# Pest Management Crossword

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**ANSWERS** (*in italics*)

## Across

3. step by step method used to identify pests *A: identificationkey*
4. read this before using pesticides *A: label*
8. planting a cover crop to choke out weeds is this type of pest control *A: biological*
10. a chemical used to kill insects *A: insecticide*
11. a chemical used to kill weeds *A: herbicide*
12. first step in selecting an IPM program *A: identify*
13. crop rotation is this type of pest control *A: cultural*







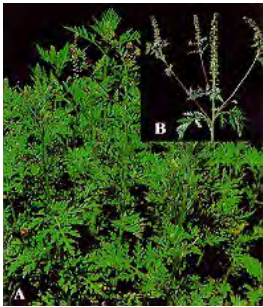













## Down

1. IPM is the acronym for this *A: integratedpestmanagement*
2. Cultivating weeds from a garden is this type of pest control *A: mechanical*
5. a plant that lives for only one growing season *A: annual*
6. a chemical used to kill fungus *A: fungicide*
7. type of agriculture involving no pesticide use *A: organic*
8. a type of organism that causes disease *A: bacteria*
9. spraying herbicides is this type of pest control *A: chemical*

# Identification Guide for Common Weeds

## Meeting 3, Activity 12

Identify the common weeds below. This ID guide will be helpful as a reference when scouting crops.

			
1.	2.	3.	4.
			
5.	6.	7.	8.
			
9.	10.	11.	12.
			
13.	14.	15.	16.
			
17.	18.	19.	20.

## Search a Weed

### Meeting 3 Activity 13

S T C Y F T C W B D J F P R T  
 R O F O Q A Z H E Y I Z E D U  
 E R T I M O E E I E F D O S F  
 T R E A X M W L L C R U S C T  
 R A N V L K O D T O K A O R E  
 A C J O L L V N O E R O A B D  
 U D L I I I F T M G V G R Z V  
 Q L M I O L P E K A W L Y Y E  
 S I Z L A I E C S E L L E U T  
 B W E G G T A D E C G L E V C  
 M T Z W R U X D N Z U F O P H  
 A X E L Q N N O S A Q E L W Q  
 L E N A B A E L F A D A N A C  
 D W I L D B U C K W H E A T Z  
 D E K C I D E M K C A L B B Z

BLACKMEDICK  
 CANADAFLEABANE  
 CHICKORY  
 COMMONMALLOW  
 DANDELION  
 FIELDVIOLET  
 FOXTAIL  
 LAMBSQUARTERS  
 MILKWEED  
 QUACKGRASS  
 RAGWEED  
 REDROOTPIGWEEED  
 TALLFESCUE

TUFTEDVETCH  
 VELVETLEAF  
 WILDBUCKWHEAT  
 WILDCARROT

# Fighting Crop Diseases

## Meeting 4, Activity 20

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
				15			3	21													17				

<u>H</u>	<u>E</u>		<u>E</u>		<u>I</u>	<u>H</u>	<u>I</u>		<u>I</u>		<u>I</u>		<u>E</u>		<u>E</u>																	
12	3	15		9	15	20		12	19		25	21	7	3	12	21	10	7		26	1	19	8		16	21	2	15	24	2		
			<u>E</u>		<u>I</u>		<u>E</u>	<u>V</u>	<u>E</u>		<u>I</u>																					
			15	2		21	2	8	1	15	17	15	10	12	21	19	10															

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# Fighting Crop Diseases

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**ANSWER:**

*The key to fighting crop diseases is prevention.*



# Insect Word Search

## Meeting 5, Activity 26

G	E	E	G	G	S	K	S	J	C	N	A	F	R	I
K	R	X	N	G	N	W	Q	B	O	P	J	B	E	L
B	R	A	N	Q	E	I	E	I	H	X	I	L	P	E
G	E	I	L	E	E	A	T	I	L	O	G	U	P	A
U	W	E	P	L	V	A	D	U	T	C	R	F	O	F
L	H	N	T	R	I	U	P	E	O	G	U	M	H	H
S	E	T	A	L	W	P	C	U	H	C	B	R	S	O
T	D	L	O	E	E	H	R	B	P	T	S	A	S	P
H	Y	F	E	M	N	R	D	E	Q	W	I	H	A	P
A	E	V	C	O	C	O	O	N	T	P	D	F	R	E
D	I	I	L	E	G	A	M	A	D	A	X	P	G	R
L	S	O	N	M	B	E	N	E	F	I	C	I	A	L
S	G	M	R	O	W	Y	M	R	A	D	U	L	T	C
Y	E	D	I	C	I	T	C	E	S	N	I	L	C	C
L	E	T	W	D	I	Y	S	G	G	E	R	D	M	G

ADULT

APHID

ARMYWORM

BEETLE

BENEFICIAL

BIOTECHNOLOGY

CATERPILLAR

COCOON

DAMAGE

DEFOLIATION

EGGS

GRASSHOPPER

GRUBS

HARMFUL

INSECTICIDE

LARVAE

LEAFHOPPER

MOTH

PUPAE

SCOUTING

SLUG

SWEEPNET

WEEVIL

WINGS

# Insect Word Search

## Solution

+ + + + G S + S + + N A + R +  
 + R + + G N W + + O P + B E L  
 B + A N + E I E I H + I L P E  
 G E I L E E A T I + O G U P A  
 U W E P L V A D U T + R F O F  
 L H N T R I + P E O + U M H H  
 S E T A L W P C U + C B R S O  
 T + L O E E H R + P + S A S P  
 + + F E M N + + E + + + H A P  
 + E V C O C O O N T + + + R E  
 D I + L E G A M A D A + + G R  
 L + O + + B E N E F I C I A L  
 + G M R O W Y M R A D U L T +  
 Y E D I C I T C E S N I + + +  
 + + + + + + + S G G E + + + +  
 (Over,Down,Direction)

ADULT(10,13,E)  
 APHID(12,1,SW)  
 ARMYWORM(10,13,W)  
 BEETLE(1,3,SE)  
 BENEFICIAL(6,12,E)  
 BIOTECHNOLOGY(13,2,SW)  
 CATERPILLAR(12,12,NW)  
 COCOON(4,10,E)  
 DAMAGE(10,11,W)  
 DEFOLIATION(1,11,NE)  
 EGGS(11,15,W)  
 GRASSHOPPER(14,11,N)  
 GRUBS(12,4,S)  
 HARMFUL(13,9,N)  
 INSECTICIDE(12,14,W)  
 LARVAE(3,8,NE)  
 LEAFHOPPER(15,2,S)  
 MOTH(5,9,NW)  
 PUPAE(10,8,NW)  
 SCOUTING(12,8,NW)  
 SLUG(1,7,N)  
 SWEEPNET(8,1,SW)  
 WEEVIL(6,7,SW)  
 WINGS(2,5,NE)



