Introduction

Welcome to the fascinating world of plants! Get your hands dirty and find out how the soil and sun affect how plants grow. Learn why plants are valuable to humans and animals. Experiment to understand how plants work. Feed your plants and watch them grow.

There are six different topics called Skill Builders that will allow you to explore all about plants in this project. Each Skill Builder has activities that will help you learn more about plants.

You’ll find out that a lot of things happen between the time a little seed is planted in the soil and the time that it ends up on your dinner plate. You will also learn what the different plant parts do.

Meet Larry Leaf
Larry says, “Don’t leaf me alone—look for me throughout the manual. I’ll share exciting and important information that will help you with your project.

Leaf it to Me!
This More Leaves box will appear throughout the project book. Check out the great website link ideas that will lead you to fun online content to help you with your 4-H

Learning is 3D!
To help you get the most out of your learning, each project meeting has the following parts:
Dream it! Plan for success
Do it! Hands on learning
Dig it! What did you learn?
What Skills Will You Learn?

Each section or Skill Builder (or Builder) in this project has activities that will help your project group learn to do by doing while learning new skills and having fun!

To complete this project, you must:
- Complete the activities in each Builder or a similar activity that focuses on the same skills as you and your leader may plan other activities.
- Plan and complete the Showcase Challenge.
- Complete the Portfolio Page.
- Participate in your club’s Achievement (see the inside back cover for more information about 4-H Achievements).

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<td>• Learn what stems and leaves need to grow</td>
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<td>Flower Power!</td>
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<td>• Explain how and why plants get sick</td>
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<tr>
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<td>• Define the term microorganism</td>
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<td></td>
<td>• Identify harmful and helpful insects</td>
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Once you successfully complete your builders, you will showcase what you have learned.

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<th>Explain success in using the skills listed above</th>
<th>Showcase Challenge</th>
<th>My Portfolio Page</th>
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Skill Builder 1: What is a Plant?

Larry says:
Plants are alive just like you! They can make their own food using air, water and sunlight. Living things that make their own food are called **autotrophs**. People and animals have eat plants and animals for food. Are we **autotrophs**? Can you think of ways that people use plants?

Skills Checklist
- Explain the difference between plants and animals
- Name important uses of plants
- List places where plants grow

Dream it!

There are many kinds of plants that grow in all kinds of places. Each type of plant has an environment that it will grow best in. For example, a cactus grows great in a desert environment but wouldn't grow very well in a lake or river environment like a lily pad does.

There are two types of plants you will hear about in this project, **monocots** and **dicots**. **Monocots** are grasses like wheat and corn. **Dicots** are broadleaf plants like strawberries, canola and beans.

Agriculture means caring for plants and animals and using them for food for people, animals and for fibre. Common agricultural plants in Manitoba that you might see in the field are wheat, canola and soybeans.

The most important role plants play in our world is providing oxygen for people and animals to breath. Green plants are the only source of oxygen on earth.

**Plants Plants EVERYWHERE!**

Do a Plants Scavenger Hunt. To start, think about where you have seen plants growing. Gardens? Greenhouses? Parks? What kinds of plants did you see growing there? If you don’t know their names, try drawing the plants in the box or describing them. Do you see anything made from plants around you right now? Write down or draw these things as well.

Do it!

Are YOU a Plant Eater?

Follow your leader’s instruction for the “Are You a Plant Eater” activity.

Fill in your answers in the chart on the next page.
Dig it!

What was one thing that surprised you about plants?

How would you explain the difference between plants and animals to a Kindergarten student?

Is it easier to find the different plants parts, after finishing this Skill Builder?

What’s Next?

In the next four Skill Builders, you will learn more about the plant parts - seeds, roots, stems and leaves, flowers and fruit. You will also be looking at different samples of plants and growing your own plants!
Larry Says:
A seed is the beginning of a plant’s life. It contains all the information to grow into a new plant. Seeds are important because plants can’t move. They use their seeds to spread and grow in new places.

Skills Checklist:
- Explain the role of seeds in the plant lifecycle
- Define germination and what is needed
- Label the steps of germination in a bean plant
- Name different ways seeds are spread

Dream It!

Have you ever seen a seed with legs? Of course not, seeds are not good at moving around on their own but they can travel in other ways. Wind, water, animals and people all carry seeds to new locations. Some seeds burst from the parent plant and can spread several meters. Seeds can be covered in juicy tasty fruit that attracts people and animals to pick it and carry it away to eat somewhere else.

If a seed lands in a suitable place that provides enough moisture, heat and air it will begin to grow. This is called germination. If these needs are not just right the seed will not germinate. Seeds can stay dormant (sleeping) in the soil for a long time and wait patiently for the right conditions.

The first part of the plant that comes out of the seed is the seed root called a radicle. The shoot comes out next and is called the epicotyl.

Seed Detectives

Your leader will give you a seed, or a picture of a seed. Can you figure out how your seed spreads?

1. Does your seed have hooks or barbs? (hint: will it stick to your clothes?)
2. Does your seed have a parachute of hairs? (try dropping it, does it float down slowly?)
3. Does your seed have wings?
4. What color is your seed?
5. Is the seed shiny?
6. Is the fruit or seed juicy?

My seed comes from a __________________________ plant.

It is spread by ____________________________

Fact: coconuts are actually large seeds that are spread around by floating on water ways.

On Your Mark...Get Set...Grow!
Look at the pictures below and try to number them in the correct order of germination.

Your leader will discuss the steps in **germination** and the words in the word bank with you and the other members.

**Hypocotyl** - the stem just above the radicle

**Radicle** - the seed root

**Cotyledon** - the first seed leaves

**Epicotyl** - the stem above the hypocotyl

**Seed Coat** - the covering around the seed.

**Foliage Leaves** - the first true leaves to emerge
Now label the pictures using the words in the word bank. You will use some of the words more than once.

**Do it!**

**Make a Living Necklace**

To make a living necklace, you will need to collect the supplies listed below and follow the instructions.

**Supplies**
- Small resealable bag about 2”x2” (usually available at craft stores)
- Cotton balls
- Spray bottle of water
- Bean seeds (or other large seeds), one per member
- Hemp, leather or other string for the necklace
- Hole punch

**Instructions**
1. Wet down a cotton ball so it is damp (but not dripping).
2. Place the seed in the wet cotton and seal it in the bag.
3. Punch a hole in the top of the bag and lace the string through.
4. Adjust the string so that it is the right length for you and tie it around your neck.

**Germination Window**

To make a **germination** window, you will need the supplies listed below. Then follow the instructions.

**Supplies**
- Small glass jar (baby food or jam jar) and lid
- Paper towels
- Bean seeds or other large seeds (3-5 per member)

**Instructions**
1. Dampen paper towels with water and insert into jars.
2. Place the seeds between the glass jar and the towel so you can see them when the lid is on.
3. Make one or two holes in the lid and close the jar.
4. Place the jar someplace warm (not too hot) and dark.
5. Check on the seeds daily and record what you see on the **germination** chart on the following page.
6. When true foliage leaves emerge move the **germination** window into the light.
**My Germination Window Record Chart**

<table>
<thead>
<tr>
<th>Day</th>
<th>Today my seeds look...</th>
<th>Parts of the seedlings I can see today</th>
<th>My seed/seedling is the color...</th>
<th>Other observations</th>
</tr>
</thead>
<tbody>
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<tr>
<td>Day 1</td>
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<td>Day 2</td>
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<td>Day 5</td>
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<td>Day 7</td>
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<td>Day 9</td>
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<td>Day 11</td>
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</tbody>
</table>

**Dig It!**

Does the living necklace have everything that a seed needs to germinate?

Does the germination window have everything a seed needs to germinate?

What are three different ways seeds are spread around or “dispersed”?

**What’s Next?**

In Skill Builder 3, you will find out whose seeds grew the most in the germination window. You will also discover roots and discuss what happened to the living necklaces.
Larry Says:
Roots are the first part of the plant to come out of the seed during germination. It’s so dark under the ground, how do roots know which way to grow? You’ll learn about gravitropism in this Skill Builder and how roots and shoots use special gravity sensing cells to sense which way is down.

Skills Checklist
- Explain the role of roots in plant growth
- Explain what roots need to grow
- Describe different types of root systems

Dream It!

Just because you can’t see most plant roots it doesn’t mean they’re not important. Plant roots help hold the plant in place so it doesn’t fall over, they absorb water and nutrients from the soil, they can store starch for food and they tell the plant which way is up and which way is down.

Not all plants have the same kinds of roots, some have tap roots that grow deep into the soil and others have lots of little roots that spread just under the soil surface. All roots have root hairs. This is the spot where the tiny water molecules and nutrients are absorbed in the plant.

All green plants contain a plant hormone called auxin. This important hormone makes root cells grow downward when they sense gravity. In the leaves and stems auxin has the opposite affect and plants grow up. The way a plant responds to gravity using plant hormones is called gravitropism.

Not everything that grows underground is a root. Try the root veggie game to test your knowledge of underground plant structures. Ask your leader about other interesting roots.

Root Veggie Game

Circle the vegetables that you think are roots. Compare your answers to other members in your group.

Ginger    Carrots    Beets    Potatoes    Sweet Potatoes    Onions
Do It!

Germination Window Continued

Bring your germination window from Skill Builder 2, and compare the changes with other members.

What do you notice about the radicle?

Can you see any root hairs?

What direction is the root growing?

Can you see the shoot? What color is it?

Did any seeds not germinate? Why?

Was the light, temperature or moisture the same everyday? Explain what was different.

The a-MAZE-ing Roots

In this activity you will demonstrate gravitropism in roots by making your germinating seed root grow through a maze! Your leader will give you the supplies and instructions to make four different root mazes.

Remember that roots always grow down with gravity. This is in caused by the plant hormone auxin. You will want to check on your maze each day and turn the petri dishes to allow the roots to follow the maze.
Dig It!

What was something that surprised you in this Skill Builder?

How long do you think it will take the roots to make it through the maze?

How does the root know which direction to grow?

Visit http://herbarium.desu.edu/pfk/index.html to learn more about gravitropism in roots and shoots.

What’s next?

In Skill Builder 4 you will compare your root maze growth with other members. You will also discover leaves and stems and find out what photosynthesis is.
Skill Builder 4: Leaves and Stems: The Power Generators

Larry Says:

Plants use energy from the sun, carbon dioxide from the air and water from the soil to make sugar for food and energy. This is a unique process called photosynthesis. ONLY green plants can do it. Water moves up the plant through the xylem. Sugars move up and down the plant through the phloem.

Skills Checklist

- Define and explain photosynthesis
- Learn what stems and leaves need to grow
- Name different shapes of leaves
- Define and explain the role of phloem and xylem

Important Words

Watch for these important words throughout the Skill Builder: Photosynthesis, Carbohydrate, Phloem, Xylem, Chlorophyll, Stomata

Dream it!

Photosynthesis is an important process. Green plants have a molecule called chlorophyll. They use chlorophyll to make food out of carbon dioxide, water and sunlight. This process is called photosynthesis and happens in the leaves. The food the plants make is sugar, The different sugars plants make are called carbohydrates.

You have learned that roots have the job of collecting water. To move the water from the roots to the tops of branches, plants use special straw shaped cells called xylem. When photosynthesis makes carbohydrates they need to be moved to the growing parts of the plant where energy is needed or to roots to be stored. Carbohydrates move through the part of the plant called the phloem. They can move up and down the plant depending where it is most needed.

Stomata are very tiny holes (so tiny you can’t see them) on the underside of the leaf that let carbon dioxide in and oxygen out of the leaf.
Did you ever wonder why leaves were different shapes and sizes? Leaves are where the energy is created. Plants have adapted to the environment that they grow in by having different types of leaves. Some have large flat leaves to collect the most amount of sunlight while other leaves are thick and waxy to hold moisture in.

Leaf Shapes

Match the leaf shapes with their name. You might use the shapes more than once.

![Leaf Shapes](image)

Hand Shaped  Heart Shaped  Spear Shaped  Round  Needle

Do It!

A-maze-ing Roots

Compare your results and notes from the A-maze-ing Roots exercise in the last Skill Builder with the other members..

Leaf Black Out

Your leader will give you the materials and instructions for this activity. The experiment will demonstrate what happens when plant parts do not receive light.

When you have completed setting up the activity, share with your group what you think will happen. Record your observations over the next week in the box on the next page.
My Observations

<table>
<thead>
<tr>
<th>Observations of celery in colored water:</th>
<th></th>
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</thead>
<tbody>
<tr>
<td>Hypothesis</td>
<td>Results</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Observations of celery split into different colored water:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Hypothesis</td>
<td>Results</td>
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</tbody>
</table>

Colored Carnations and Celery

Your leader will give you the instructions and material for this activity. Once you have the experiment set up answer the questions below and make a hypothesis for each experiment in the space below.

What does the **xylem** do?

How is it different than the phloem?

What do you think the celery will look like the next time your group meets? Draw and color what you think will happen in the charts below.

<table>
<thead>
<tr>
<th>How leaf looks under paper</th>
<th>How many days does it take to return to normal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Day 1</td>
<td></td>
</tr>
<tr>
<td>Day 3</td>
<td></td>
</tr>
<tr>
<td>Day 7</td>
<td></td>
</tr>
</tbody>
</table>
What do you think each carnation will look like the next time your group meets? Draw your predictions in the box below. Let the plants sit in the dyed water at least one day.

<table>
<thead>
<tr>
<th>Observations of flowers in colored water:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hypothesis</td>
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<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Observations of flower’s stem split into different colored water:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hypothesis</td>
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<td></td>
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</tbody>
</table>

**Dig it!**

Why do you think that photosynthesis is important?

How would you explain what xylem does to someone younger than you?

**What’s next?**

In Skill Builder 5 you will look at your celery and carnation experiment and compare your results with others in the group. You will also dissect some flowers and learn why plants produce bright and beautiful parts.
Larry Says:

Flowers help plants make seeds. Brightly colored, sweet smelling flowers attract bees and other insects than move pollen from flower to flower. This is called **pollination** and is necessary for the **flower** to form the seed. There are many kinds of **flowers** with different combinations of **flower** parts. In this Skill Builder you’ll learn about male and female **flower** parts called the **stamen** and **pistil**. You’ll also discover the difference between fruits and seeds.

**Important Words**

Watch out for these important words throughout the Skill Builder: Flower, Stamen, Pistil, Pollination

**Skills Checklist**

- Explain why plants make **flowers** and fruit
- Define the term **pollination**
- Explain the difference between fruit and seed

**Dream it!**

Flowers are more than just pretty parts of the plant. Plants make **flowers** to attract pollinators such as bees and birds. When a pollinator lands on a **flower** it picks up the yellow/orange pollen from the **flowers** anthers. As the pollinator travels from **flower** to **flower** it drops pollen as it goes which sticks to the stigma of other flowers. This process is called **pollination**. **Pollination** causes a seed (or many seeds) to form in the ovary of the **flower**.

When you think of fruit you probably think of apples, oranges or bananas in your lunch kits. In botany (the scientific study of plants), fruit means any plant part that holds the seed. Apples and tomatoes are fruit. The stem on the fruit is actually the stem of the flower and the little leaves that are left are the **sepals**. Inside the fruit is the seed. Cereal grains like wheat and barley are a kind of fruit called a caryopsis.
Seed or Fruit?
Label the plant structures below as a fruit or a seed.

Do It!

Leaf Black Out

Compare your notes from the Leaf Black Out exercise in the last Skill Builder with the other members.

Coloured Carnations and Celery (continued)

Compare the drawings or pictures of your celery and carnations to the plants. Was your prediction the same as what happened?

Did all of the celery and carnations react the same way?
What surprised you about the experiment?

Which flower parts can you identify on your carnations?

**Amaryllis Dissection**

Sketch the entire amaryllis plant in the box below using colored pencils.

Label the plant parts that you have learned about in the past skill builders. Answer the questions below.

1. How many flowers are on the flower head? _________

2. How many leaves per plant? __

3. How many petals on each flower? _________

4. Does each flower have the same number of petals? _________
5. How many stamens in each flower?
   Do the anthers have pollen on them?
   Use a cotton swab to mimic pollination by moving pollen from the anthers to the stigma.

6. Look at the stigma on top of the ovary. How many lobes does it have? _____

7. Look for the ovary at the base of the style. How many lobes does it have? _____
   Choose one flower to dissect and remove the following parts carefully without damaging them.
   · Pistil (Stigma, Style and ovary)
   · Stamen
   Using a knife cut the ovary in half across the short axis.

8. How many chambers are in the ovary? _____

9. Are there seeds in the ovary? _____
   Scrape out the ovary carefully and count the seeds.

10. How many seeds did you find? _____

**Dig It!**

Why are flowers important in agriculture?

What are the differences between a fruit and a vegetable?

Why do plants produce fruit and seeds?

**What's next?**

In Skill Builder 6 you will learn what kinds of things can make plants sick and how to keep plants healthy.
Skill Builder 6: Plant 911

Skills Checklist
- Explain how and why plants get sick
- Define the term microorganism
- Identify harmful and helpful insects

Dream it!

The environment has a big impact on how plants grow. You have already learned that plants are suited to different environments or habitats like lakes and deserts, rainforests and fields. The frost free period is the time between the last frost in the spring and the first frost in the fall. This length of time is important in Manitoba for many of the field crops grown here because Manitoba is on the northern boundary of agriculture production. Plants can not survive in temperatures below 0 degrees Celsius. Besides being above freezing, plants require different temperatures for growing. The amount of heat accumulated through a growing season that the plant can use is called growing degree days.

When plants are grown indoors or in greenhouses it is easier to control the amount of water they get compared to outdoor gardens or fields. Plants need just the right amount of water, too much or not enough and the plant becomes stressed and is not able to grow and produce to its full potential. Wilting is a sign of moisture stress.

Plants can make their own energy from the sun but they must get certain minerals from the soil as well. Nitrogen, Phosphorus, Potassium and Sulphur are the important nutrients in agriculture and are often added to the soil in different amounts as fertilizer. The amount of fertilizer depends on the plant needs and type of soil. Plants need just the right amount of soil minerals, too much or too little can be damaging.

Plants are food for animals and insects. In the garden, greenhouse and in the field these herbivores can be damaging to plant growth when they eat plant leaves, fruit or seeds. Insects, although small, can be the most damaging because they occur in large numbers and multiply quickly. Some insects are beneficial, like the pollinators you learned about in skill builder 5 and those that eat other insects.

Larry Says:
Plants are alive and just like animals and people they can get sick too. Being “sick” might keep a plant from growing to maturity or prevent it from making flowers and seeds. Weather can affect how plants grow as well as soil nutrients and diseases caused by microorganisms.
Sometimes plants look sick because of disease. **Microorganisms** are tiny living organisms too small to be seen with the unaided eye such as bacteria and fungi. When **microorganisms** infect a plant, the plant will show specific disease symptoms. A plant pathologist is a “doctor” for plants who specializes in studying the microorganisms that cause plant diseases.

**Word Match**

Draw a line matching the word on the left with the correct definition on the right.

**Nitrogen**
A measure of useful heat for the growth and development of plants

**Growing Degree Days**
Living organisms too small to be viewed with the unaided eye that can cause disease in plants

**Fertilizer**
A nutrient plants must absorb from the soil in order to complete their lifecycle

**Wilting**
Can be synthetic or animal product nutrients applied to the soil to aid plant growth

**Microorganism**
The loss of pressure in plant cells usually in leaves and stems due to moisture stress

**Search It!**

Search the Internet for diseases in plants. You can do this by choosing a search engine, and typing in the name of the crop or plant that you’ve chosen, and the word ‘disease’.
Ex-“pineapple plant diseases” or “banana plant diseases”

Try to find one disease that is caused by a fungus and one disease that is caused by bacteria.

My crop/plant is: ___________________________

Disease caused by bacteria ____________________

Name of microorganism____________________

Disease cause by fungus ______________________

Name of microorganism____________________
Good Bug, Bad Bug

Instructions:
1. Cut out the pictures of the insects on page 25 and 27
2. Identify the insects using the information your leader will share with you
3. Write the name of the insect on the back of the card
4. Identify if this is a Good Bug or a Bad Bug and mark a green check mark or a red X in the circle on the back of the picture.
5. Using the information your leader will provide color the pictures of the insects to help identify them.
6. Laminate or tape on both sides with clear packing tape each card individually
7. Use a hole punch to make a hole in the top left corner of each page and join the pages together using the key chain ring.
8. You may wish to decorate a front cover page for the Good Bug Bad Bug book

Dig It!

What are fertilizers used for in agriculture?

What do you think would happen to our food supply if there were no plant pathologists?

What is the best way to prevent plants from becoming diseased or unhealthy?

What’s next?

Congratulations, you have completed all the builders for this project. Now it’s time to get ready for your Showcase Challenge! What will you do to show others what you have learned in the Exploring Plants project?
Good Bug  ✓

BAD Bug

Good Bug

Bad Bug

Grasshopper

Roach

Grape

Colorado potato beetle
This is a...

This is a...

This is a...

This is a...
Showcase Challenge

Bringing it all together!

Now that you have finished this project, it is time to think about how you will share your experiences and knowledge with others. You may put your new skills to work by helping at a community event or at your club Achievement or teaching others about your topic. The goal of the Showcase Challenge is to help highlight your new skills and help you understand how you can use them. It can be an opportunity to receive feedback from others on your project. So go back through your manual and find some highlights of your learning (what you are proud of) and think about how you will “showcase” it.

Dream It!

Here are some Showcase Challenge Suggestions:

- Demonstrate something you made or learned about
- Make a poster or display
- Make a pamphlet
- Make a computer presentation (e.g. PowerPoint)
- Give a speech
- Write a report
- Use your new skills to help with the Club Achievement plans
- Or come up with your own idea. It is up to you and your leader!

My Showcase Challenge Plan

My showcase idea: ____________________________________________________________

____________________________________________________________________________

What materials and resources do I need? ________________________________

____________________________________________________________________________

Who do I need to help me? ________________________________________________

____________________________________________________________________________

When do I need to have things done by? _________________________________

____________________________________________________________________________
Do It!
Insert or attach your finished product or a photo of you sharing your skills in your Showcase Challenge.
Dig It!

Now that you have showcased your project skills;

- How did your Showcase Challenge go?

- What would you do differently next time?

- How will you use your new skills in the future? (in different situations?)
**My 4-H Portfolio**

Name: ______________ Date: ___________ Year in 4-H: ____
Club: ______________ Hours Spent on 4-H: ____(Project and Other 4-H Activities)

---

### Exploring Plants Skills Chart

To be completed by the leader and the member based on observations and conversations throughout the project.

<table>
<thead>
<tr>
<th>Skill Builder 1</th>
<th>Members will be able to...</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>What is a Plant?</strong></td>
<td></td>
</tr>
<tr>
<td>• Explain the difference between plants and animals</td>
<td></td>
</tr>
<tr>
<td>• Name important uses of plants</td>
<td></td>
</tr>
<tr>
<td>• List places where plants grow</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Skill Builder 2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Seeds for the Future</strong></td>
</tr>
<tr>
<td>• Explain the role of seeds in the plant lifecycle</td>
</tr>
<tr>
<td>• Define germination and what is needed</td>
</tr>
<tr>
<td>• Label the steps of germination in a bean plant</td>
</tr>
<tr>
<td>• Name different ways seeds are spread</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Skill Builder 3</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Getting to the ROOT of it!</strong></td>
</tr>
<tr>
<td>• Explain the role of roots in plant growth</td>
</tr>
<tr>
<td>• Explain what roots need to grow</td>
</tr>
<tr>
<td>• Describe different types of root systems</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Skill Builder 4</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Leaves and Stems: the Power Generators</strong></td>
</tr>
<tr>
<td>• Define and explain photosynthesis</td>
</tr>
<tr>
<td>• Learn what stems and leaves need to grow</td>
</tr>
<tr>
<td>• Name shapes of leaves</td>
</tr>
<tr>
<td>• Define and explain the role of phloem and xylem</td>
</tr>
</tbody>
</table>
Exploring Plants Skills Chart
To be completed by the leader and the member based on observations and conversations throughout the project.

<table>
<thead>
<tr>
<th>Skill Builder 5</th>
<th>Members will be able to...</th>
<th>We know this because . . .</th>
<th>Identify activities completed and record observations and information from discussion about activities.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flower Power!</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Explain why plants make flowers and fruit</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Define the term pollination</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Explain the difference between fruit and seed</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Skill Builder 6 | Plant 911                  |                            |                                                                                                   |
|-----------------|----------------------------|                            |                                                                                                   |
| • Explain how and why plants get sick |                            |                            |                                                                                                   |
| • Define the term microorganism |                            |                            |                                                                                                   |
| • Identify harmful and helpful insects |                            |                            |                                                                                                   |

Once your members successfully complete their builders, they will showcase what they have learned.

<table>
<thead>
<tr>
<th>Showcase &amp; Portfolio</th>
<th>Explain success in using the skills listed above</th>
<th></th>
</tr>
</thead>
</table>

Leader Point of Praise!

I am most impressed by...

I acknowledge that the member has completed the 4-H project requirements.

Leader’s Signature: _______________________________
Above and Beyond!
In addition to project skills, 4-H also increases skills in meeting management, communications, leadership, community involvement through participation in club, area, or provincial 4-H events or activities. List below any activities you participated in this year in 4-H.
(Some examples include Executive Positions Held, Workshops, Communication, Community Service, Rally, Bonspiels, Conferences, Judging, Camps, Trips, Awards, Representation to Area or Provincial Councils, etc)

_________________________       __________________________
_________________________       __________________________
_________________________       __________________________
_________________________       __________________________
_________________________       __________________________
_________________________       __________________________

**Feel Free to add additional pages that include awards, certificates, new clippings, photos or other items that describe your 4-H involvement.**

Member Point of Pride!

What I learned...

What I need to improve on...

What I want others to notice...

Member’s Signature: _______________________________

Point of Praise! Another’s perspective on your achievements in 4-H.
(community professionals, 4-H club head leaders, friends of 4-H)

I am most impressed by...

I believe that you have learned...

In the future I encourage you to...

Signature: _______________________________
4-H Achievement

4-H Achievement is... a 4-H club celebration when members have completed their projects. Achievements are planned by the club to give recognition to members and leaders for their accomplishments in their 4-H projects and club activities.

A 4-H Achievement can take many different formats: from choosing a theme, to member project displays, to members using their new skills for the event (entertainment, food, decorating, photographer, etc.), to members presenting their project to the whole group, the options are endless and open to the creativity of the members and leaders in each club!

Clubs may also plan their Achievement to promote 4-H to the community or to recognize sponsors and others who have helped the club.

Members and leaders - be sure to check your project books for the project completion requirements, so you will be ready for your club’s Achievement celebration!

If you have any questions, comments or suggestions for this or other 4-H projects contact:

Manitoba 4-H Projects
Manitoba Agriculture
1129 Queens Avenue
Brandon, MB R7A 1L9

Email: 4h@gov.mb.ca
Phone: 204-726-6613
Fax: 204-726-6260

This manual is for educational use only and is not intended as professional advice.

For more information about 4-H and the many 4-H opportunities available please visit

http://www.gov.mb.ca/agriculture/4-h/
What is 4-H?

4-H is an international youth organization involving more than 7 million members in 80 countries around the world.

In Canada, 4-H began in 1913 in Roland, Manitoba as a community-based organization dedicated to growth and development of rural youth. Today’s 4-H program reaches both farm and non-farm youth across Canada. The motto of “Learn to Do by Doing” is embodied in the program, as 4-H focuses on skill development as well as personal development of life skills such as communications, leadership and citizenship.

4-H Motto

“Learn To Do by Doing”

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.

All 4-H project materials are available in alternate format upon request.