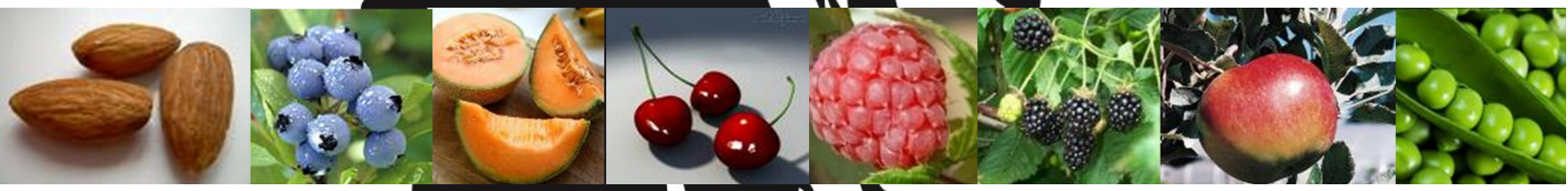
New2Bees

MINI COURSE



GUIDE TO RAISING GENTLE, SOLITARY BEES

Grow more food and flowers



Crown Bees™

The Gentle Bee Company

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New2Bees Mini Course

INTRODUCTION

Welcome to the mini course. This guide will prepare you to raise the following amazing pollinator bees: spring mason bees, summer leafcutters and eastern states bumble bees.
It includes 8 short lessons.

After that, use our Bee-Mail for monthly reminders on what to do when.

Why this course?

Bees pollinate 1/3 of our food supply. Historically, we have relied primarily on the troubled honey bee for this job. As science works to help this stressed bee, we can increase the population of gentle-natured solitary bees like mason and leafcutter bees. These amazing pollinators are a great supplement to the honey bee, and have proven to increase various crop yields. We've also added bumble bees, another declining bee on the east coast. While social like the honey bee, it is mild mannered and a great pollinator.

Protect our bees—sustain the food supply

Protecting our food supply with more diverse bee pollinators is a Crown Bees goal. In particular, we are focused on increasing the mason bee population for spring fruit, nuts and plant pollination. That's one part of the solution to food pollination challenges.

Reduce chemical use

We also need to change the way we use our bees, both in our backyards and in commercial fields. At Crown Bees we advocate reducing "welfare lawns" that depend on chemicals to maintain a green appearance, but starve our pollinators and other wildlife. Chemicals kill everything, including our beneficial insects. There is no pollen in grass. Using fewer harmful chemicals will protect our water, the environment, our pollinators and our food.

Additionally, we see the need to change the way we raise our commercial crops to accommodate nature's caretakers in our food fields. We'll provide more information on this move from "mono-culture growing" as we work with growers.

New2Bees Mini Course

Create a Bee Habitat in your yard

By raising mason bees, you are part of the solution to increase awareness about our bees and the need for creating bee habitats and to help protect our future food supply. Without bees, we will lose many of our food choices. With a growing worldwide population, we can't afford not to be "pollinator wise." That's why we created the BeeGAP (Gardeners Adding Pollinators) program. Read more about this and how you can help on the Bee Active website page.

Our Company Vision

The Bee Active website page describes our company vision to change the way we manage our bee pollinators, protect the environment and sustain our food supply. It also discusses what we see going wrong with the troubled honey bee.

We think we have a solution.

Our online store offers bee-safe products. You can buy individual items, assemble a custom package, or buy one of our complete kits with everything you need to get started (or to give as a gift), or hard goods packages. We take the guesswork out of selecting a package that fits your needs.

Lesson #1: Bee Basics

Bees are vital pollinators for our fruits, nuts and vegetables. They pollinate 1/3 of our food supply and 1/3 of the feed for our meat sources (ex: beef). Historically, commercial growers have relied primarily on the honey bee. This social bee is in trouble, and while science looks for answers, Crown Bees offers an excellent supplement with solitary bees. These overlooked bees are exceptional pollinators, gentle-natured and easy to raise in the backyard. This lesson focuses on spring mason bees, summer leafcutters and eastern state bumble bees (losses for western state bumble bees are not as critical).

Lesson #1: Bee Basics

SOCIAL BEE CHARACTERISTICS	SOLITARY BEE CHARACTERISTICS
One queen, one hive to defend. Worker bees defend the hive, queen and young.	Every female is a queen; no hive to defend. She owns and maintains her own nest.
Hive communicates, every bee has a specific task: help raise young, gather food (pollen and nectar), and care for the queen.	No communications since no one works for the female. She does all chores. Males die after mating. There's no time to be aggressive or be chatty.
Aggressive; requires special clothing to raise.	Gentle, doesn't mind people; no dress code needed - shirts and flip flops acceptable.
Stings. Honey bee can cause anaphylactic shock.	Rarely stings. The mason bee and leafcutter sting is similar to a mosquito bite.
Only honey bees make honey that can be harvested.	None available to harvest.
Effective pollinator. One bee gathers pollen and another bee goes out to gather nectar.	Efficient pollinator. Pollen and nectar are gathered in the same visit.
Pollen becomes sticky and clings to legs. It's comb into pollen sacs for carrying to the hive.	Dry pollen clings to hairy body and drops off to pollinate almost every flower visited.

SOCIAL BEES EXAMPLES	SOLITARY BEES EXAMPLES
Honey bees	Mason bees
Hornets and wasps	Leafcutters and mud dauber wasps
Bumble Bees: We put it in the middle. While social, this bumbling bee is mild mannered	

Lesson #1: Bee Basics

Overview of Our Gentle, Solitary Pollinators

SPRING MASON BEE

The darling of the Crown Bees team is the spring mason bee. These charming ladies are fun to watch as they busily pollinate and tend to their nests.

Gentle natured

Since the female performs all of the activities alone, she can't do the work AND guard her nest. Her goal is to lay her eggs, and she only lays them in her own hole. As a result, she is not overly protective of the nesting hole, as with social bees.

Mason bees can sting, but do so very, very, rarely. It only occurs as a defensive action if she's caught in clothing or held tightly. The rare sting is similar to a mosquito bite, and does not cause anaphylactic shock.

Lesson #1: Bee Basics

Only 1 mason bee is needed to pollinate 12 lbs of cherries

VS. 60 Honey Bees

The Perfect Pollinator Body

It's all about body and purpose

Since the mason bee is gathering both pollen AND nectar in the same flower visit, virtually each flower is pollinated. The pollen is carried dry on her abdomen hairs which falls off in each flower. The mason bee is an inefficient pollen gatherer, but an amazing pollinator! You won't get honey from a mason bee, but you'll get healthy plant yields.

An early morning riser who pollinates longer into the evening

Spring female mason bees live about 6 weeks (males about 2 weeks), and are one of the first bees to fly in the spring. They only need mid 50's °F to emerge and begin their nesting. Because they are less sensitive to the weather, they start earlier in the day and pollinate longer into the evening than their honey bee cousins. Find out more about their life cycle on our Learn page.

Lesson #1: Bee Basics

SUMMER LEAFCUTTER

The alfalfa leafcutter bee became a hero in the first half of the 20th century by saving the declining alfalfa seed industry. A familiar story, seed production decreased when pollinating bees lost their habitats to agriculture and land clearing. This threatened a major food nutrient for livestock. Alfalfa is a source of high protein for livestock in pasture and hay mixes. Today, the alfalfa leafcutter is used extensively to pollinate this crop, and others.

Gentle-natured, gregarious

While all leafcutter bee species are solitary, only the alfalfa leafcutter is gregarious. This means the females will nest very close together, one of the main characteristics for managed pollinators. In order to be effective for gardeners and commercial growers, bee pollinators must be able to live together in a “managed” environment.

Like the larger spring mason bee, the leafcutter is gentle and rarely stings. She is a cavity dwelling bee that lay her eggs in existing holes. She does not create holes or damage structures to make holes. Leafcutter bees stay close to home, foraging for pollen and nectar within 300 feet (100m) of the nest.

Outperforms its honey bee cousin for pollination

This busy, blue-eyed bee is a great summer garden addition. It’s a tiny, fast pollinator for late summer melons, peas and other vegetables. Its hairy body makes it an excellent pollinator.

Lesson #1: Bee Basics

A Sun Worshiper

The sun loving alfalfa leafcutter bee is black with pale yellow strips on the abdomen and face, and about 2/3 the size of a honey bee. It hibernates as larvae from early fall until summer. Leafcutters fly best when day temperatures are at or above 75° F (24° C) to pollinate summer fruits and vegetables.

The female leafcutter's life cycle is similar to that of the spring mason bee. At the end of her life, the female's wings become frayed —there are only so many times her powerful wings will flap!

Nesting building with leaf cuttings

Unlike the mason bee that uses mud to seal each egg chamber, the leafcutter uses non-fibrous leaves. She chews the leaves and then seals the egg chamber. You will notice smooth ¾" diameter circles cut from your plant leaves. Roses are a particular favorite. These cuttings typically do not harm the plant.

Harvesting leafcutters

Raising leafcutter bees is different from the spring mason bee as they overwinter as larvae instead of adult bees. They can survive until July as larva. A hot weather bee, leafcutters require "incubation" to mature. They need 3-4 weeks of temperatures at about 84 ºF (29 ºC) to metamorphose into adult bees.

For customer convenience, Crown Bees starts incubating its leafcutters in April for shipments starting May 1 to August 15. Delivery is timed so the leafcutters arrive as fully developed adults, just in time to emerge and pollinate the garden.

If you want to raise your own leafcutters, here is a quick overview. After bee activity stops, store filled nesting holes (open ends up) in an unheated garage or shed that is dry and secure. Overwinter the bee larvae in the nesting holes until next summer. You'll need to incubate them as described above. Find out more about leafcutters on our website.

Lesson #1: Bee Basics

BUMBLE BEES (for eastern states only)

The earliest fossilized bumble bee dates from the Oligocene period, about 30 million years ago. This plump, fuzzy bee has a lazy buzz and "bumbling" flight pattern. They pollinate in green houses and are especially good at pollinating tomatoes.

Mild-mannered

Bumble bees are social, meaning they may defend their hive when the hive is threatened. The number of bumble bees in a hive are small (typically less than 150-200 bees) and the duties of each worker is limited. In a large honey bee hive, a duty includes "Sentry and defender," but with the bumble bee, this position doesn't exist.

Big and lumbering, hives left alone are gentle. Bees gathering pollen and nectar won't sting unless life threatened.

Wonderful Pollinator

The bumble bee is a productive pollinator for spring through fall gardens and flowers. The female workers carry pollen on the underside of her hairy abdomen and on their rear legs after scraping it off and mixing it with her spit. She also gathers nectar in these same trips. The bumble bee carries the pollen back to her hive for rearing new workers.

When pollinating, the heavy bumble bees will cling to the bottom of the flower and vibrate their flight muscles producing a "buzz" sound. The pollen falls out of the flower onto the bumble bee. This makes them awesome tomato and blueberry pollinators! Bumble bees can harvest pollen from flowers 400 times faster than honey bees can.

Temperature sensitive

Queens hibernate for 5-9 months using stored fats. Workers don't hibernate. When she warms up, she'll venture outside in search of food, and to create her hive. Bumbles perform best at temperatures below 86°F (30°C).

If temperatures in the hive rise too high, the bumblebees won't fly outside. Instead, they remain in the hive and keep their brood cool with rapid wing movements. If too cold, below 40° F, the bumble bees will stay within their hive. Placing an insulated blanket around most of the hive, leaving the entrance accessible may help your bees if the temperature remains unbearably cold for multiple days.

Lesson #2:
Houses to Shelter Nesting Homes

Mason bees and leafcutters aren't picky about their house, as long as it meets their nest-building needs. In fact, you can use the same house for both bees. They won't use it at the same time. Just swap out the nesting holes used for the spring mason bee, and replace it with the smaller diameter material for the summer leafcutter. Your bees won't mind your cost saving approach.

Here are 3 things to keep in mind when selecting your bee's home.

Design

- You can use most any type of material. We have several designs on our website that are functional, durable and weather resistant. You can build your own following a few guidelines:
- Make sure your house has a 2-3 inch roof overhang that tilts over the nesting holes for rain and wind protection.
- If you paint or stain your bee house, do it at least a month before your bees are active. In particular, mason bees prefer old nesting scents, so an unknown or unpleasant smell may cause them to shy away from building nests in your new home.

Functionality

- The female needs a stable environment to build her nest. Once set up, leave your house in place.
- Your house should allow for easy removal of cocoons for harvesting at the end of the season. You can't harvest bees from drilled wood blocks. There's no way to remove the cocoons.
- Scale your house to the number of bees you want to raise. If you have a large yard (15+ fruit trees) that can feed a lot of bees, select a larger house to hold 150 tubes or more. For typical garden sizes, we suggest you focus on what looks best to you. Realize that some houses can only hold tubes/reeds, while others are more square-shaped and can hold wood trays. Our tubes and trays are sold in packages to meet the needs of the typical gardener.
- Both your spring and summer bees can use the same house, but their nest-building material is different (more about this in a later lessons).

Lesson #2:
Houses to Shelter Nesting Homes

Location, Location, Location

- Your bees like to wake up in a warm house (who doesn't!). Position your house on a wall or structure that gets the warmth of early morning sun. If you're in the SE, where it can get too hot during the day, a bit of afternoon shade is preferable. Your bees will pollinate earlier in the day and later into the evening as the house stays warm.
- Mount the house on a stable surface (wall or fence) surface, about head height (so you can watch bee activity).
- Be sure to place it near the pollen source... within 100' or so.
- Keep a mud source nearby for mason bees and non-fibrous plants for leafcutters (we'll talk about this in a later lesson)

BUMBLE BEE HOUSE

- Like the mason bee and leafcutter, a bumble bee house acts as a shelter to keep your hive dry. The house can be made of any material, painted, stained, or left unfinished. Lighter colors help reflect the sun.
- Venting holes should be screened to keep out pests.
- It should have legs so it doesn't sit directly on the ground. The legs should extend down 1"-2" to deter ants and other small pests. Placing the house directly in a bath of water prevents the ants from crawling inside.
- The roof should slope to prevent water from leaking through.

Crown Bees has the BumbleBarn, and a paintable pine wood house.

Lesson #2:
Houses to Shelter Nesting Homes

Location

1. A calm spot with afternoon shade is optimal for your bumble bee hive. The height should be between 3' to 5' above the ground. The entrance can face any direction, but preferably away from winds. If your location is windy, lower the bumble bee house.

2. Ensure that there is a clear space immediately in front of the hive for easy exit and entry.

3. Locate your bumble bee house where there will be afternoon shade. If not, your bees will bake if they sit in the hot afternoon sun.

4. Do not locate your nesting bumble bees just in front of a bird feeding station. The bees will quickly become tasty treats! Rather, ensure that they are out of line of sight of each other. This also holds true for mason bees and leafcutter bees.

Next up: Nesting holes

Lesson #3: Nesting Holes

You've selected your bees and mounted the bee house. Now it's time to set up the bee nursery. We call it a nursery because this is where your female bee will lay her eggs. Typically, one female will lay 15-20 eggs in her lifetime. This is an average for both mason bees and leafcutters. Bumble bees are discussed separately.

Nesting Hole Basics

Your bee needs a hole be big enough to get into, and deep enough to protect her laid eggs from predators. She prefers a snug fit over larger holes. You will notice that since mason bees are larger than leafcutter bees, her holes are also larger.

Nest-building materials must also be easy for you to remove at the end of the pollinating season. You'll want to harvest and overwinter your cocoons to get healthy offspring for next season.

We want mason bees to thrive, not just survive from season to season. If you can't harvest your cocoons in the fall (because you can't get to the cocoons), you're destined to fail over a short period of time. Inattention to cocoons leaves them vulnerable to predators, disease and environmental elements.

3 Tips for Nesting Hole Success

Go Natural

We believe it's wisest to use natural holes upon which your developing cocoons can lay. Examples of what we use are recyclable paper, reeds or wood trays. These materials allow wicking of excess moisture from the bee's carefully placed pollen/nectar. This helps prevent cocoons from molding. Bamboo, although plentiful, doesn't allow wicking and is too strong to open for harvesting and cleaning.

Lesson #3: Nesting Holes

3 Tips for Nesting Hole Success (cont.)

Size Matters

The size of the hole matters. Small bees prefer small holes, larger bees need more space. The larger spring mason bee uses about a 5/16" (8mm) diameter hole and about 6-8" (15cm) long.

Summer bees generally prefer smaller holes, but about the same length as spring mason bees. Our Variety Summer Nesting Pack includes small and large reeds and paper tubes with holes sized 6-8mm. This accommodates different sized bees who might take up residence in your bee house.

You may also find that your holes attract beneficial parasitic wasps. Generally harmless to humans, these good guys/gals help gardeners and farmers naturally control crop damaging insects. They feast on grubs in lawns as well as garden-destroying aphids, cabbage loopers, caterpillars, cutworms, tomato hornworms and woodboring beetles. So include some extra holes for beneficial parasitic wasps.

Our reusable wood trays, are a great long-term buy, but a bit more expensive up front. Our bees love the trays because they retain the nesting scent from previous seasons (smells like home). We love them because they are reusable and are extremely easy to open and clean for harvesting. We have both summer and spring trays with different hole sizes.

Avoid using drilled blocks of wood

They make simple nests, but you can't open them to harvest your bees. Nor can you clean them and remove parasites.

Both the mason bee and leafcutter will only lay eggs in her own nest or hole. While she doesn't mind neighbors, there is no community raising of bees. Here are some tips to make it easier for her to find her hole in your bee house.

Lesson #3: Nesting Holes

Prepare the Nursery

Mason and Leafcutter Bees

- Create a messy palette from the nesting holes. Uniform holes evenly placed in the house make it difficult for the female to find her hole. Instead, insert the materials in an irregular design by pulling some tubes or reeds out from the group.

- Our wood trays are burnished so the holes do not look alike. We also position the trays at different lengths to create a visual roadmap for the bees.

- Place sticks/twigs or small objects between the tubes or trays to give her a "homing" device.

Now your house and nursery are ready.

Bumble Bees

- Once you set up the hive in your bee house, there is not much else to do for your bumble bees. As a general rule, a hive can pollinate an acre of bloom. That said, one hive should be sufficient for the typical yard.

- Towards late summer, the queen's control over her hive is reducing.

- She lays 3-5 queens and males for them to mate with. The new queens will begin looking for new homes.

- Only the queens hibernate for the winter.

Lesson #3: Nesting Holes

Placement of cocoons

Mason bees

Place cocoons behind or on top of the nesting holes when daytime temperatures reach about 50-55°F (13°C), and blossoms are appearing. When the bees emerge, they'll remember where their house is and will come back to build a nest.

If your spring is late, you can keep your hibernating cocoons within a refrigerator, but be wary of dehydrating your cocoons. Place your cocoons within a HumidiBee and remember to add water once a month. If bees emerge within your refrigerator, add a cotton ball with 50/50 honey/water into the HumidiBee and place the bees on top of it. Your bees should be released before May 1st as their stored fats that they hybernated on are nearly depleted.

Leafcutter bees

Use the same placement of cocoons as that done for mason bees. However, place this summer bee out when the daytime temperature is about 70° F (21° C). You will need to allow time for them to emerge from incubation. Directions will be included on how to do this with your leafcutter order. You can also read more about incubation on the Learn page.

Bumble bees

Wild queens are just starting to show up when temperatures reach high 40's and low 50's. They are beginning to gather nectar for starting their new hive. Depending on where you live, you may be able to capture a queen and place it within your own bumble bee house. More conveniently, you can also buy bumbles from Crown Bees.

Next Up: Importance of mud and non-fibrous leaves for the nest

Lesson #4:
Importance of Mud and Leaves

Mason bees need mud

Lack of clayey mud is the number one reason for failure. The spring mason bee is very picky about her mud. It's an important ingredient for creating a separation between each egg she lays in her nesting hole.

She looks for moist clayey-mud that's easy to carry in her mandibles (note picture on right how she carries brown mud).

In the nest, each egg and pollen chamber is tightly sealed with packed mud. She repeats this process for each of the 5-6 eggs she lays in a hole. Once she has run out of room in the hole, she seals the opening of the nesting hole with an extra thick plug. Her babies are now protected while maturing.

As a gardener, you can keep your mason bees in your yard/garden be supplying moist mud pies. Let's look at it from both the gardener and mason bee perspective. It's actually quite simple to get into the mind of a mason bee.

Lesson #4:
Importance of Mud and Leaves

Picture this beautiful yard:

Gardener View: a large lawn, beauty bark, gravel accents and wonderful sidewalks.

Mason Bee View: Where's the mud? She needs just a small amount of moist, clayey mud within 50-100 feet of her nest. If she can't find moist mud in your yard, she'll build her nest somewhere else. If the mud dries out, she'll leave.

The gardener loses! No awesome pollination.

We've analyzed mud compositions from multiple mason bees and found these things in common. Their tiny mandibles need mud that's smooth and moist but sticks together for transport to the nest. Think of it as a mud pie you may have made as a child. In their gathered mud, we find these results:

- No gravel
- No beauty bark
- No humus
- And no grains of sand
- All material was smaller than a grain of sand

Your mud should remain moist enough that the bee can pick it up and pack it into her hole. **A shovel-sized hole in the ground is the easiest solution.** If you don't have clayey-mud available in the hole, look for mud elsewhere along the inside of rivers or streams. Crown Bees has dried mud available in our store. Place this mud on a sidewall of the small hole you dug. The ground needs to remain moist near this hole. If you have moist mud naturally, your bees will find it!

Lesson #4:
Importance of Mud and Leaves

Leafcutter bees need leaves

Here's the typical cycle for the female preparing the nest and laying eggs.

- Quick foraging for food (nectar provides energy!) and locating an appropriate nesting hole (2-3 days)
- Finding and marking her specific hole (this way, she knows which hole is hers and so do the other females)
- Collecting leaf bits to make a partition at the back of her chosen hole. Then, if it is a nice day with plenty of bloom available, she makes a mad, day-long sprint of pollen/nectar gathering (15-20 trips).
- Laying an egg a day on each nectar and saliva-moistened pollen loaf, then creating a leafy partition for the next egg. Leaves of rose bushes are favored as well as other non-fibrous plant leafs. You'll notice perfectly round holes in the leaves. Don't be alarmed. A few of these cuttings won't harm your plants

The above steps are repeated until reaching the end of the nesting hole.

If not eaten by predators, or killed by pesticides, she'll live about 6 weeks, completing about two "holes" with an average of 15 total egg chambers, each filled with pollen/1 egg/leaf.

Keep your leafcutter and mason bees happy and you'll be rewarded with a healthy garden yield and flowering plants. Visit the Learn page for details on this section, and videos.

Next Up: Harvesting is vital to bee health

Lesson #5:
Harvesting is Vital to Bee Health

Harvesting Mason Bees

This lesson only applies to mason bee harvesting. This is the bee we need to increase in population for sustainable pollination of spring fruits, nuts and plants. Following the tips for harvesting, you'll increase your bees for next season, and hopefully will have excess bees. We'll buy these back under our Bee BuyBack program in exchange for nesting holes. Your bees will be rehomed with other gardeners and, as the bee population grows, with commercial growers.

Why harvest?

What happens when you never change the oil in your car? Without maintenance, your car's life expectancy is greatly shortened.

Similarly, without annual maintenance (about 30 minutes) your bees will begin to die off. All sorts of pests accumulate over time within the nesting holes. You'll reintroduce the pests the following season as the bees try to emerge. Then later, your holes won't open since the bees within are dead.

Harvesting requires nesting holes that you can open up, like paper tubes, reeds or reusable wood trays. Drilled blocks of wood, bamboo and plastic holes won't work because you can't open them for harvesting.

Spring mason bees are harvested after the bees have completely developed within the cocoons. This typically occurs in late September/October.

We provide easy steps for cleaning your cocoons, and taking care of mites and pests. We'll help you know exactly what to do in our October Bee-Mail. Our website also has instructions and suggestions, such as hosting a harvesting party.

Next Up: Who is Nesting in Your Yard?

Lesson #6:
Who is Nesting in Your Yard?

Of the 4,000 species of bees in North America, 130+ of them are “cavity nesting” bees, or bees that use available holes to nest in. You’ll also find many beneficial insects, but first let’s talk about bees.

There are many “known” mason bees like the Blue Orchard, Hornfaced and Leafcutters. A host of others are less popular, though very important in our environment; Californica, Aglaia, Pumila, Ribifloris, Wool Carder and more.

The various bees emerge at different times of the season, according to where they live and what temperatures they need to fly.

Each bee species uses different materials for nest divisions: Mud for the spring bees and cut leaf circles for summer bees. Other bees use chewed up vegetation, resin from trees, cottony down from flowers or pebbles, etc.

You will also find beneficial wasps use your holes. Some will use mud and leave a very smooth surface, others will use grass stuffed into the hole. These wasps are wonderful predators to yard pests and should be encouraged as well. (You may also find a hornet queen overwinter in a hole waiting for spring to begin her new nest. Unless you don’t like them, we then encourage you to remove all holes and store them in August.)

Some bees pollinate any flower, while some mason bees pollinate specific types of flowers. What they all have in common is the need for pollen and nectar to survive, and holes to build nests for next season’s offspring. We add our own survival requirement to this list—fewer harmful chemicals in yards

Small bees use small holes. Larger bees use bigger holes. Consider setting out holes of different sizes and see what nests in them! We offer a Variety Summer Nesting Pack.

Next Up: Pesticides and bees

Lesson #7: Pesticides and Bees

As you prepare for planting, do so with a goal to create habitats for bees and other pollinators. You'll get more abundant and nutritious crops, and a lot of joy from watching the activities of your gentle native bees. Here are 5 ways to get more joy and rewards from your yard and garden.

1. Rethink the purpose of your yard.
A manicured yard is beautiful to look at, but what does it give back? It has lots of grass, beauty bark and low-maintenance plants with a few accent flowers.

a. The problem is it's a dead landscape lacking food for our bees, birds, bugs and other beneficial insects.

b. From their perspective, your lovely yard is a green desert with no ability to support their lives or their offspring.

2. Give your yard a greater purpose: Make it a pollinator oasis of flowering plants and trees rich in pollen for nutritious bee food. We need more safe havens for our pollinators, and your yard can be one of them. Add native plants that thrive in your region, instead of the more costly and less hardy hybrids. They require less work to maintain and you'll save money by less watering.

a. *Plant a garden of fruits and vegetables*; start small if you have never done it.

b. Your bees will take care of pollination, and you will reap a healthy garden yield. Eating your home grown food is a wonderful addition to your diet.

3. Be chemical wise: If you feel you must use a chemical pesticide, choose one that selectively focuses on your garden problem. Then spray wisely—in the early morning or late evening—when your bees and other beneficial insects are not active. It's not ideal, but will help protect them from direct exposure. And consider that your bees and other beneficial insects will journey to someone else's yard that is more chemical free and full of food.

a. Resist using "broad spectrum" synthetic pesticides. These types of chemicals indiscriminately kill everything in your yard—thus you are creating a pollinator dead zone.

b. What chemicals are specifically bad for bees? Unfortunately, most all research has been spent analyzing honey bees, not the 4,000 other species of native North American. We are aware chemicals impact species differently. Consider all chemicals bad for your pollinators.

Lesson #7: Pesticides and Bees

4. Try controlling garden pests with "bio-pesticides." This is a fancy term for our beneficial insects who naturally prey on pests as a food source. Many times they can safely take care of your pest problem.

a. *Lady Bug*—it's a cute predator. It eats aphids, a serious plant pest, as well as mites, white flies, and scale insects.

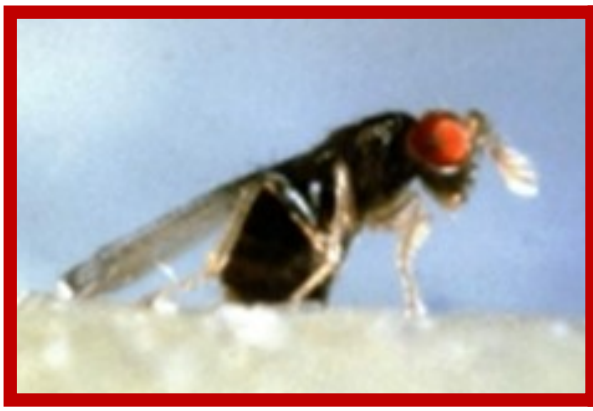
b. *Beneficial Parasitic Wasps*—These are the good guys/gals of the wasp family. They are part of a large and diverse group of insect parasites. Parasitic wasps generally are harmless to people. They get a bad reputation because they're sometimes mistaken for aggressive yellow jacket bees.

Gardeners and farmers often use these wasps to naturally control infestations of damaging insects. This organic approach eliminates the use of harmful chemicals and insecticides. These insects can benefit your organic garden and help you produce healthy garden yields.

Smaller beneficial wasps feed on pests like grubs that damage lawns. Others feast on creepy-crawlies in the garden like aphids, cabbage loopers, caterpillars, cutworms, tomato hornworms and wood boring beetles.

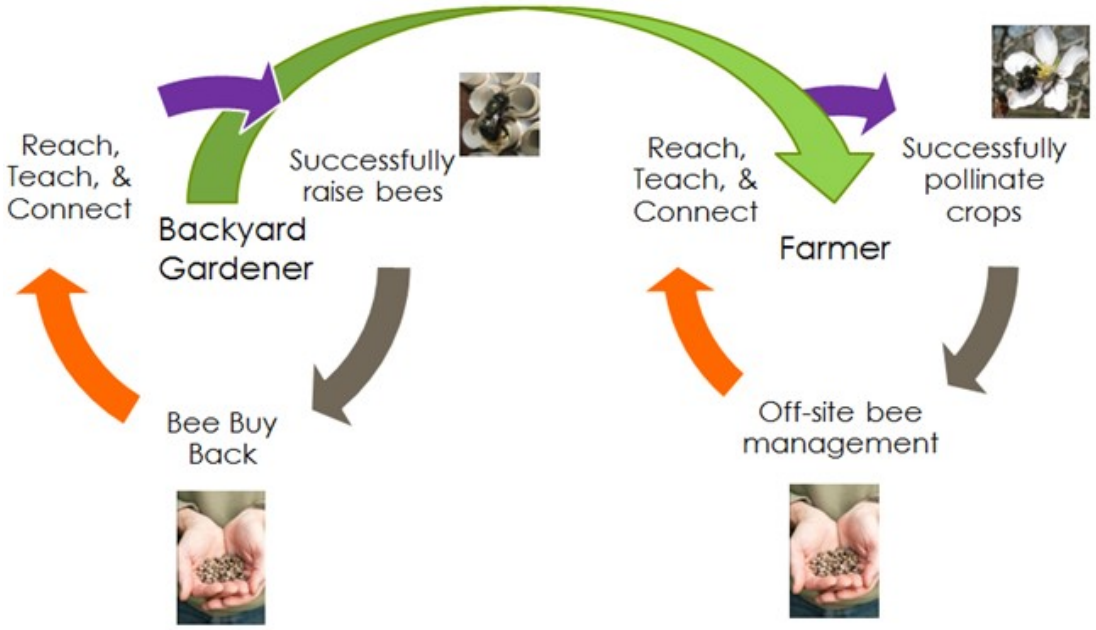
Some of these beneficial wasps nest in holes during the summer months. *You can help them by including a few extra nesting holes for their use alongside your leafcutter bees.*

Seek balance: If you remove all the pests, you're going to lose your beneficial insects because they will starve and seek prey elsewhere. A few pests aren't bad; it's about a balanced approach to pest management. *A healthy yard needs pests for balance.*



Next Up: BeeGAP Program

Lesson #8: BeeGAP Program



This is the final lesson in this course. The BeeGAP (Gardeners Adding Pollinators) program is quite simple. It is designed to increase the population of the overlooked mason bee, an amazing pollinator for spring fruits, nuts and plants. As a gardener, we want you so successful raising mason bees that:

1. You have too many mason bee cocoons in the fall.
2. You have so much garden yield, you share with others the value of adding mason bees.
3. You send your excess cocoons to us as part of the BeeGAP network.
4. The combined cocoons, from regions around you, are provided to nearby qualified orchards for pollination

Our Bee Buy-Back program started in 2013. This program has consistently increased the bee population each season so that we have more cocoons to rehome with other gardeners. A portion of these bees were successfully used in trial orchards. We're helping farmers understand how to pollinate with native bees in addition to honey bees.

We have many gardeners teaching others about mason bees. We have supplied them with presentations and teaching aids. If you are interested, please visit our Bee Active page. The presentation is easy as we provide you with all notes, an audience handout and frequently asked questions (FAQ's).

Spread awareness! These gentle bees are vital to protect our future food supply.

Lesson #9:
Our Future Plans

Crown Bees intends to reshape the future of how we grow our food whether it's grown in our backyard or farm/ orchard.

We rely too much on the honey bee to pollinate crops. While it is a wonderful honey-producing bee, Crown Bees believes we should mitigate our risk and consider additional bees with our food supply.

We need to consider the sustainability of our food supply. We need to be wise about how we grow our food, control pests, and use soil and water so that no additional chemicals are needed. This won't be easy to change.

Enter BeeWithMe.net

This revolutionary website will hopefully be a tool to help communities become more sustainable. We want this website to allow like-minded individuals and communities to organize and collaborate for a sustainable future — it is not restricted to just those raising bees. By bringing gardeners, farmers, clubs, associations, academia, and other communities to one site where they can learn from each other, we hope this approach will begin to create change.

Through the BeeWithMe network, you'll be able to find people with common interests and locate them. Take butterflies for example. Suppose there are 22 people who are very interested in butterflies in your local community. Now, you're able to find them on the BeeWithMe maps and communicate with them through forums or directly messages. Meet in a local nursery. Create a club. There are many paths.

We want to reward good behavior. Did you like someone's answer or help? Sprinkle them with pollen. Is someone out of line and abusing the website's intent? Toss a little pesticide on them. By looking at people's pollen levels, you'll know who to rely on. You could even become the expert people come to.

The website won't have all of the expertise you'll need in one spot. Rather, it can be a place to reach out and find referrals if you need some high level expertise. Share the knowledge you learned to your community.

Crown Bees expects this website to be a wonderful means to create change in our food supply. In years to come, we'll get micro farmers and farmers connected so that you are aware of who's doing what to provide your food.

Bee Active. Learn more at BeeWithMe.net.

Crown Bees™

The Gentle Bee Company

Thank you for taking this mini course.
We wish you success in raising your bees!

The Crown Bees Team

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