Illinois

Ag Mag

An agricultural magazine for kids

Apple

Apple Production

Thirty-six states grow apples to sell, including Illinois. An estimated 7,500 U.S. apple growers manage orchards covering 379,000 acres, and produce 221 million bushels per year. Most of these apple orchards are in our northern states, such as Washington, Michigan, and New York. Washington state has the best climate in the world to grow apples because of its warm days and cool nights. Of all the apples grown in the United States, half are sold fresh and half are made into apple sauce, apple juice, or dehydrated apple products.

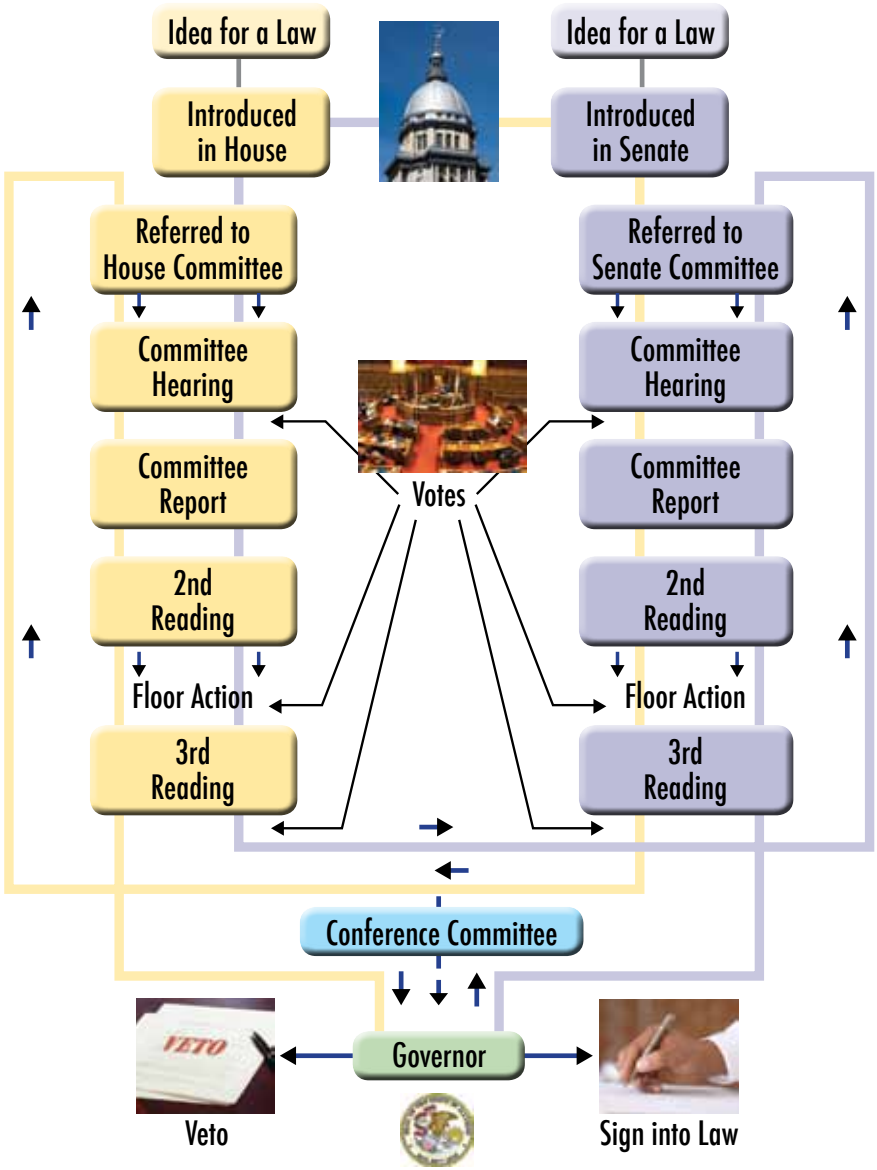
The Legend of Johnny Appleseed

The legend states that John Chapman, who was born in Massachusetts in 1774, planted more than 10,000 square miles of orchards. He began in Pennsylvania and while traveling barefoot and using a saucepan for a hat, spread the word about the importance of apples in people's diets. He died in 1845 at the age of 71 in Fort Wayne, Indiana. Everyone called him "Johnny Appleseed."

Americans eat an average of 18 pounds of apples per year.

How a Bill Becomes a Law

In order for the GoldRush Apple to become our state fruit, the idea had to go through the legislative process. So how does a bill become a law? It starts out as an idea. A fourth-grade class of Woodlawn Elementary School initiated this legislation after learning that Illinois was one of the few states that did not recognize a state fruit. After doing research, they contacted Senator John Jones, who was the primary sponsor of the bill. Take a look at the graphic v to see how a bill becomes a law in Illinois.



The State Fruit: The GoldRush Apple

Do you know all your state symbols? State Public Act 95-0328 officially made the GoldRush Apple Illinois' State Fruit on August 21, 2007. The GoldRush Apple is a sweet-tart yellow apple that was developed through a disease resistant apple breeding program. The GoldRush is a cross between a Golden Delicious and a lab variety apple called Co-op 17. The GoldRush Apple is a hybrid apple because it is a cross between two different varieties of apples. One significant result from this cross is that the GoldRush has a long shelf life, making it available to store longer.

How did the GoldRush get its name? Scientists named the apple based on its golden, bronze color and the "rush" of flavor you get from the first bite. The GoldRush is a great apple to grow because it has qualities that make it disease resistant to apple scab, fire blight and apple mildew, all common diseases that can wipe out an apple crop.

Top Varieties of Apples

What's your favorite kind of apple? There are nearly 100 varieties grown in the United States, but 15 popular varieties account for more than 90 percent of production. Listed below are a few Illinois favorites.

Red Delicious – bright to dark red and sweet-tasting

Golden Delicious – golden to light yellow-green, keeps its shape and flavor during baking

Gala – crisp, yellowish-white, sweet flesh with red or golden skin with red striping

Fuji – super sweet, super juicy, super crisp, great for snacking

Granny Smith – green, crisp, great for salads and fresh eating

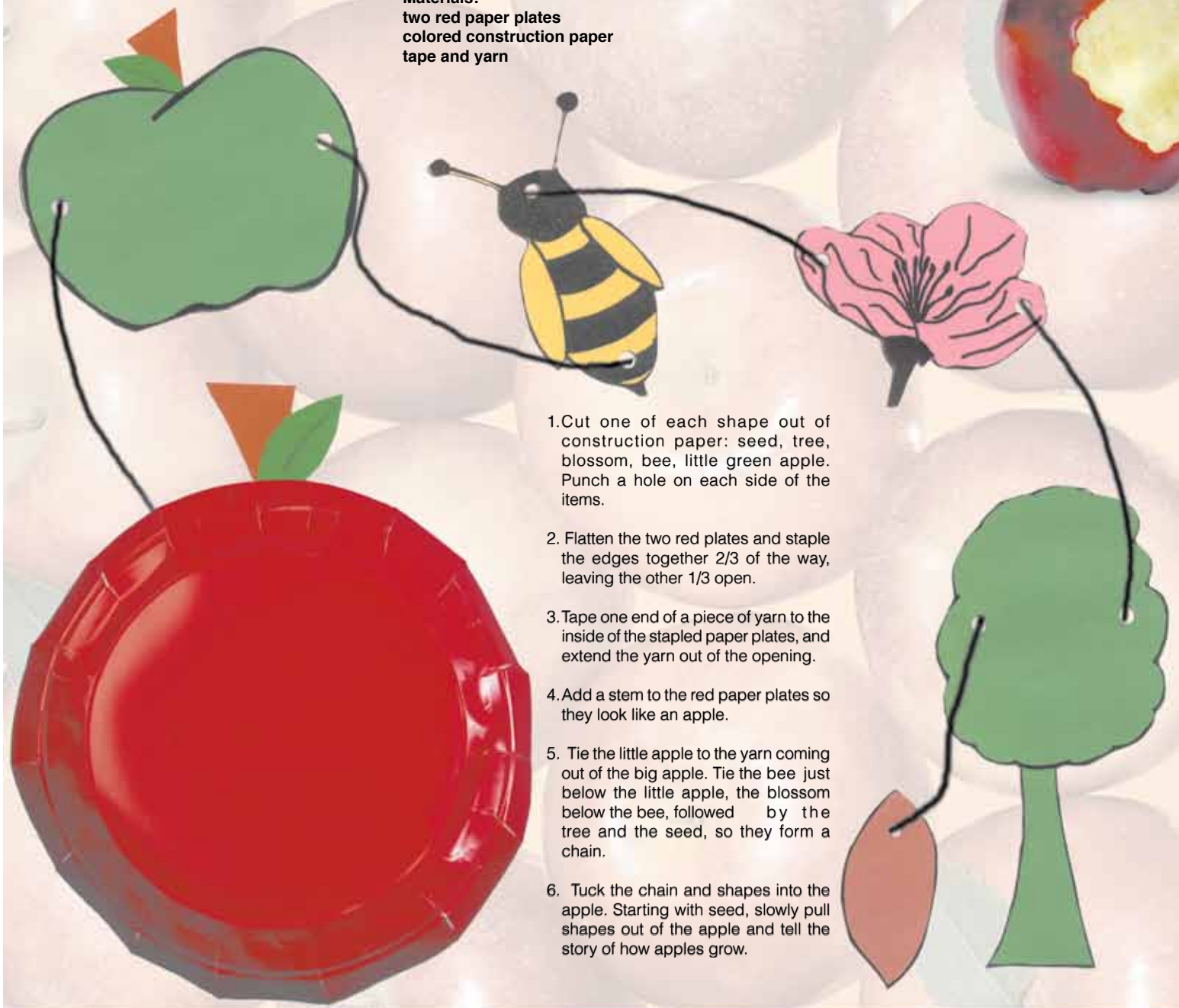
GoldRush - golden, bronze apple with a sweet flavor, great for fresh eating

All it Takes is a Bee

Apple blossoms, which are white or pale pink, appear on apple trees in the spring. Unknowingly a bee takes pollen, made mostly of male cells, from the stamens of one apple blossom, and leaves it near the pistils, made of female cells, of another apple blossom. This is called pollination. When the apple blossom is pollinated, it develops into an apple. Since every apple seed is made of its own unique set of genetic material, you can plant 10 seeds from a single apple and get 10 entirely different kinds of apples. Bees are important for pollination, so some apple growers place beehives in their orchards.

Create An Apple Chain

Materials:
two red paper plates
colored construction paper
tape and yarn



1. Cut one of each shape out of construction paper: seed, tree, blossom, bee, little green apple. Punch a hole on each side of the items.

2. Flatten the two red plates and staple the edges together 2/3 of the way, leaving the other 1/3 open.

3. Tape one end of a piece of yarn to the inside of the stapled paper plates, and extend the yarn out of the opening.

4. Add a stem to the red paper plates so they look like an apple.

5. Tie the little apple to the yarn coming out of the big apple. Tie the bee just below the little apple, the blossom below the bee, followed by the tree and the seed, so they form a chain.

6. Tuck the chain and shapes into the apple. Starting with seed, slowly pull shapes out of the apple and tell the story of how apples grow.

Healthy Bites

Apples contain Vitamin A, Vitamin C, Vitamin B6, and Vitamin B12, along with thiamin and niacin. They are rich in pectin which is known to reduce cholesterol. Apples contain as much fiber as a whole bowl of most popular cereals and are also good for diabetics. The soluble fiber in apples works to regulate blood sugar, and prevent its sudden fluctuation.

Patterns can be found at **www.agintheclassroom.org** under the "Teachers Resources" section called "Interest Approaches (Make-n-Takes and Other Lessons)."

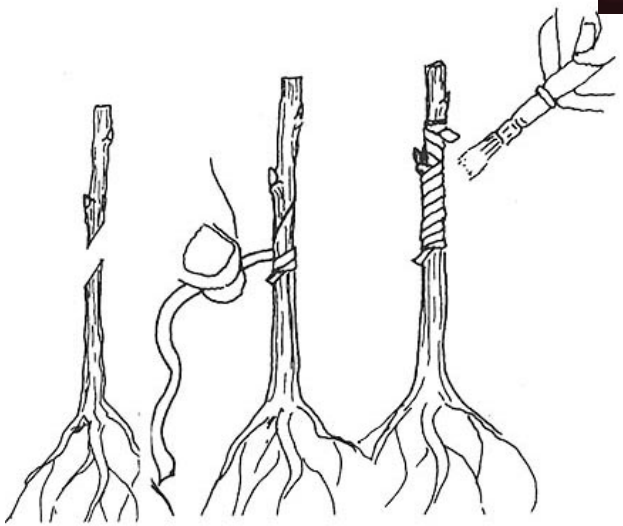
A Budding Idea

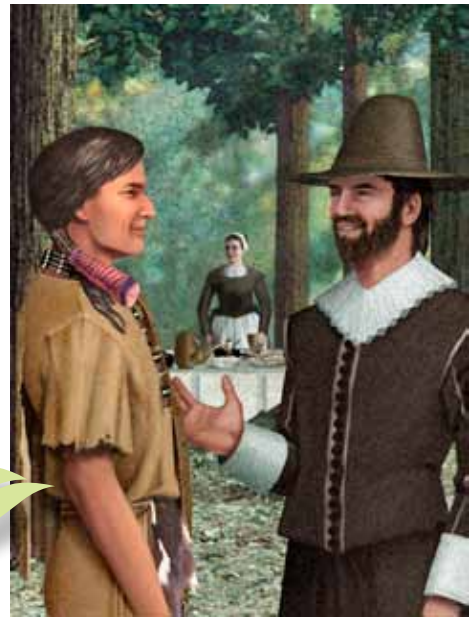
Apple trees are difficult to grow from seeds. It takes about 15 years for a tree grown from a seed to produce an apple. Most apple trees are grown by grafting or budding onto already existing rootstocks.

There are approximately 7,500 varieties of apples. Growers take the best parts from different trees and stick them together with glue and tape. This is called grafting. Many growers graft the branches of a desired type of apple tree to a rootstock to produce a new plant. The rootstock includes a section of tree roots still attached to a bit of the tree trunk.

Sometimes growers use budding instead of grafting. In budding, one bud is taken from a tree and attached under the bark of the rootstock with tape or glue. New trees created by grafting or budding live in a protected nursery for about twelve months before they are replanted in an orchard.

Growers are always trying to make new and perfect apples. They continue to combine the genetic material contained in the branches, buds, or rootstocks to adjust the taste, color, texture, shape, and growing season of the apple.





Where Did Apples Come From?

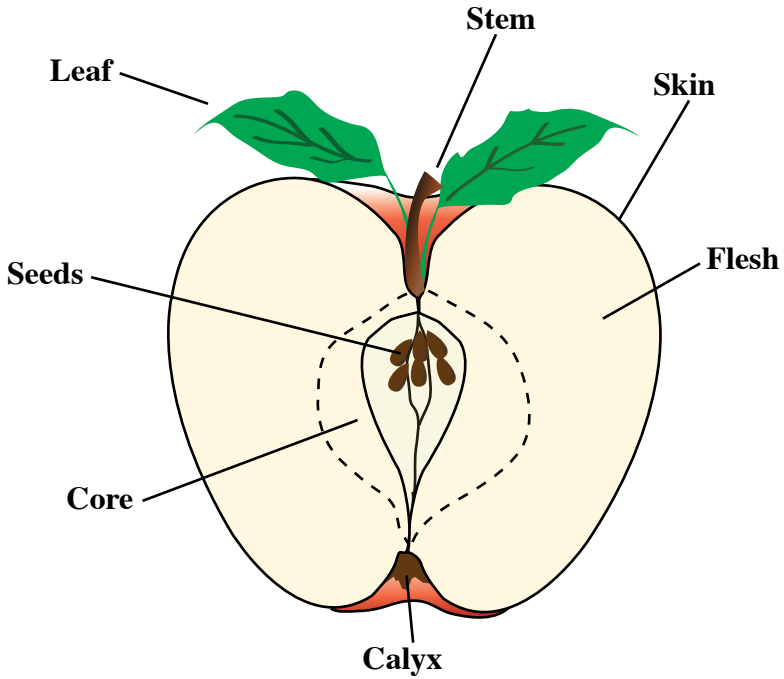
The apple was brought to the United States by the Pilgrims in 1620. While the Native Americans taught the early settlers how to grow corn and vegetables, the settlers taught the Native Americans how to grow apples with apple tree seeds and seedlings. They used apples to make apple juice, apple cider, dried apples, apple butter, and vinegar. The apples were even food for the pigs, cows, and horses.

During the long, cold winters, the settlers could not grow fresh fruits and vegetables. So, instead they found ways to preserve them. The apples were peeled, cored, and hung out to dry on a big net or string tied to trees or posts. The warm air would evaporate the water inside the apples, and they would be dried in a few days.

Apples All The Time

Apples are harvested in late summer and early fall; however, we can buy fresh apples from the store all year. This is due to Controlled Atmosphere Storage. Controlled Atmosphere Storage regulates the temperature, oxygen, carbon dioxide, and humidity in the storage room. Each variety of apple requires different conditions so computers help keep the specified conditions constant.

As an apple ripens, the starches change to sugar, and the apple takes in oxygen and gives off carbon dioxide. This is the respiration process of an apple. In Controlled Atmosphere Storage, the respiration process is slowed down so the apples do not ripen quickly. Most varieties of apples can be stored for 12 months or longer. Because of Controlled Atmosphere Storage, we are able to enjoy apples all year round.



Starch It

Apples naturally contain a carbohydrate known as starch. As apples ripen, the amount of starch decreases as it is converted into sugar. Starch turns into sugar near the center of the apple or the core first. The starch conversion works its way out towards the skin of the apple. Apples are ripe when most of the starch becomes sugar. An iodine test is a simple way to see whether an apple is ripe. Try this starch test to see if your apples are ripe. Did you know you can tell how sweet an apple is by how much starch is in it?

Materials: brown iodine, small paint brush, an apple, a knife

1. Have an adult cut an apple in half for you.
2. Brush some brown iodine on the cut surface.
3. If your apple turns a dark purple color, then there is still a lot of starch in the apple. If your apple only has a small amount of purple then it has only a little starch. A ripe apple will have less starch because most of it has been converted to sugar.

Apple Vocabulary

Fruit: the edible part of a plant developed from a flower.
Nectar: the juice of a fruit that attracts the insects or birds that pollinate the flower.
Flower: the blossom of a plant.
Petal: brightly colored parts of a flower.
Leaf: green part of plant that helps collect sunlight and nutrients for the plant.
Stem: the stalk that supports a leaf, flower, or fruit.
Pollen: the yellow powder inside a flower which fertilizes other flowers.
Calyx: the stubby brown nub at opposite end from the apple stem that is the remaining parts of the apple blossom.

Career Corner

Eckert's Family Farm

Apple Producers
Belleville, Grafton & Millstadt, Illinois

Describe your business.
Eckert's is the largest family-owned and operated pick-your-own orchard in the United States. We currently grow strawberries, peaches, blackberries, apples, pumpkins and Christmas trees. Today, the sixth and seventh generations of my family oversee retail, entertainment and farming entities located in Belleville, Grafton and Millstadt in southwestern Illinois.

How did your family get into the apple business?
It started in 1837 when Johann Peter Eckert immigrated here from Europe. In true German tradition, his family began growing fruit trees here in Illinois in 1862.

Originally, we grew apples for wholesale. We sold them to manufacturers to make juice, cider and sauce. But Washington state took control over that market until there wasn't a lot left in the wholesale apple business. So In 1964, we started pick-your-own apples at our Grafton farm as a more efficient and economical way of harvesting our apples for retail. As it turns out, people found value in picking their own fruit right from the source. They see it as a recreational activity; a return to what my family calls the "good life." It was on that day that we stopped selling apples and got into the memory-making business.

Your orchard is a family business. What do you enjoy about it and what are the benefits of working with family?
I love seeing photos of my great-great ancestors working the same land that my kids are growing up on today. Our family history is what makes us different from other orchards. Other farms can grow the same fruit as us, but they can't duplicate our rich history of farming this land for over 150 years.

Working with family keeps you close. On a day-to-day basis, I'm in touch not only with my immediate family members, but aunts, uncles and cousins, too. Our mission here at Eckert's is to create family memories. The benefit is we get to keep creating our own family memories while we're fulfilling that mission for our guests.

How do you market your apples and produce to the public?
Many families have been coming to Eckert's for generations. It's amazing how often we hear, "I used to come here with my grandparents and now I'm bringing my own kids." In that way, the operation keeps itself going through those ongoing family traditions. But we also realize the need to keep up with current marketing strategies so we can further grow our business. Our marketing efforts primarily consists of email marketing, on-site promotions, social networking, as well as some media advertising. Of course, we have also built and maintained relationships with our surrounding communities, chambers and tourism bureaus.

This Ag Mag has been provided by the IAA Foundation

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Illinois Department of Agriculture

To learn more about Agriculture, visit us at www.agintheclassroom.org, or contact your County Farm Bureau® office or Illinois Agriculture in the Classroom, Illinois Farm Bureau®, 1701 Towanda Avenue, Bloomington, IL 61701.

Paul & Joyce Curtis

Apple Producers - Champaign, Illinois

How are apples grown at Curtis Orchard?
Our apple trees are semi-dwarf (about 12-15 feet tall). We begin pruning the trees the first of February to control the size and to open them up for light and air penetration. Just prior to bloom we move beehives into the orchard for improved pollination. In June, we actually trim a few apples off the trees. The apples left on the tree can then grow bigger because there's less competition for nutrients. Harvest begins in late July and continues through late October for the late varieties.

What types of products do you make from the apples?
Our number one apple product is apple cider. Other apple products include apple donuts, applesauce, apple butter, and caramel apples.

How did you become involved in apple production?
We started our orchard in 1977 by planting 725 trees. It was a dry year and we watered the trees by a hose to keep them alive. By attending fruit growers meetings, reading books and pamphlets on tree pruning and tree care, we learned to prune the apple trees and care for the orchard. Our orchard has grown to 5,000 trees on 24 acres with approximately 30 different varieties of apples.

What is the best part of your job?
We are partners with our daughter and son-in law. They have five children and all work at the orchard. We enjoy the opportunity to work with our family. We also enjoy working with our employees and appreciate all our loyal customers and teaching many children and adults who come here on field trips.

Dr. Mosbah M. Kushad

Food Crops Specialist - University of Illinois

What are the different types of activities you perform?
I am involved in many research and outreach activities aimed at helping the Illinois fruit and vegetable industries produce higher quality, safer-to-eat foods. For example, I help coordinate the training schools for the fruit and vegetable industries in the state. I also coordinate the fruit research farm at the University of Illinois. Additionally, I help train people who produce cider, so they are able to make better cider.

What are some of the studies you have done?
I have done some studies on identifying apple rootstocks that adapt most effectively to Midwest climates, and on identifying improved apple varieties. I am also researching ways to preserve nutrients of fruits and vegetables during storage and shipping.

What types of subjects from school have helped you the most at your job?
My graduate degrees are in horticulture, with an emphasis in biochemistry and physiology. I found biology, chemistry, mathematics, and computer science most helpful. A good education is the key to any successful career.

Where do you see the apple industry headed in the next 10 years?
Consumers will continue to prefer apples for their health and nutritional qualities. The most significant change will be an increase in small direct-market or pick-your-own farms. These small farms offer a unique atmosphere for the whole family, and often include a petting zoo, arts, crafts, coffee shops, and tours of the orchard.