

The

REYNOLDA GARDENS
of Wake Forest University

Fall
2014

Gardener's

JOURNAL

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A-“maize”-ing

by John Kiger, RGWFU assistant manager

What does ‘Stowell’s Evergreen,’ ‘Golden Bantam,’ ‘Blue Jade,’ and *Sciurus carolinensis* have in common? The first three are varieties of corn I grew at Reynolda Gardens this year, and the fourth is the Eastern Grey Squirrel, which ate eighty percent of the corn.

Typically, corn is not grown in the 1921 “Fruit, Cut Flower and Nicer Vegetable Garden” designed by Thomas Sears, because it is considered a field crop. In my twenty years of employment at Reynolda Gardens, I have planted corn three times. My first two plantings were of ‘Golden Queen,’ and both were very productive. This year I selected the three varieties mentioned above for two reasons; I wanted to cross-pollinate the ‘Stowell’s Evergreen’ with the ‘Golden Bantam,’ and the ‘Blue Jade’ captured my attention simply because of its unique color.

‘Stowell’s Evergreen.’ Just the sound of the name might lead one to think this is a green colored corn, but it is not. ‘Stowell’s Evergreen’ is a white, sweet corn that was developed by Nathaniel Newman Stowell in 1848, when he crossed ‘Menomony Soft’ corn with ‘Northern Sugar’ corn. Typically taking eighty to one hundred days to reach maturity, the stalks can reach heights of

CROSS-POLLINATED
‘STOWELL’S
EVERGREEN’ AND
‘GOLDEN BANTAM’



eight to ten
plus feet
and bear two
to three ears
per stalk.

The seeds of this corn were released commercially in 1856 but, surprisingly, not by Mr. Stowell. As the story goes, Mr. Stowell sold two ears of seed corn in 1855 to a close friend for four dollars. Of course, he expected the seed would only be for “personal use.” However, this close friend approached the seed distributor Thoburn and Company and sold the two ears of corn to them for \$20,000. Thoburn and Company released the seed to the public in 1873 for twenty-five cents per pint.

‘Golden Bantam’ is a yellow, meaty, sweet corn that was a favorite of William Chambers of Greenfield, Massachusetts, during the mid-1800s. At that time, yellow corn was basically considered feed corn for livestock. It was not until Mr. Chambers passed away that a friend found the seed and approached W. Atlee Burpee Company. They purchased the seed, and the Burpee Catalog of 1902 featured ‘Golden Bantam’ for the first time. Within a few years, yellow corn was a public favorite.

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Make Room for the Nuthatches, Part 2

by Michelle Hawks, RGWFU horticulturist

In the last issue of the *Gardener's Journal*, I focused on the decline of the Brown-headed Nuthatch, *Sitta pusilla*. The North Carolina Audubon Society has a goal of installing 10,000 nesting boxes for the nuthatches by 2015, and they are half-way there. Reynolda Gardens participated in this project by placing ten nesting boxes throughout the property.

So why put up 10,000 nesting boxes over the state of North Carolina? The Brown-headed Nuthatch population has been in decline over the last thirty-five years, which has caused the birds to become a high priority for conservation in the Piedmont region. As I stated in my first article, this decline is due to logging, forest fires, and new house construction in their native habitats.

Understanding bird conservation means understanding ecology. Webster defines ecology as "a science that deals with the relationships between groups of living things and their environments." Birds are a huge part of the ecosystem and serve many important purposes including insect and rodent control, distributing seeds, and being a food source for predators. Scientists and volunteers have been working for years to try and understand the ecology of nuthatches. While studying the Brown-headed Nuthatch, scientists discovered that bluebirds often seek out the same nesting boxes as the nuthatches. Nuthatch and bluebird boxes are exactly the same, except the nuthatch box has a smaller entry hole. By using a metal excluder, which you can purchase for about \$3.50 at Wild Birds Unlimited or Wright's Backyard Birding Center, you can protect the nuthatch nesting box and discourage bluebirds from using it.

While the natural habitat for the Brown-headed Nuthatch is mature pine forests, studies have shown that they adapt well to open suburban areas. This is very important information for scientists and volunteers working for the Bird-Friendly Communities project, which focuses on placing nesting boxes in areas where people live and work. Audubon North Carolina received a \$40,000 Toyota TogetherGreen Innovation Grant to expand the Bird-Friendly Communities project across the state, and nuthatches are now included. The project focuses conservation where most people live, in the suburbs and towns, and it gives birds the opportunity to succeed in their native habitat. Not only will it help the birds, but it will bring people of all ages and backgrounds to work together towards a common goal.

The Toyota TogetherGreen Innovation Grant funds many community-based conservation projects. They "seek organizations within the Audubon network that are working with partners in their communities, and that have the passion, commitment, and vision to move people to take action and achieve lasting conservation results." In 2014, Toyota TogetherGreen gave out twenty grants nationwide, ranging from \$5,000 to \$80,000.

The Reynolda Gardens staff was thrilled to participate in the Bird-Friendly Communities project. Back in early March, Lee Williams and Phil Dickinson of Forsyth Audubon helped us install the boxes around the Gardens. Forsyth Audubon has made weekly visits to the boxes during this year's breeding season, which was from May through June. While monitoring our nesting boxes, we found that only one had the Brown-headed Nuthatch, while chickadees had claimed the others. The box with the nuthatches was also an unlikely habitat for them, since it was in the meadow near the road with no surrounding pines. Audubon representatives have also noticed them nesting in a dead snag at the edge of Lake Katharine. It may take two or three years for

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A-"maize"-ing

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'Blue Jade' was another interesting choice. Specific information on this variety is extremely limited, unless you count garden bloggers who have grown it in the past. My experience with this miniature corn plant, which is excellent for containers, is that it reaches a height of three feet and produces three to six ears per stalk. At maturity, the ears of corn are six to seven inches long with purplish-blue kernels. The kernels will surprise you by turning a deep jade blue when boiled.

My goal this year was to educate myself by cross-pollinating the 'Stowell's Evergreen' with the 'Golden Bantam.' This was really not difficult. I planted a total of six rows approximately thirty feet long. Three rows of 'Stowell's Evergreen' and three rows of 'Golden Bantam' were separated by three rows of okra. Generally, corn crops are separated by acres and, sometimes, miles to prevent them from cross-pollinating.

As corn matures, it produces tassels at the top, which are the male part of the plant. The actual ears are the female part of the plant. The tassels produce anthers that contain the pollen needed to produce corn kernels. As the anthers mature, wind disperses the pollen, which drifts onto the delicate silks. When pollinated, each silk will produce a single kernel of corn.

Hand pollination is done to ensure fully pollinated ears or to cross varieties. Crossing the two varieties was my goal. As the anthers of the 'Golden Bantam' began to disperse pollen in early July, I pulled the stalk down, placed a bag over the entire tassel, and shook lightly. With the pollen collected, I used a small paint brush to coat the silks of a few ears of corn on the 'Stowell's Evergreen' and tagged them.

Toward the end of the month, most of the corn was devastated by squirrels. Fortunately, they began their feeding frenzy on the 'Blue Jade,' which was planted on the east side of the garden. I had only planted one short row, but I was looking forward to harvesting and cooking blue corn. It took a few days for them to clean us out of 'Blue Jade' and, as a result, I harvested a grand total of one ear. It was a young ear, not fully developed, but I did see signs of color!

When the squirrels finished with 'Blue Jade,' they headed for the 'Stowell's Evergreen' and 'Golden Bantam' planted on the west side of the garden. It was amazing to walk into the garden and see stripped corn cobs lying on the ground. I continued to monitor my project, and, before the squirrels could get to it, I harvested the ears that I had marked. My project was not a total loss, and the cross-pollination was quite successful. I was very surprised to find the 'Stowell's Evergreen' was now heavily mottled with yellow kernels from the 'Golden Bantam.' However, due to the close proximity of the plantings, most of the ears were likely cross-pollinated by the wind.

The total harvest of 'Stowell's Evergreen' and 'Golden Bantam' was about thirty good ears. Throughout my years of gardening, at work and at home, I have never had this much of an issue with squirrels eating corn. If anyone has any tips on how to deter them, please stop and let me know. 🌽

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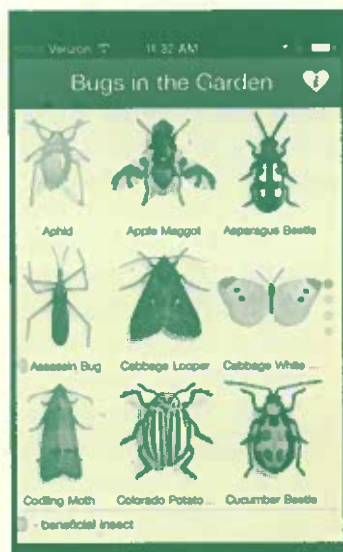
More Useful Gardening Apps

by Preston Stockton, RGWFU manager

In the spring *Gardener's Journal*, I discussed some useful phone and tablet apps for the gardener. Here are a few more you may like to consider.

Gardening Compass is a great app for identifying plants, plant diseases, or insects. And, as we all know, proper identification is the first step to making the right decisions on placement, care, and treatment of problems. You take a picture and send it to a team of experts and within a day or two you have an answer. . .from an actual person! If it is a disease or pest, they will provide recommendations on control or treatment. I have used it several times for plant identification, and, generally, they have been very accurate. One time they didn't know the plant, but they asked me to notify them if I was able to identify it. When I did determine the name of the plant and let them know, they graciously thanked me and added it to their database. This app is free and, at this time, only for iPhone and iPad.

Speaking of pests in the garden, a great app for insect identification is *Bugs in the Garden*. It is pretty basic, so it really isn't for the experienced gardener, but beginners will love it! When you tap on the picture of the pest, *Bugs in the Garden* describes the insect, its life cycle, the plants normally affected, the damage done, and methods of



control. This app also includes beneficial insects that you do not want to destroy and ways to attract them to your garden. It is 99 cents for iPhone, iPad, and Android.

GrowIt! is a free app with a great concept. Much like the restaurant review apps such as Yelp, GrowIt! relies totally on user input. Created by the Ball Horticultural Company, it allows users to upload photos of plants in their garden or area. The user then rates each plant, so that local gardeners will know the ones that grow successfully and those that should be avoided. By using geo-locating technology, the user only sees information from gardeners in their vicinity. This is a great tool for an experienced gardener who wants to assist a beginner.

The GrowIt! team is traveling the United States to promote their app and was at the JC Raulston Arboretum in Raleigh in July. Hopefully, the word will spread and local gardeners will begin using GrowIt! to increase their knowledge base. Currently, the app is only available for the iPhone and iPad.

For my friends that swear by *Blum's Almanac*, there is now *Moon Gardening*, an app that tells you the optimum time to plant, water, and weed, depending on the phases of the moon. Yes, there is an app for everything! The basic concept is that the moon's gravitational pull affects water on the earth, such as the tides, as well as water in the earth. When the moon pulls water up to the surface of the earth, it makes it more available for plant use, so it is the best time to plant. There are also zodiac considerations, but I will leave those explanations to others! This is an iPhone app only and is \$1.99.

If you are going to be outside in the garden, you might as well know the birds chirping in the trees. Besides *Angry Birds*, there are a ton of apps for identification of real birds. My favorite is *Audubon Birds Pro*, which has a very large catalog of birds. One of the great features for someone like me, who knows basic birds but not the more unusual ones, is

you can begin your search by the shape of the bird, like perching birds, tree clinging, hawk-like, etc. This quickly helps narrow your search. When you identify the bird in question, there are numerous images, as well as a description, information about their range, multiple recordings of their call, and a list of similar looking birds. You can keep a record of your sightings and share it with others. There are many features with this app, and I have found it very useful. It is \$9.99 for iPhone, \$3.99 for Android.

There are also lots of apps for garden design. I have tried a few, and one I really liked was Garden Plan Pro. Garden Plan Pro was developed for the vegetable, fruit, and herb gardener. It help you to design your garden by providing an extensive list of plants and varieties that grow well in your area as well as providing planting and harvesting dates. A great feature is that it allows you to store up to five years of data. Garden Plan Pro also alerts you if you need to rotate your crops. It is available for iPhone or iPad for \$7.99.

The best way to get started with Garden Plan Pro or many of the apps is to watch the video tutorial. Most of the developers have web sites that tout the best features of their apps, and many include videos.

I was surprised how many new apps have been developed since I did my first article last January. It will be interesting to see what the designers think up next. I think one that pulls weeds and plucks off Japanese beetles would be perfect! Now, that one I would buy. 🌱

Make Room for the Nuthatches, Part 2

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the nuthatches to begin using their boxes, but we are happy to see that they are here at Reynolda.

Brown-headed Nuthatches live in ninety percent of the counties in North Carolina but not in areas where the elevation is above 2,000 feet. Forsyth County is 970 feet above sea level, which makes it a perfect location for nesting boxes. Forsyth Audubon also placed nesting boxes in other local natural areas, including Tanglewood, Bethabara, Miller Park, and Summit School. So far, Reynolda Gardens has been the most successful in nest sites. You can help with this project by placing a nuthatch-nesting box in your yard. I hope you will consider it.

By studying birds like the Brown-headed Nuthatch, we can better understand the relationships between all living things on our planet. One of the simplest pleasures we get from bird conservation is a genuine appreciation for our natural world. Working with this project has taught me how to be more aware of different birds and their unique personalities. 🌱

In the last issue of the *Gardener's Journal*, we failed to recognize our friend and volunteer Gene Stewart. We apologize for this error and wish to thank Gene for his hard work and support of the Gardens!

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Sustaining Reynolda Gardens: What's All The Buzz About?

by Amanda Lanier, RGWFU curator of education

As I am writing, hundreds of bees are going to work on our blossoms here at the Gardens. Each year, all across the globe, bees are busy doing the work of pollination, therefore, providing us with a great diversity of food crops. From berries to broccoli, these pollinators sustain a third of our food harvest – a fifteen billion dollar industry in the United States alone. Without these keystone species, the world would lose a great deal of our favorite and healthy food choices. Not only would the disappearance of bees affect human needs, but because bees play such an integral role in maintaining many of the planet's ecosystems, all living things would be affected. In fact, notable scientist Albert Einstein once said, "If the honeybee goes extinct, we have four more years on Earth." That should be enough to get everyone's attention.

These days honeybees, in particular, are of great concern. Over the last decade, honeybee populations have been in great danger; the decline in their numbers includes the collapse of nearly one third of all hives each year. Farmers can no longer rely on wild bees to pollinate their crops; domesticated bees must be "rented" to ensure a successful season. A plethora of issues, coming from many different directions, seems to be plaguing the bees and making it difficult for scientists to figure out solutions.

Many beekeepers have faced the mystery of Colony Collapse Disorder (CCD), a phenomenon that causes adult bees to vanish from their hives. The explanations behind this crisis can be linked to stressors such as pests, pesticides, starvation, and disease. Despite many pointing fingers, especially towards insecticides such as neonicotinoids, there is not enough evidence that one source is the cause. Neonicotinoids are systemic pesticides that are used in many of our monoculture farms nationwide. Systemic pesticides are taken up by the plant and transported to all the tissues, which includes the leaves, flowers, roots, stems, pollen, and nectar. Research has raised some concerns in their use including suppressing immunity in bees, which assures their susceptibility to diseases, parasites, and pathogens. Bees can also have neurological side effects, such as confusion, imbalance when flying, and memory loss from the use of neonicotinoids.

For the majority of those who work with bees, the cause of hive decline is definitely synergistic in nature. One seasoned beekeeper describes the situation with bees to be similar to a person who is overworked, stressed, eating fast food, and encounters someone with a cold; of course, the person will catch the cold because his immune system is on the verge of collapse. The bees are being strained in so many ways, by so many outside forces, that any added stress can be the tipping point. Speaking of pests, the Varroa and Tracheal mites are deal breakers when it comes to healthy hives. Many beekeepers have to apply chemicals directly to the hives to combat stressors like these. Naturally, these chemical applications affect the health of the bees in the hive as well. Researchers have estimated that as many as 120 pesticide residues exist in the average beehive. These residues serve a "toxic soup" to the bees that are then left weakened and vulnerable to the next merciless enemy.

A new concern has also emerged associated with pesticide use, but it may not be what you would guess. The "inert" ingredients used to boost effectiveness of pesticides have been found to harm bees as well. The even greater concern with these ingredients are the fact that they are not disclosed to consumers in labeling and, therefore, not tested or regulated by any government entity.

All of these problems are complicated by the increasingly difficult task of feeding bees. Commercial beekeepers are seeing a rise in the demand for bees, yet the environments remain the same. Beekeepers often have to feed their bees because natural pollen varieties are not available. In addition, the amount of natural area with nutritious bee forage is not enough to meet the demand. The lack of nutritious food also impacts the health of the bees, especially when it comes to delivering amino acid providing protein. The best pollens are made up of high quality protein, which is very important to bees since they are ultimately vegetarians. Colonies with access to the best pollens, which are found in diverse plant habitats, are more resilient to outside pressures such as disease. Colonies within poor pollen environments, such as a monoculture farm, are reportedly malnourished and even starved.

With all the tribulations facing bees, it is no wonder their populations are in danger. So what can the average gardener do to help? More than you would think! First, educate yourself on the pesticides and insecticides that you use. Many problems come from measuring, mixing, or applying chemicals incorrectly. Next, advocate for bee-friendly pesticides by expressing your opinion to government agen-

A Little of Reynolda For Your Garden: *Calendula officinalis*

by Forrest Allred, RGWFU head horticulturist

Fifteen years ago the trend in fall retail gardening was mums, pansies, ornamental cabbage, and kale. That hasn't changed much, but let me recommend another option. If you have never considered *Calendula officinalis*, try this cool-season annual that can be planted in both the spring and fall in the South.

History

Calendula officinalis originated in southern Europe and the Mediterranean. In some areas of the world, Calendulas have the capability of blooming every month, and this is how the name Calendula came to exist. The scientific name *Calendula* is derived from the Middle English word *calends*, which derives from the Latin word *kalendae*, meaning new moon or first of the month. *Calendula officinalis* is commonly known as pot marigold, English marigold, and poor man's saffron.

Culture

Calendulas are part of the Asteraceae family, and they typically flower from May until the first freeze. Start Calendulas four to six weeks before the last frost in the spring. In southern gardens, heat is detrimental to Calendulas, and flowering will begin to decrease in July. Once this begins, start a second crop for the fall. Calendulas, on average, prefer full sun but will tolerate partial shade. They like one to two inches of rain per week and soils that are neutral to mildly acidic. They will grow twelve to twenty-four inches tall and will need nine to twelve inches of space.

Calendulas have a few problems but not many of great concern. Once heat has taken its toll, aphids and spider mites will find this an accommodating environment in which to live. In order to deal with this problem, simply pull the plants out and start the next crop for fall. During cold periods, powdery mildew may be a problem. In order to encourage re-bloom and maintain tidiness, you will need to deadhead your plants. Calendulas often reseed themselves in the garden, but they do not appear weedy. If you desire, the seedlings can be easily transplanted to other areas of the garden.

Calendulas can be used in a grouping for a wonderful, bright, dramatic show or in a mixed border as a great accent. They can also be planted in containers. Much like traditional marigolds, they make a good companion plant because of their insect-repelling ability. Calendulas also attract beneficial insects into your garden. They grow fast, the flowers are edible, and the seeds are easily handled, which makes it a great flower for a children's garden.

Uses

The ray florets or petals are the most useful part of the plant although the whole flower is typically harvested. Calendulas can be used for cut flowers and in potpourri. The petals are used as a dye for fabric and hair and to flavor cakes, cookies, puddings, and teas. They also make a nice addition to salads. Dried petals can be used like saffron to color butters, cheeses, liqueurs, custards, and rice. Powdered Calendulas can also be used like saffron to season seafood, chowders, soups, stew, roast meats, and chickens.

Since the 12th century, Calendulas have been used in medicine. Although there is no scientific evidence that calendulas have worked for these health issues, people have used them to treat upset stomach, ulcers, and relieve menstrual cramps. Today the plants have been approved in the United States for use in cosmetics, dietary supplements, and homeopathic remedies. Calendula tinctures, creams, ointments, and washes have been used to treat burns, sunburns, cuts, and bruises. It appears the plants help wounds heal faster, possibly by increasing blood flow and oxygen to the affected area. Calendulas have also been shown to help with many skin problems such as hydration and firmness and prevent dermatitis in breast cancer patients undergoing radiation therapy. For infants and children, it has been effective in treating diaper rash and ear infections.

Varieties

The flowers of Calendulas come in bright yellow, orange, apricot, and rust. They can be single, double, quilled, tipped with red as if painted, or daisy and dahlia-shaped. Certain cultivars have green or black centers. Here are some varieties that are highly recommended:

- ☛ 'Pacific Beauty Mix' – a little more heat tolerant than most, traditional yellow and orange flowers.
- ☛ 'Bon Bon Mix' – a dwarf variety.
- ☛ 'Corniche' – large, orange and yellow, bicolor, double flowers with dark centers.
- ☛ 'Flashback Mix' – undersides of the petals are a muted burgundy, giving the flowers a unique, flashy appearance.

PUBLISHED TWICE YEARLY BY REYNOLDA
GARDENS OF WAKE FOREST UNIVERSITY

Communications about Gardens
donations should be addressed
to Preston Stockton, manager.
Correspondence concerning *The
Gardener's Journal* should be
addressed to Amanda Lanier, editor.

A calendar of events is published
separately in February and September.

Website: www.reynoldagardens.org



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A Little of Reynolda for your Garden: *Calendula officinalis*

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- 'Orange Porcupine' – orange petals are quilled, giving the flowers a wild, spiky effect.
- 'Candyman Orange Dwarf' – top performing, longest flowering, double calendula available.
- 'Pink Surprise' – gold and yellow, ruffled blooms with a pink tinge to their edges.

If you want something different for the fall garden, I recommend *Calendulas*. I hope you will take the opportunity to plant one or more of these cultivars in your garden and enjoy the many benefits of this wonderful plant. Here are a few suppliers that have *Calendula* seed available: Grimes Seeds, Thompson & Morgan, Johnny's Selected Seeds, and Swallowtail Garden Seeds. 🌻

Sustaining Reynolda Gardens: What's All the Buzz About?

CONTINUED FROM PAGE 6

cies and representatives that oversee their regulation. Another easy action is to purchase organic fruits and vegetables that are pollinated by bees. This indirectly supports bees by supporting agriculture that uses little to no chemicals. One way the Gardens is doing our part for the bees is by installing our own bee boxes. This spring we placed a box near our formal gardens, with the help of a local beekeeper. We were amazed how quickly the box filled up with bees! We are happy to house a few hundred bees who can then take advantage of the diverse pollen in our Gardens. Contact your local beekeeping chapter to learn more about bee box installation and maintenance. Lastly, as gardeners, we can learn about planting for a healthy bee population. Be sure to incorporate or leave plants such as goldenrod, lemon balm, dandelion, poppy, and clover in your green spaces. Trees such as tulip poplars, maples, and cherries are also good choices because they provide high concentrations of protein in their pollen.

If everyone did at least one of these things, we would be helping tremendously. We hope you will join us in doing your part to help this vital species. 🌻



REYNOLDA GARDENS

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