

# the Naturalist's Notebook

for K-5 Educators

## *Young Naturalist's Notebook:* Watercolor and Poetry

*Each season, students learn skills in art and writing that help them become better observers of plant life. Keeping a collection of their work helps them build understanding of the variety of plant life in the Piedmont and around the world.*

Spring, the season of pastel colors and soft breezes, delicate blossoms and tender new leaves, is the perfect time for watercolor and poetry.

For the Young Naturalist's Notebook, watercolor and poetry both begin with the same process—a careful examination of a living plant. Students make pencil sketches of each part and accompany them with notes describing such features as vein patterns in the leaves and coloration of the flowers. Taking the most descriptive words from their notes, they transform them into lines of a poem, with the last lines describing their observations.

Students copy their best sketches onto watercolor paper, then paint in the colors, creating a full-page watercolor of all or part of the plant. A finished copy of the poem is attached to it.



*A Young Naturalist's Notebook*  
sample entry

## Growing a Brassica Garden

For thousands of years, brassicas have been cultivated for food for humans and livestock. Leaves are cooked, preserved, and eaten raw; oil is pressed from the seeds. Because most brassicas originated in cool climates, they are ideal candidates for the spring garden. With many classes growing the Wisconsin Fast Plant, *Brassica rapa* inside, a brassica garden is an ideal extension. Plant seeds in the classroom and grow your own plants, or buy small plants at a garden center when you're ready to put them in the ground. Either way, they will be ready to harvest in May. Look on the packaging for varieties that mature quickly, about sixty days. Many of these are compact in growth habit, so they are excellent for pots or small gardens. You'll find planting and growing tips inside this issue.

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**Naturalist's Notebook**  
for K-5 educators, a quarterly publication of Reynolda Gardens of Wake Forest University, enriches teachers' understanding of plant life of the Piedmont and around the world. Lesson plans designed by teachers to accompany each issue integrate plant science, art, and writing.

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## Starting Garden Brassica Seeds

Seeds should be started inside in mid-February. They will germinate in about ten days.

|             |                                                                                                                                                                                                                  |
|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Container   | Flat containers like clear-top plastic sandwich trays can be closed to help preserve moisture and heat.                                                                                                          |
| Drainage    | Holes should be drilled in the bottom of each container to provide adequate drainage. Stack several containers together to make drilling easier.                                                                 |
| Medium      | Potting mix, available at garden centers and discount stores, is formulated to hold moisture while providing good drainage and some nutrients for young plants.                                                  |
| Darkness    | Cover seeds with a thin layer of potting mix. Place the seed tray in a bright area so adequate light will be available for growth as soon as seedlings push through the soil.                                    |
| Temperature | The temperature in the soil medium should be about seventy degrees. Place seed trays near a radiator or heat-producing appliance if the room is too cool.                                                        |
| Water       | Watering seeds and seedlings from the bottom ensures that they stay in place and moisture is adequate throughout the mix. Place the container in a pan of water and leave it until the soil is damp, then drain. |

## Transplanting and Growing Seedlings

Seedlings are transplanted when they have their first true leaves (the second pair after the seed leaves). Dig them out gently and handle them by their leaves to prevent stem breakage.



### LIGHT

Brightest light available, at a window or under growing lights.

### CONTAINERS

Small flowerpots or cups with holes in the bottom.

### MEDIUM

Same type as for starting seeds.

### WATER

Keep medium moist. Water from the top.

### FERTILIZER

Diluted houseplant fertilizer every two weeks.

### TEMPERATURE

About sixty degrees. Slightly cooler temperatures won't hurt them.

Established plants should be planted outside in early to mid-March. Put them in a protected place outside for about a week prior to planting to prepare them for garden conditions. Before planting, release any matted roots by separating them with your fingers or cutting them with scissors.

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*Throughout the Piedmont, there are woods, meadows, and wetlands like those at Reynolda Gardens. They're in parks, playgrounds, and lawns. Plants from all parts of the world grow in the formal gardens and greenhouses at Reynolda Gardens, just as they grow in home and school gardens and on home and classroom windowsills. The places and plants of Reynolda Gardens serve as examples that help us observe and learn about the plants we see every day.*

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# Controlling Pests in the Brassica Garden

*A succession of pests begins to invade the brassica garden in early spring. Understanding when, why, and how animals damage plants helps gardeners decide how to respond.*

## Cutworms

The caterpillars of a night-flying moth, *Agrotis ipsilon* emerge from their burrows to feed in the spring. They can be dug out of the soil where they reside during the day, but their dull brown color makes them difficult to see. Burying a paper collar an inch or two deep around the base of each plant at planting time is more effective. Remove collars when the plants are about eight inches high.

## Rabbits

Rabbits do the most damage in early spring. Growing plants within a fence or in large pots usually solves this problem. You can simply grow extra plants to replace those that are completely eaten in an unprotected garden, as rabbits move on when more tender leaves become available elsewhere.

## Cabbage Loopers

This night-flying gray moth, *Trichoplusia ni* is a Florida native, that, like its relative the cutworm spends the winter underground. It must reach the adult stage and then fly north before laying eggs. The small, bright green larvae, which resemble inchworms, emerge from pale green eggs on the upper surface of leaves and chew holes along the veins. As they grow, they burrow into brassica heads and florets. For both cabbage loopers and imported cabbageworms, picking caterpillars off the plants and removing them from the garden might be effective in a small garden. A row cover (a type of thin cloth available at farm and garden stores) can be placed over plants to keep insects from laying eggs on them. Harvest brassicas as soon as they mature.

## Imported Cabbageworms

The adult *Pieris rapae* lays hundreds of yellow eggs on the underside of leaves. Velvety green larvae crawl flat along leaves and feed voraciously for about two weeks, then pupate nearby for another ten days. When they emerge, they have metamorphosed into a cabbage white butterfly, which can be distinguished by the black tips and black dots on the upper surface of its yellowish white wings. As an adult, it is a very active pollinator. Cabbage loopers and imported cabbageworms complete several generations each year, spending summer months in nearby lawns and flower gardens, where the butterflies pollinate flowers during the day and the moths pollinate the evening blooming flowers. They both return to the brassica garden in time for fall planting.



## Spring Annuals from Seed

Pot marigold, *Calendula officinalis* completes its life cycle during cool weather. Seeds can be started along with the brassicas in mid-February, and the two types of plants can grow side by side in the classroom and in the garden. When the flowers fade, break them apart and save the crescent-shaped seeds for planting in the fall.

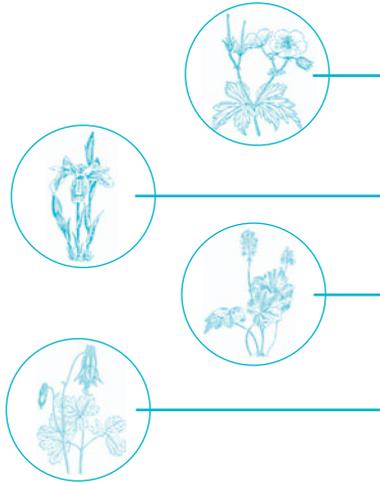


## Summer Annuals from Seed

French marigold, *Tagetes patula* seeds can be started inside in March to prepare for planting outside in early May, using the same method used for brassica and calendula seeds. Seeds can be planted in the garden after May 1 and every few weeks through the summer to keep blooming plants available until frost. Break spent flowers apart to harvest the elongated black-coated seeds.

# Wildflowers for the Schoolyard

These perennial spring blooming wildflowers are native to southern woodlands. You will find them on stream banks and in woodlots. Buy nursery-propagated plants in the fall and plant them in a moist, shaded area for bloom next spring. Call the RGWFU education office for a list of wildflower nurseries.



Wild geranium grows from seed or rhizomes and is usually less than a foot tall. It has deeply toothed leaves and pink to lavender flowers. *Geranium maculatum*

Dwarf crested iris grows from seed or rhizomes. Typical iris flowers are nestled in tiny fans of sharply pointed leaves. *Iris cristata*

Foamflower grows from seed or runners. Stalks of pinkish white flowers rise above round-lobed evergreen leaves. *Tiarella cordifolia*

Columbine grows from seed and short, sturdy rootstock. Nodding five-petal flowers with red spurs hang over delicate, light green, compound leaves. *Aquilegia canadensis*

## Compost

In the compost bin or on the woodland floor, the cycle of decomposition is the same: nutrients that have been extracted from the soil or produced by plants and animals are consumed and processed by microorganisms, worms, and insects and then returned to the soil in a form that can be utilized by plants.

### *What ingredients make up good compost?*

Microorganisms require nitrogen, protein, and carbon for their own nutrition. They need a mixture of green and dry materials such as plant waste; potting or garden soil; shredded paper; finely broken branches and twigs; dry leaves; and aged cow manure. Green and dry materials should be added to the pile or bin in layers.

### *What kind of containment system should I use?*

For demonstration purposes, a large plastic flowerpot with extra holes drilled in the bottom and sides or a plastic bag with several holes punched in it should be sufficient. To make enough compost for a garden, you will need to create a structure of fencing or bales of straw to contain it.

### *How long should it take for raw materials to become compost?*

If temperatures are warm and compost is turned regularly and kept moist, it should be finished within a few months; it takes longer in cool, dry conditions. It's finished when it's dark brown, moist, crumbly, and sweet-smelling.

### *How do I use compost?*

Compost is rich in nutrients, so use it sparingly. Place a small amount around each plant or work it into the top layer of soil as you prepare for planting.



Compost bin in the Children's Gardens

Reynolda Gardens of Wake Forest University is located within the boundaries of the 1,067-acre estate that was established by Mr. and Mrs. R. J. Reynolds in the early twentieth century. Today, RGWFU consists of 125 acres of woodlands, open fields, and wetlands; four acres of formal gardens; and a greenhouse range with conservatory. Student visit times are limited. Reservations are taken only in early August for the following school year.

**Call the education office (336.758.3485) for information on programs and scheduling.**