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CHAPTER 13

Beans & peas

The study of legumes can occupy an entire lifetime. Two familiar types of legumes are discussed: peas and beans. all le gumes have seedpods that split along the sides.

peas originated at the same time as lentils about 10,000 years ago in the middle east. peas were used in their dry form (split peas) until about the sixteenth century when forms with tender seeds were developed that could be eaten fresh. other members of the le gume family, such as the lentil, the peanut, and the long bean, are neither pea nor bean. The lentil is a staple food throughout the world, especially in the indian subcontinent. The peanut, also known as the groundnut, originated in south america about 5,000 years ago. long beans, called co wpeas or black-eyed peas when mature and dried, originated in West africa.

There are three types of beans: common, or phaseolus, beans; fava beans; and soybeans. phaseolus beans are from Central and south america and date back to about 5,000 B.C. phaseolus, or common, beans include green beans as well as dried beans, such as haricot, cannellino, pinto, navy, kidney, black, marrow, and flageolet. The fava bean (also spelled *faba*) is a second type of bean. The fava bean is from the middle east and dates back to roughly 6,500 B.C. it was formerly more widely eaten than today as phaseolus beans have replaced it. The soybean (also spelled *soya*) was domesticated in China around 3,000 B.C.

one may eat beans or peas in se veral ways: eat the entire pod when it is immature (e.g., green beans and snow peas); eat the immature seeds without the pod (e.g., english peas and the fava bean); or eat the dry, mature seeds (e.g., pinto beans or split peas).

other types of le gumes, such as alfalfa, clover, and vetch, are grown as animal fodder. These legume animal feeds are a cheap source of digestible nutrients and protein. The soybean, which is used for both human and animal consumption, is considered to be one of the most nutrient-rich foods in the world. le gumes are also prized as soil-building crops because they return nitrogen to the soil.

Seasonality and Growing Conditions

Fresh legumes, such as sugar snap peas, english peas, and fava beans, are favorite spring treats. in moderate coastal climates, beans and peas can be grown from spring to fall. as summer and fall arrive, cranberry beans and other shelling beans turn up in farmers markets. dried le gumes are a hearty winter staple in many households and are used to fortify soups, stews, and casseroles.

gro wing conditions for legumes depend upon the type. Vetches and clovers prefer cool climates; other legumes like hot, dry weather. re gardless of climatic conditions, legumes like soil rich in phosphorus and potassium. They will tolerate low nitrogen levels in the soil.

although most plants strip a way nutrients from the soil, legumes are unique in that they can replenish the earth with nitrogen. nestled in the roots of legume plants are millions of bacteria called *rhizobia.* rhizobia can tak e nitrogen, a necessary plant nutrient, from the air and "fix" it in the plant. if the plants are plowed into the soil after harvesting, they help to increase the nitrogen levels in the soil.

one of the best le gumes for nitrogen fixation is the fava bean. prior to the fava fl wer's bloom, farmers chop up the plants with machetes or a farm machine called a disc and then plow the plants back into the ground. This "green manure" then puts nitrogen into the soil.

The only serious disease to affect legumes is powdery mildew. sulfur dust will help to curb this fungus. snails, aphids, mites, and whiteflies are generally not a problem as long as good growing conditions prevail; pests can be removed by hand or pressure from a spray hose.

Selection, Storage, and Nutrition Information

When selecting fresh beans or peas, look for firm, plump, bright-colored, unblemished specimens. dried beans should not be moldy , broken, or discolored. Check for little stones among the beans when washing them. Fresh beans will keep in a plastic bag in the refrigerator for several days.

green peas are a good source of folate, iron, and potassium. They are high in antioxidant vitamins a and C as well as in fibe . snap peas and string beans are high in vitamin C. Fava beans are high in fiber and iron. long beans are high in vitamins a and C.

RECIPE

Pea Salad with Fresh Herbs

preparation Time:	20 minutes
Cooking Time:	10 minutes
Total lesson Time:	60 minutes
recipe le vel:	easy

Background

With this recipe, students get a chance to learn about the unique characteristics of three different peas. The peas can be eaten with the vinaigrette as a dipping sauce or dressed as a salad. use small- to medium-sized pods and equal amounts of each type.

here is a good opportunity to discuss the dif ference between mature and immature pods. The english peas are sold as mature pods (the peas are readily separated from the pods), b ut the sugar snap and snow peas are usually sold as immature pods (the peas are embedded in the pods and are difficult to separate). as students w ork, discuss the different sizes, shapes, textures, and fl vors of the different peas.

Objectives

Students will be able to:

demonstrate a w orking knowledge of the following words: *vinaigrette, blanch, English peas, sugar snap peas,* and *snow peas.*

examine the dif ferences between english peas, sug ar snap peas, and snow peas.

Ingredients

For a class of 20:

- a mixture of peas:
  - 1 lb sugar snap peas
  - 1 lb snow peas
  - 1 lb english peas
- 1 bunch mint
- 1 bunch cilantro
- 1 bunch italian parsley
- 1 cup light olive oil
- 1/4 cup seasoned rice vinegar
- 1/3 teaspoon salt

Materials

For the class:

- colander
- salad spinner
- blender
- 4-quart pot with lid
- 1 large and 1 small mixing bowl
- measuring cups and spoons
- hot plate
- 2 quarts water
- small strainer
- serving spoon
- large baking sheet

For each group of 4:

- 2 cutting boards
- 2 knives
- 4 bowls
- 4 forks
- napkins
- journals
- bowls

Preparation

1. have students wash their hands. discuss proper methods of handling food.
2. Wash peas and place them in a colander to drain.
3. divide the peas and herbs into five equal portions.
4. set a 4-quart pot of water to boil on the hot plate.

Safety Precautions

review safety precautions for using knives and the hot plate.

Making the Recipe

1. demonstrate taking the leaves off the stems of the herbs.
2. have students snap or cut off the tip (the stem end) of the snow and sugar snap peas and shell the english peas. have them place the snow and sugar snap peas in one bowl and the english peas in another. have students remove the stems from the herbs; wash and dry the herb leaves in a salad spinner; and place them in another bowl.
3. Collect the bowls and place them on the demonstration table next to the hot plate. have students gather around the demonstration table.
4. have three students measure oil, vinegar, and salt into the blender. add the herb leaves and blend the vinaigrette until smooth. set aside in the small bowl.
5. gather all the peas and blanch them in batches by dipping them in boiling water and removing quickly, being sure to cook sugar snap and snow peas separately from the english peas. Blanching is a method of cooking the vegetables quickly so that they stay crisp. When the peas are tender (after about 2 minutes), scoop them out with the small strainer and lay them out to cool on a baking sheet covered with a towel. do not pile them up or they will keep cooking.
6. When the peas are all blanched, put them back in the big bowl. dress them as a salad or use the vinaigrette as a dipping sauce.
7. While students eat, discuss the differences in texture and taste of the pea varieties.
8. Clean up materials. if you have a school or classroom compost or worm bin, place the food scraps there.

RECIPE

Long Beans with Ginger

preparation Time:	20 minutes
Cooking Time:	10 minutes
Total lesson Time:	1 hour
recipe le vel:	adv anced

Background

long beans are readily found in asian mark ets during the same season as green beans. They are almost a foot long and are green or purple in color. They are quite delicious, and this recipe is an easy way to prepare them.

in this lesson, discuss with students the differences between immature and mature beans. immature beans have tender, edible pods that are not fully developed, with seeds still closely embedded in the pod. mature beans ha ve large seeds, which are easily separated from the pod; with mature beans only the seed, commonly called cowpea or black-eyed pea, is eaten. long beans are sold as immature beans, and the entire pod is eaten.

Objectives

Students will be able to:

demonstrate a w orking knowledge of the following words: *long beans, sauté,* and *top.*

investigate immature bean pods.

Ingredients

For a class of 20:

- 3 lbs long beans
- 1½-inch knob of ginger root
- 6 tablespoons soy sauce
- 3 tablespoons fish sauce (from the supermarket or an asian grocery)
- ¾ cup water
- 6 tablespoons canola oil

Materials

For the class:

- colander
- hot plate
- wok or heavy skillet
- cutting board
- measuring spoons and cups
- serving spoon
- 1 large and 3 small mixing bowls
- water
- pot holders

For each group of 4:

- 2 cutting boards
- 2 knives
- napkins
- 4 plates
- journals

Preparation

1. have students wash their hands. discuss proper methods of handling food.
2. Wash the beans and place them in the colander to drain.

Safety Precautions

review safety precautions for using knives and the hot plate. an adult should peel and slice the ginger root. When cooking, have students stand at least three feet away from the hot plate so that the oil does not spatter them.

Making the Recipe

1. give each group an equal portion of the beans.
2. have students "top" the long beans (this means to cut off the very tip of the stem end and pull off the string). Cut or "snap" the beans into 3-inch pieces. place the prepared beans in a bowl. Collect bowls and place them on the demonstration table next to the hot plate. have students gather around the demonstration table.
3. peel the ginger root's thin brown skin with a paring knife. Because slicing ginger root thinly is difficult, an adult should cut the peeled ginger into slices and then into fine strip
4. gather the beans into a large mixing bowl. have two students measure out the soy sauce and fish sauce into separate small bowls. have another student measure the water.
5. When all the ingredients are ready, place the skillet on the hot plate. set the hot plate on high. When the skillet is hot, turn the hot plate to medium.
6. Cook the beans in two different batches. First add half of the oil and half of the ginger root. (make sure students are at least three feet away so that they are not spattered by oil.) When the ginger begins to sizzle, add half of the beans and stir. after three minutes add half of the fish sauce, soy sauce, and water. Cook until tender, covering if necessary. repeat with the next batch.
7. serve from the skillet into student bowls.
8. Clean up materials. if you have a school or classroom compost or worm bin, place the food scraps there.

ACTIVITY

Crop rotation

preparation Time: 5 minutes
Total lesson Time: 60 minutes

Background

staying ahead of pests and k eeping soil healthy is one of the most important and time-consuming challenges farmers face. Beans and other legumes are important in helping to keep soil healthy.

nestled in the roots of le gume plants are millions of bacteria called *rhizobia.* rhizobia can tak e nitrogen, a necessary plant nutrient, from the air and fix it in the plant. Thus these plants do not deplete nitrogen from the soil. in fact, if they are plowed into the soil after harvesting, the plants actually help to increase the nitrogen levels within the soil.

in this activity, students will simulate the planning that farmers perform to help their crops stay healthy. one technique emplo yed in sustainable agriculture is to use crop rotation to keep pests (crop-eating insects) away and to keep soil healthy. most crop rotation plans follo w two rules: al ways plant a crop that uses the soil differently from the one harvested. The rationale is that crops from the same group (e.g., root crops) tend to use up the same nutrients from soil and are prone to similar pests. The second rule is to plant a crop of a plant family different from the one harvested in order to control disease.

To help avoid unhealthy soil and pests, farmers rotate crops on a seasonal basis. usually , plant families that are heavy feeders (those that take a lot of nutrients from the soil) are followed by light feeders or soil builders (such as legumes). in this activity, students are given an information chart that lists plants according to the type, soil feeder or builder. using the chart, students plan four seasonal plantings for four farm plots.

Objectives

Students will be able to:
describe wh y farmers use crop rotation.
simulate the planning process for crop rotation.
dif ferentiate between heavy feeders, light feeders, and soil builders.

Materials

For the class:
T&d Willey Farms farm profil
20 copies of seasonal Crop rotation Chart and map, one per student

Preparation
read the background information to re view the rationale and methods of crop rotation.

Doing the Activity
1. lead a discussion about some of the dangers to health y crops on a farm, such as pests, poor soil, or weather.

2. read aloud or ha ve students read silently the farm profile on T&d Willey Farms.

3. explain crop rotation to students, describing ho w farmers rotate crops of heavy or light feeders and soil builders to keep the soil healthy.

4. sho w them the seasonal Crop rotation Chart and e xplain what it means.

5. Tell the students that they will be farmers planning the crops on their farm for four seasons.

6. gi ve each group copies of the map and the chart. Tell the groups that they can work together to figure out which crop should be planted in which plot for each gr wing season to ensure the healthiest plants and soil.

7. model ho w they might use the charts to create the plan. monitor and assist the groups.

8. after each student has de veloped a crop rotation plan, ask the students to write a paragraph to explain the reasons for their plan.

9. ask v olunteers to present their plans to the class. discuss the follo wing questions: ho w many different ideas did the class have? Can different students have different ideas and still be correct? ho w does this activity relate to what farmers do?

Crop rotation

Seasonal Crop Rotation Chart

Crop	Family	Feeder	Season
Corn	grass	hea vy	summer
Cucumber	gourd	hea vy	spring
lettuce	Composite	hea vy	spring
spinach	goosefoot	hea vy	Winter
squash	gourd	hea vy	summer
Tomato	solanaceae	hea vy	summer
Carrot	umbelifer	light	Winter
pepper	solanaceae	light	Fall
potato	solanaceae	light	Winter
swiss chard	goosefoot	light	Fall
pea	le gume	soil b uilder	Winter
so ybean	le gume	soil b uilder	summer
Fava bean	le gume	soil b uilder	spring
lima bean	le gume	soil b uilder	Fall
green bean	le gume	soil b uilder	summer

Seasonal Crop Rotation Map

The maps shown below represent your farm in each of the four seasons. plan crops for each plot (a, B, C, and d) so that the soil stays as health y as possible.

spring

a	B
C	d

Fall

a	B
C	d

summer

a	B
C	d

Winter

a	B
C	d

T&D Willey Farms

Tom Willey with Mr. Poe, the Arkansas farmer who inspired the Willeys to use a rotation of beans in their crop mix.

The T&d Willey Farms harvests a variety of vegetables, such as eggplants, squash, and potatoes, but the beans are by far the favorites. Tom Willey believes in the goodness of beans. “They are a great crop,” Tom says. “They give good nutrients back to the earth, and they are good for you to eat as well. They’re like a gift.”

Back in 1980, Tom and his wife, denesse, started the organic farm bearing their initials. Fields and orchards surround their farm, but only one mile away is the spreading construction of Fresno’s new housing and mall developments. although the majestic sierra ne vada ranges stand 30 miles to the east of T&d Willey Farms, the smog and haze often make them hard to see.

The Willey farm is fortunate to be located in the san Joaquin Valley with its rich soil and sunny days. sno wmelt from the sierra ne vada provides the water that keeps the vegetables growing all year round. But even with these natural gifts from the earth, vegetables cannot thrive if the soil becomes sapped of its nutrients. Two ways to keep the soil healthy are to rotate the crops and, more fundamentally, to apply well-made compost before planting every crop. in the crop rotations, it is a good idea to include crops, such as beans, that give nutrients back to the earth.

Tom learned these old-fashioned ways from a neighbor farmer. rotating crops means dif ferent vegetables are grown in different parts of the farm every year. Where squash grew one year, beans might be planted the next year. in that way, one vegetable will not use up all the soil's natural nutrients. in fact, beans give back some of the nutrients taken away by other vegetables.

The techniques used in sustainable agriculture of rotating crops, attracting good insects, and planting diverse crops all help to decrease the need for artificial pest control. The best protection against insects, Tom says, is to improve the soil and produce healthy plants that can resist insect attacks. Tom and denesse believe they must take care of their soil so that they can harvest good vegetables for years to come.

in the middle of T&d Willey Farms stands a tall group of cottonwood trees. This is where Tom and denesse pack their v egetables into boxes to be sold in the markets. denesse includes in each box what she calls a pid, or public information document. These pids tell the customers how to store their vegetables to keep them fresh and how to cook and serve some of the more unfamiliar crops, such as romano beans. denesse e ven includes quotations from their farming heroes, Wendell Berry and masanobu Fukoka. For Tom and denesse, educating the public means carrying on the tradition and respect taught to them by other farmers.

ev en with all the help and guidance of other farmers, denesse and Tom never lose sight of the most important fact for farmers: success depends on learning to work with nature. as Tom says, "Farming is great. There is so much to learn. But even after we do all we can, we still need the timely blessing of mother nature: consistent crop-ripening heat in the summer and her angel kisses of rain in the winter."

Note: since this profile as written, the Willey farm in Fresno was paved over for development. Tom and denesse ha ve started a new farm on the outskirts of madera.

CHAPTER 14

salad greens

lettuce was domesticated about 3,000 years ago in the middle east. Before that, wild lettuce was eaten for several thousands of years. The ancient greeks and romans gre w lettuce in their gardens for its culinary and healthful properties. lettuce is a member of the composite f amily. Wild lettuce is found all over the world as a common weed in fields and acant lots.

There are four principal types of lettuce: loose-leaf, butterhead, cabbagehead, and cos (or romaine) lettuces. loose-leaf lettuces are nonheading varieties (e.g., grand rapids). Butterheads (e.g., Big Boston) have soft, buttery leaves in a loosely formed head. Cabbageheads have tight, compacted leaves (e.g., iceberg). They are challenging to grow because they will not create a firm head in hot weathe . Cos have long, elongated heads with spoon-shaped leaves. They are a good summer variety (dark green cos).

other common salad greens are arugula, cress, and chicory. arugula, also called *rocket* or *roquette*, is a low-growing spicy plant from the mustard family. There are many types of cress, of which watercress is the most common. Cress is a member of the mustard family. Chicory is a member of the composite family and contains types known as escarole, frisée, and endive.

Seasonality and Growing Conditions

lettuce gro ws only in moderate weather. it tolerates neither freezing nor summer heat. This means that in most regions of California, lettuce is a winter crop. But in foggy, coastal valleys, the weather is cool and damp all year-round; therefore, lettuce can always be grown. lettuces require fertile loam soil that is well drained in order to prevent leaf rot. spreading sand around the base of seedlings also helps prevent rot by reducing contact between mature leaves and the soil. lettuces require lots of moisture and cool days.

lettuces should be k ept uncrowded and be thinned periodically as they grow. Crowded plants will get leggy (grow long stems rather than stay compact). another k ey to good lettuce is adding plenty of nitrogen (e.g., well-rotted manure).

lettuce seedlings are almost irresistible to birds, cutworms, slugs, and snails. slugs and snails often hide deep at the base of leaves and can, if undetected, do a lot of damage. hand picking slugs is one way to remove them. in general, however, lettuces suffer little from insect pests and disease. The lower leaves may often be subject to rot because of the moist conditions necessary to grow the plants, but rotted leaves can be removed by hand. if left unchecked, the rot can spread to the heart of the plant, killing it.

Selection, Storage, and Nutrition Information

lettuces should be crisp, unblemished, and free of signs of rot or insect damage. a void wilted, limp leaves. in stores, you can find salad mixes of young, tender loose-leaf varieties and other greens, such as arugula. y ou may also create your own salad mixes (called *mesclun*). some peppery and slightly bitter leaves, such as watercress and frisée, mix well with mild lettuces, such as a butterhead or red leaf. y ou may add edible fl wers (such as calendula and nasturtium) if you have them.

all salad greens should be stored in the refrigerator in an airtight plastic bag and will keep for up to fi e days. ne ver wash leaves until they are ready for use; after washing, drain the leaves in a colander or salad spinner.
iceberg lettuce, with its high water content and pale leaves, has much less nutritional value than other lettuces have. loose leaf, b utterhead, and romaine (cos) are all high in vitamin a. loose leaf and cos, the dark er green leaf-lettuce, are also good sources of folate, which is nutritionally important to help reduce the risk of birth defects and heart disease.

RECIPE

Avocado Dressing

preparation Time:	20 minutes
Cooking Time:	15 minutes (optional)
Total lesson Time:	45 to 60 minutes
recipe le vel:	easy

Background

This recipe is a great way to introduce various types of lettuce that differ in color and fl vor. sweet lettuces, such as romaine, butter leaf, red leaf, and red oak leaf, complement this tangy avocado dressing. The dressing may be tossed with the lettuce or spooned on torn leaves of lettuce arranged on a plate. The croutons make a great crunchy treat on top, but because they require an oven, they are optional (available for purchase at a retail food store).

When showing the class the different lettuce varieties, have students dissect some of the leaves. re view the different parts of a leaf: the veins that transport water and minerals to the leaves from the other parts of the plant; the waxy cuticle that protects the leaf's epidermis; and the stomates, which are tiny openings for gas exchange on the underside of a leaf.

Objectives

Students will be able to:

demonstrate a w orking knowledge of the following words: *sweet lettuces, romaine, whisk,* and *avocado.*

mak e a salad dressing.

Ingredients

For a class of 20:

- 3 tablespoons finely chopped parsl y
- 1 tablespoon finely chopped ch ves
- 2 tablespoons finely chopped basi
- 3 small to medium avocados
- 6 thick slices bread (optional)
- 2 shallots
- 1 lemon
- 4 tablespoons red wine vinegar
- ¾ teaspoon salt
- pepper
- ¾ cup extra virgin olive oil
- 4 tablespoons cream
- 3 to 6 heads of romaine, butter, or oak leaf lettuce, depending on size

Materials

For the class:

- salad spinner
- 1 large mixing bowl
- 1 small mixing bowl
- whisk
- serving spoon
- measuring spoons
- oven, optional
- baking sheet, optional
- cutting board, optional
- knife
- pot handlers

For each group of 4:

- 2 cutting boards
- 2 knives
- 4 plates
- 4 forks
- journals

Preparation

1. ha ve students wash their hands. discuss proper methods of handling food.
2. Wash lettuce, tear leaves, and dry in the salad spinner. Wash and dry herbs in the salad spinner.
3. preheat oven to 375°F, optional.

Safety Precautions

re view safety precautions for using knives and the oven (if using it).

Making Avocado Dressing

1. gi ve each group an equal portion of herbs and avocado to prepare.
2. demonstrate remo ving leaves from stems and chopping the herbs. demonstrate remo ving the seed, scooping out the flesh, and chopping the vocado.
3. ha ve each group of students prepare its herbs and avocado and place them on a plate.
4. (optional) demonstrate cutting the bread into small cubes for croutons. ha ve students prepare the remaining bread.
5. Collect the plates and place them on the demonstration table next to the small mixing bowl. ha ve students gather around the demonstration table. While you have one student peel and finely dice the shallot, h ve two other students cut a lemon in half and squeeze its juice into the small mixing bowl. ask another student to measure and add the vine gar, 1 teaspoon salt, and a few grinds of black pepper. add the shallots. mix and set aside.
6. (optional) Toss the bread cubes with 2 tablespoons olive oil and bake them on a baking sheet in the oven at 375°F for 10 to 15 minutes or until they are golden and crunchy. When the croutons are done, take them from the oven and sprinkle them very lightly with salt.
7. ask three students to mash the a vocados on a plate and blend them into the vinegar mixture. add the herbs and then whisk in the oli ve oil and the cream. go slo wly, whisking the whole time to make a thick dressing. Taste the dressing and add more salt, lemon juice, or oil, as needed.
8. in a large mixing bowl, toss the lettuce and dressing and serve the salad on plates. (optional) garnish with the croutons.
9. While students eat, discuss how the dressing enhances the fl vor of the lettuce.
10. Clean up materials. if you have a school or classroom compost or worm bin, place the food scraps there.

RECIPE

Salad of Mixed Greens

preparation Time:	20 minutes
Cooking Time:	n one
Total l esson Time:	45 minutes
r ecipe l evel:	e asy

Background

This recipe allows students to experiment with different salad greens and different types of olive oil and vinegar. many types of greens are sold in markets, either as mixed greens (called *mesclun*) or separately. For this salad, select greens that are colorful and offer a variety of tastes. in this recipe, a basic oil and vinegar dressing is used. remember , the better the vinegar and olive oil, the better the dressing. There are many kinds of vinegar, such as red wine, white wine, sherry, rice wine, and balsamic, each varying in acidity. (Wine vinegar has no alcohol content.) Try experimenting with different ones: two parts balsamic to one part red wine vinegar is a ratio children often like.

in this recipe, students discover a variety of greens, all having similar parts. re view the different parts of a leaf: the veins that transport water and minerals to the leaves from the other parts of the plant; the waxy cuticle that protects the leaf's epidermis; and the stomates, which are tiny openings for gas exchange on the underside of a leaf.

Objectives

Students will be able to:

demonstrate a w orking knowledge of the following words: *vinaigrette, bitter greens, salad greens,* and *olive oil.*

examine the dif ference between a variety of salad greens and different olive oils and vinegars.

mak e a salad dressing.

Ingredients

For a class of 20:

- 12 handfuls mixed lettuces and other salad greens
- 3 tablespoons vinegar
- salt and pepper
- 12 tablespoons olive oil

Materials

For the class:

- salad spinner
- 1 large mixing bowl
- 1 small mixing bowl
- whisk
- serving spoon
- measuring spoons
- water

For each group of 4:

- napkins
- 4 plates
- 4 forks
- journals

Preparation

1. ha ve students wash their hands. discuss proper methods of handling food.

2. Wash and dry salad greens in the salad spinner in two or three batches.

Making the Recipe

1. ha ve students gather around the demonstration table. ha ve a student measure the vinegar into the small bowl and add ¾ teaspoon salt and a few grinds of black pepper. ha ve another student measure and slowly pour in the olive oil as another student uses a whisk to mix the oil and vinegar. Taste the dressing and adjust the taste to your liking by adding more oil if it is too sour or more vinegar if it needs more acid. if you do not use the vinaigrette right away, it will separate and you must re-mix it before dressing the salad.

2. if your class chooses to have more than one type of dressing (see Background), a good ratio of ingredients is 2 tablespoons vinegar to 8 tablespoons olive oil.

3. ha ve students taste each type of salad green so they can decide which combination they want in their salad. discuss the dif ferent fl vors and tastes.

4. ha ve students make their own salad and choose their own dressing. demonstrate ho w to place the salad on the plate, spoon on the dressing, and mix so that the dressing is distributed evenly.

5. While students eat, discuss the tastes and textures of the different greens in the salad.

6. Clean up materials. if you have a school or classroom compost or worm bin, place the food scraps there.

ACTIVITY

gro wing arugula

preparation Time: gro wth time will vary.
Total lesson Time: 30 minutes, then a few minutes every few days to observe plant growth

Background

man y parts of coastal California have cool, foggy summers. although sweet corn or juic y tomatoes have a harder time growing along the coast, the cool, foggy summers are great for growing salad greens. if you live in a place that gets foggy summers and cool winters, your backyard or kitchen window may be the perfect location for growing salad greens.

arugula is an easy plant to gro w in a window or outside in a small plastic container. a member of the mustard family, it is also known as *rocket* or *roquette.* its unique fl vor—a bit spicy or nutty—is fun for most students to try.

in California, arugula may be planted at any time of year. if some of the plants go to fl wer, the blossoms may also be put into salads for extra color. often, the fl wer is a bit spicier than the leaf, so have students try both to see which fl vor they prefer.

Objectives

Students will be able to:
gro w and harvest arugula.
describe ho w cool and moderate climates are well suited to growing salad greens.

Materials

For the class:
- arugula seeds
- potting soil
- watering can
- Berkeley y outh alternati ves garden p atch profil
- plastic garden pots

Preparation

gather materials.

Doing the Activity

1. read the Berkeley youth alternatives garden patch profile to the class or have students read it on their own. discuss with students the coastal area's unique climate and compare it with climates further inland or in other areas of the state or nation. have students explain why coastal areas may be well suited for growing salad greens year-round. ask them whether arugula could grow in their environment.

2. explain to students that they will have an opportunity to grow arugula, a salad green with a unique flavor. ask them whether they have ever tasted this green before.

3. give each group a pot and have them fill it with potting soil. have them scatter seeds on the top of the soil and then cover the seeds with ¼ inch to ½ inch of soil. Water the pots.

4. Keep the pots in a sunny window or in an outside location.

5. every few days, have students check the plants to see whether they need water and to monitor their growth. as the plants start to grow, students can thin them so that they stand four to six inches apart. if you wish, they can wash the thinnings and taste them.

6. When the plants are just under six inches high, harvest them whole or harvest just the leaves, or you can cut them an inch or two from the ground and let them grow again.

7. Wash the greens and allow students to taste them. since arugula has a strong flavor, students will probably enjoy them more as part of a mixed green salad. use either of the salad green recipes provided.

Berkeley Youth Alternatives Garden Patch

At the Berkeley Farmers Market, a shopper can see produce stands lining the street, brimming with sun-ripened fruits and vegetables, a bountiful feast for the eyes and senses. Colorful signs in front of the stands show the names of farms from all over Northern California, except for one particular stand.

This stand is staffed by local youths and young adults bagging salad greens and making change for the shoppers in a professional and courteous way. What shoppers might not know, unless they ask, is that these young people not only manage the stand but also tend an urban garden that produces collard greens and salad leaf mixes right in the heart of the city of Berkeley.

Berkeley youth alternatives garden patch is a program of Berkeley youth alternatives (Bya), which was founded 30 years ago as a shelter for runaway teens. over the years Bya has grown. The organization now runs more than 15 programs to meet the needs of thousands of children and their families each year. some of these programs are a comprehensive counseling center, a preschool, an after-school center, a summer camp, a computer center, a teen center, and several sports programs.

The Berkeley youth alternatives garden patch is part of Bya 's youth employment, youth enterprise, and job training program for high school students. Teenagers learn to grow organic vegetables and fruits from sowing the seed to harvesting and selling the vegetables. a variety of crops are grown in the garden patch. The crops that the youths harvest during the winter months are carrots, beets, collard greens, swiss chard, broccoli, potatoes, green garlic, and many more. some of the summer crops they grow are several tomato varieties, green beans, summer squashes, corn, apricots, plums, basil, and cilantro.

The youths also grow specialty salad greens for sale to local restaurants—high sierra, crisp, red romaine, red oak leaf, red sail, and green buttercup—as well as edible flwers. The Berkeley youth alternatives garden patch operates largely on organic principles. To control pests, the young gardeners learn organic growing techniques, such as double crop rotation and the planting of many different kinds of flwers and vegetables to attract beneficial insects.

one of the most damaging pests in a salad garden is the common snail. snails love to munch on tender leaves, causing unattractive holes if not outright destroying the plants. Because snails prefer shady spots away from the sun, the young gardeners have learned to weed and to leave a bare, exposed border around plant beds so that the snails have no place to hide.

The youths have also learned what all farmers know: you must accept the forces of nature and learn to live with a certain amount of damage to your crops. in addition to learning about organic farming practices, young adults learn every aspect of managing a garden. They take on the roles of business manager, garden manager, and greenhouse manager. They also go out to schools and educate other youths about teen nutrition.

learning to market their produce teaches youths about management, community relations, customer relations, and business. so whether or not the teenagers decide to pursue a career in farming, they will come away from the program with skills they may apply to many other jobs and situations.

some former garden project participants have gone on to become nursery workers, school garden teachers, business and sales associates, and farm employees. depending on their interests and needs, the garden project managers try to help the teenagers achieve their goals. so the garden project cultivates not only a garden but also a community and people.