

Tahoe Fruit & Vegetable Workshop Series

Lettuce & Kale



passingthru.com image



Wikipedia image



Wikipedia image

Mary Wall –With additions by DML
Master Gardener, Lake Tahoe Basin



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Master Gardener Program

Tahoe Fruit & Vegetable Workshop Series

Lettuce & Kale

- Project overview
- Phenology
- Scientific classification & Plant Lifecycle
- Varieties
- Nutrition
- History and culinary aspects
- Planting and care
- Workshop plants & Supplier information
- Distribution of plant materials



Wikipedia image



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Lettuce & Kale

- **Master Gardeners** are **community members** who have been trained under the direction of the University of California (Davis) Cooperative Extension. **50 hours of formal classroom training**
- We assist the UC Cooperative Extension by providing practical, scientific gardening information to the home gardeners in the Lake Tahoe Basin.
- The Lake Tahoe Master Gardeners offer research-based information by:
 - ✓ **Answering questions** via email hotlines, farmers markets and at community events.
 - ✓ Offering **workshops**



123RF Image



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Lettuce & Kale

Master Gardeners engage in the Community



Community Gardens

School Gardens



Workshops



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Master Gardeners engage in the Community

Plant Sales

Farmers Markets



Phenology

- General **Phenology** looks at growth and development of plants that are due to weather and climate
- **Varietal Comparative Phenology** (VCP) compares growth and development among several plant varieties that are due to weather and climate
- Tahoe phenology

Merriam-Webster on-line Dictionary



Why grown lettuce and kale in the Tahoe Basin?

- Popular food: lettuce ranks second only to potatoes in number of servings per person
- Kale has grown in popularity – Very cold tolerant
- Both are very Nutritious
- Fairly easy to grow in summer at high **Elevation**



Scientific Classification

Lettuce: *Lactuca sativa*

Is in the daisy family which includes asters and sunflowers



The white sap is a milky fluid made of latex that's naturally found in the lettuce and is completely harmless. The botanical name for the substance is lactucarium, which comes from lactus, the Latin word for milk





The undomesticated version is called wild cabbage and is found in western Europe along the sea coast on limestone outcrops.



- **Kale:** *Brassica oleracea* var. *viridis*
 - Same species as cabbage, broccoli, brussel sprouts and
 - cauliflower only variety differs



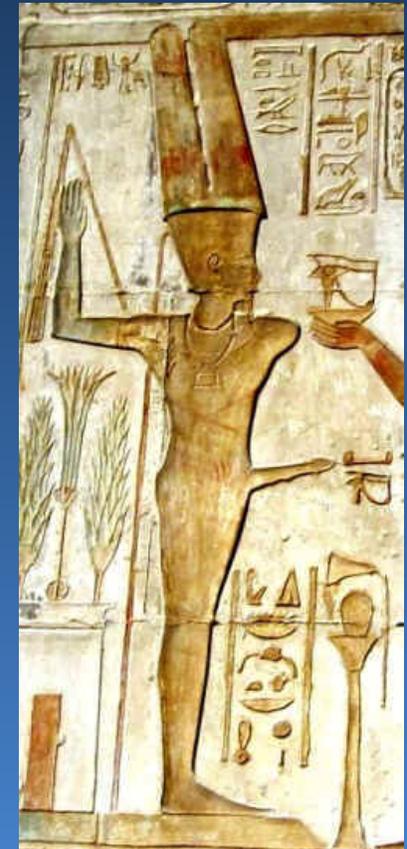
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Lettuce & Kale

History & Fun Facts

Lettuce I

- Native to the eastern Mediterranean region and western Asia – The wild form of lettuce is thought to be closely related to *Lactuca serriola* – prickly lettuce an edible weed.
- Egypt 4500 BC Cultivation - Initially grown for latex like sap and oils. Considered an aphrodisiac. Often as an offering to the God Min. Later edible leaf forms developed.

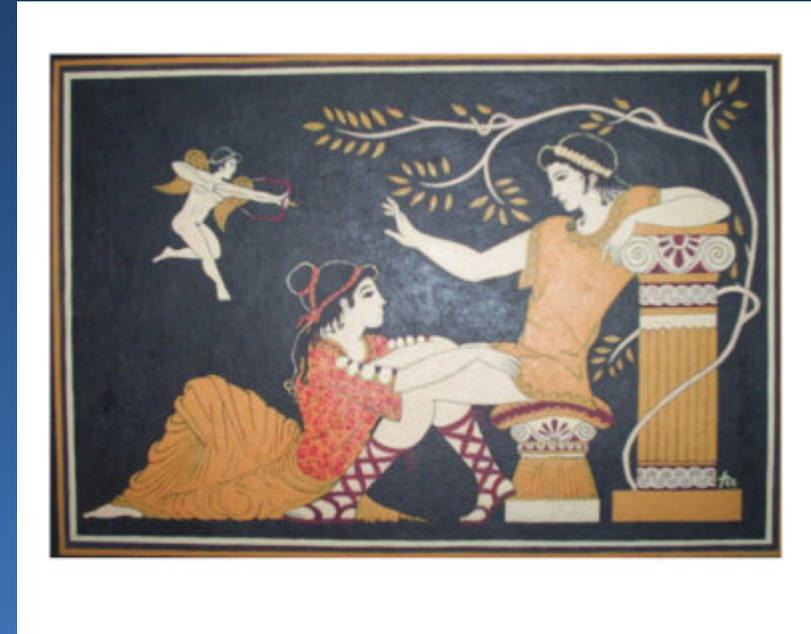


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Lettuce II

- Ancient Greek Mythology claimed that Adonis was killed by a wild boar in a field of lettuce.
- The Greek festival Adonia commemorated Adonis with women planting lettuce and fennel.
- The Greeks thought lettuce reduced sexual desires.



Adonis and Aphrodite



Lettuce III

- By the time of the Romans a number of varieties of lettuce were available. Aphrodite was replaced by Venus and lettuce was again thought as an aid to digestion and a sexual stimulant.
- Lettuce arrived in China by the 7th century though how or by whom is unclear.
- Columbus in 1494 brought lettuce to the new world in 1494.



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Lettuce & Kale

Lettuce IV

- With the development of rail transport and refrigeration lettuce has become a year round staple in the markets. California leads the way in production with the iceberg head lettuce the most common lettuce in stores.



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Lettuce V

- **Lactucarium**, the milky latex has been thought to have hallucinogenic properties since the time of early Egypt. It regained a short lived revival during the hippie movement of the early 1970s (Lettuce opium).



History & Fun Facts

Kale

- Celts to Europe in 600 BC
- Greece 400 BC
- Canada in 1850 by Russians
- UK Dig for Victory gardens
(US aka Victory Gardens)
- Farmer's markets, smoothies, foodies & chefs



Image by Jen Delyth



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Lettuce & Kale

- **Twice lost vegetable Kale**
- By the Middle Ages, kale had spread through Europe and Asia. The Italians developed plants with “dinosaur” scales, while the Scots created varieties with leaves like frilly petticoats. The Russians produced kale that could survive in the snow.
- By the end of the middle ages kale was one of the most important green vegetable in Europe but soon fell out of favor as a poor mans food.



Medievalist.net Image



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- **During WWII** Kale was promoted as a victory vegetable in Britain, France and Germany (especially during fall and winter) based on its nutrient value and cold weather resistance.
- At the end of the war kale was abandoned considered a war time ration
- **Rediscovered** as a super green in the 1990s



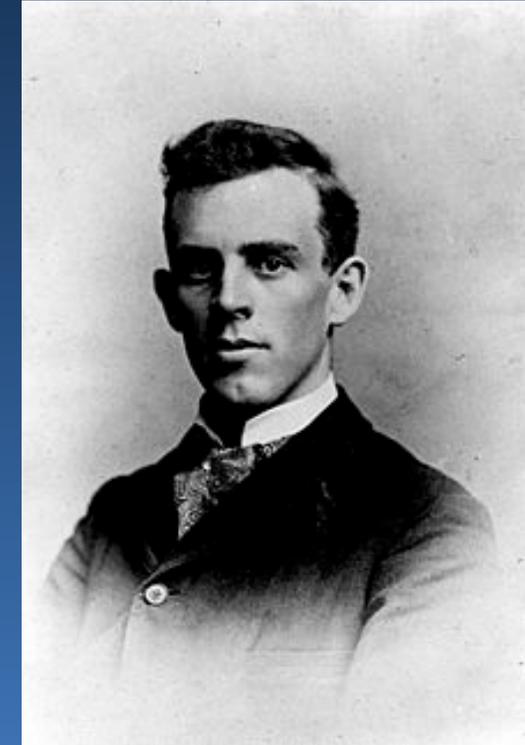
British Library Image



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Lettuce & Kale

- **David Fairfield** is credited with the introduction of kale into the United States, though records of kale from Russia introduction into the northwest and Canada exist. Fairfield also introduced avocados, soybeans, pistachios, dates and varieties of cotton to the American agricultural system as a Plant Explorer for the USDA



David G. Fairfield
1869-1954



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Gettyimages

Life Cycle of Lettuce

- **Seed Stage**
 - Dormant
 - Germinating (5 days)
- **Vegetative**
 - Seedling (7 – 14 days)
 - Head formation (45- 90 days)
 - Bolting (30 days)
- **Reproductive**
 - Flowering (14 days)
 - Ripening (11-13 days)



Life Cycle of Kale

- **Seed Stage**
 - Dormant
 - Germinating (4-7 days)
- **Vegetative**
 - Seedling (7 – 14 days)
 - Head formation (none)
 - Bolting (2nd year)
- **Reproductive**
 - Flowering (2nd year)
 - Ripening (?)



Gettyimages



Lettuce Varieties

Romaine

Iceberg

Butterhead

Green Leaf

Oakleaf

Mesclun

Stem lettuce

Oil Seed



Lettuce Varieties

Romaine

- Aka Cos Lettuce
- Outer leaves removed: Hearts of Romaine
- Thick center rib gives it a real crunch
- Rib also gives this lettuce a slight bitter taste
- Caesar salad



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Lettuce Varieties

Iceberg

- The most popular type in the US
- Very heat-sensitive and was originally adapted for growth in the northern US
- Ships well
- Low in flavor and nutritional content



Amazon.com image



Lettuce Varieties

Butterhead

- Aka Butter lettuce, Bib lettuce, Boston lettuce
- Leaves are soft and delicate
- Texture smooth like butter
- Sometimes sold “living”



iStock image



Live Gourmet image



Lettuce Varieties

Green Leaf

- Aka Loose Leaf lettuce
- Ruffled edges
- Mild flavor
- Hardy
- Continual harvest
- Eaten raw or sautéed or grilled



Tanimura & Antle image



Johnny's Selected Seeds image



Lettuce Varieties

Oakleaf

- Aka Red Oakleaf, Green Oakleaf
- The shape similar to that of the oak tree
- Mistake it for leaf lettuce
 - Differences in shape and texture
 - Oakleaves are a little shorter and more squat
 - Tops of their leaves have a softer texture



Lettuce Varieties

Stem lettuce

- Aka celtuce
- Grown for its stem
- Used in Chinese cooking
- Taste similar to hearts of palm, celery



Wikipedia image



Kale Varieties

- Dino Kale
- Purple Kale
- Curly
- Ornamental Kale



Nutrition

Serving Size: 100 grams RAW

	Iceberg	Romaine	Kale
Water	96 g	94 g	90 g
Calories	14 Cal	17 Cal	35 Cal
Carbs	2%	3%	3%
Fiber	5%	8%	16%
Calcium	2%	3%	25%
Magnesium	2%	4%	10%
Potassium	3%	5%	7%
Vitamin C	4%	5%	112%
Vitamin A	63%	55%	55%

Calculated from
USDA Food Database
NIH, Dietary Reference Tables



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Lettuce & Kale

History & Fun Facts

Lettuce

Lettuce production
(millions of tonnes)

Country	2015
 China	14.6
 United States	3.8
 India	1.1
 Spain	0.9
 Italy	0.6
World	26.1

Source: UN Food & Agriculture Organization^[4]

Kale

China produces and exports more kale than any country with the U.S. coming in as #2.

California leads the US in kale production



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Caesar Salad

- Olive oil
- Garlic
- Croutons
- Lemon juice
- Parmesan cheese
- anchovy paste or 1-2 anchovies
- Raw or coddled eggs
- Black pepper
- Salt
- ROMAINE Lettuce

Make the croutons

Make the dressing

Tear or cut Romaine

Mix together

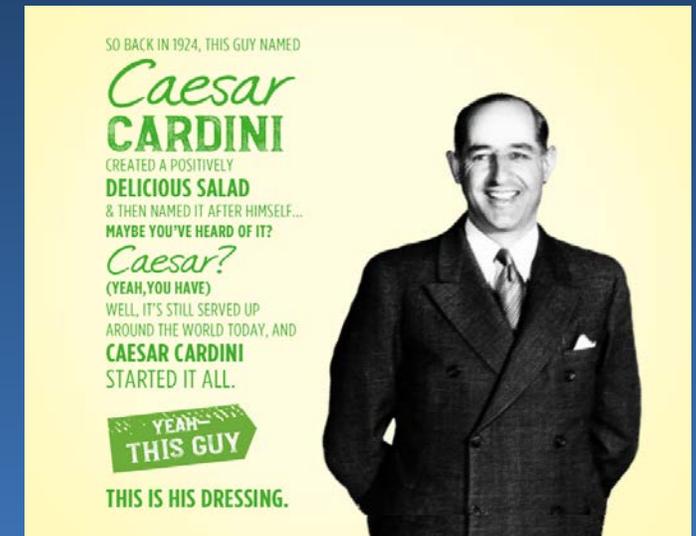
Prepare the salad at the table for added drama.



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- The salad's creation is generally attributed to restaurateur **Caesar Cardini**. He was working in Tijuana where he avoided the Prohibition restrictions. He is said to have invented salad as kitchen ran low on supplies on July 4, 1924. Originally made table side to add flair.



Cardini's Dressing Image





Kale Chips

- Olive oil
- Seasoning of choice
- Kale leaves

- Trim away veins of kale
- Mix seasoning with olive oil
- Toss together
- Arrange kale pieces on micro-wave safe plates, do not overlap
- Cook each plateful of kale in microwave, until crispy (2-3 min), may need to turn once





- Harden off the seedlings - adjust to sun, wind and temperature
 - Dig a hole slightly larger than the pot size
 - Gently remove the plants – those roots are tender
-
- Space to allow for mature growth
 - Plant just at the crown, if not stems rot
 - Fertilize with a well balanced fertilizer or compost, leafy veg need a good source of



Growing Lettuce



- Prefers cool temperatures
- Considered to be a spring crop

Soil Requirements

- Humus-rich, moisture-holding, but well-drained
- Abundant in leaf-producing nitrogen
- manure & compost
- pH 6.5 to 7.0, lime if necessary
- Sunlight 3-8 (partial & full sun)
- Water 3-5 days



Growing Lettuce



Jungseed image

Planting

- Early spring lettuce in Tahoe, sow indoors in late winter in or cold frames
- After last chance for snow and ground is workable, plant seedlings or to extend harvest plant seeds directly in ground at weekly intervals ~ late May early June



Texas A&M AgrLife Research photo

- As weather warms, plant or seed in shadier locations, use shade cloth
- Limited space, lettuce can be intercropped with slower-growing or after harvesting other vegetables



Growing Lettuce

Harvest



My-Favorite Things image



[Mad About Gardening image](#)

- Quality deteriorates, harvest ASAP
- Make extra plantings not extend harvest
- Pick in morning, preserves crispness acquired overnight
- Loose-leaf can be harvested continuously
- Head types test firmness with back of hand



Growing Kale

- Prefers cool temperatures
- Tolerates frost



Soil Requirements

- Well-drained, light soil
- Ample nitrogen, heavy feeders
- manure & compost
- pH content 5.5 -6.8, lime if necessary
- Sunlight 4-8 hours
- Water 1-2 inches



Growing Kale



Toni Sicola image

Planting

- Early spring kale in Tahoe, sow late winter indoors or cold frames
- After last chance for snow and ground is workable, plant seedlings 12 to 18 inches apart, closer for dwarf varieties



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Lettuce & Kale

Growing Kale

Harvest

- Harvest leaves 5 – 8 inches from bottom cutting center will stop growth
- Harvest in morning and refrigerate immediately
- Kale becomes sweeter after first frost
- Continues to grow in year 2



Dorling Kindersley



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Insect Pests

- Cutworms
- Slugs
- Whiteflies
- Aphids
- Earwigs



You Tube image

Diseases

- Rot

Critters

- Squirrels
- Rabbits
- Birds



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- **Parris Island Romaine**
- This is the typical commercial Romaine
- Introduced in 1951 by Ferry Morse Seed Company
- 59 days to Maturity
- 8 – 15 inches in height.



Baker Seed Image



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- **Australe Lettuce**
- Mid sized butterhead lettuce
- 50 days to maturity
- Red tinged leaves



High Mowing Image



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Lettuce & Kale

- **Areostar lettuce (AL)**
- A Mid size dark green Romaine lettuce.
Resistant to powdery mildew
- 50 days until maturity



Johnny's Seed Image



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Lettuce & Kale

- **Blade Lettuce**
- An Oak leaf variety
- 30 days from transplant to initial harvest (baby) 45 days otherwise
- Red tinged leaves



Johnny's Seed Image



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- **Dwarf Green Curled Kale**
- Compact plant with curled leaves
- Frost tolerant
- Very productive
- 50 days to maturity



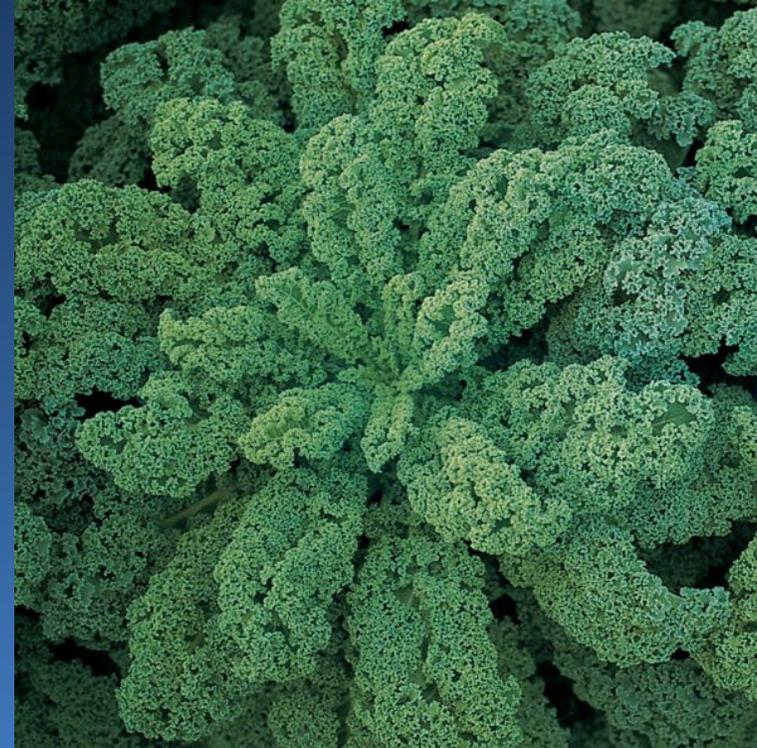
High Mowing Image



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- **Darkabor F1 Kale (DK)**
- Vigorous and tall the leaves are curled and dark green
- Very cold tolerant and may overwinter
- A hybrid variety



High Mowing Image



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Lettuce & Kale

- **Meadow Lark Kale**
- 50 days to Maturity
- A German variety
- 18-24 inches tall
- Cold tolerant



High Mowing Image



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- **Dazzling Blue Kale**
- Leaf color intensifies in cold weather
- Has red or pink midrib
- Very hardy 50-60 days to maturity.
- Can occasionally over winter



Adaptive Seeds Image



Lettuce and Kale plants grown by



Charles Schembre, Manager of the UNR High Desert Farming Initiative. The program supports small farmers in identifying and growing higher value crops in western Nevada.

The Tahoe Master Gardener vegetable growing workshops qualified for participation – Looking at high elevation issues of food production.



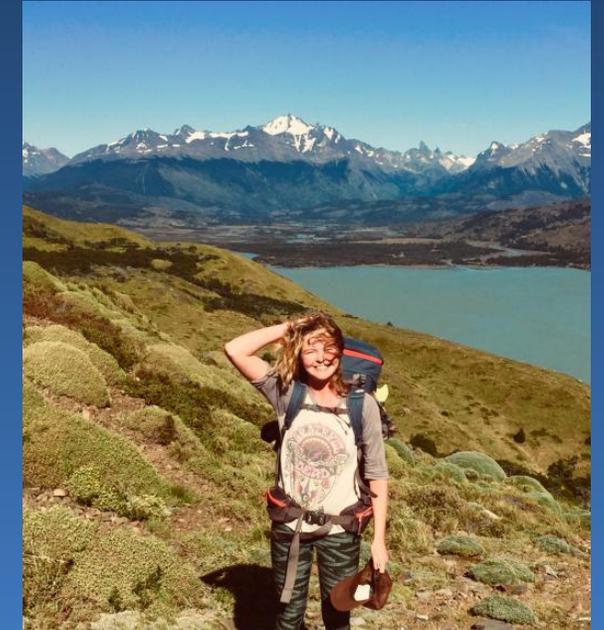


Alison Toy

Kale and Lettuce plants grown by

The University of California, Davis, Tahoe Environmental Research Center (TERC), has monitored Lake Tahoe for over 50 years, amassing a unique record of change for one of the world's most beautiful yet vulnerable lakes. TERC is dedicated to research, education, and public outreach on lakes and their surrounding watersheds and airsheds.

Public tours are available at the Tahoe City Field Station in the summer and year-round at the Tahoe Science Center in Incline Village.



Brooke Boeger



Ornamental Kale





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- China
- Americas Columbus 1494
- California 17th century
- Refrigeration and railway transportation
- Harmless white sap in homegrown lettuce gives scientific name



Tahoe Fruit & Vegetable Workshop Series

Lettuce & Kale

Workshop Varieties

Lettuce

Amish Deer Tongue

Freckles Romaine

Tom Thumb

Kale

Lacinato

Dwarf Blue Curled Scotch



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Distribution of Plant Materials

- 3 pony packs TOTAL
- 2 packs lettuce, 3 varieties
- 1 pack kale, 2 varieties



Tahoe Fruit & Vegetable Workshop Series

Lettuce & Kale

Workshop Varieties

Freckles Romaine Lettuce

Heirloom



- Splashes of brilliant crimson
- Heat resistant, low bolt
- German “specked like a trout’s back”



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Lettuce & Kale

Workshop Varieties

Amish Deer Tongue Lettuce



- Rugged
- Sharp flavor
- Strong yields
- Cut-and-come-again



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Lettuce & Kale

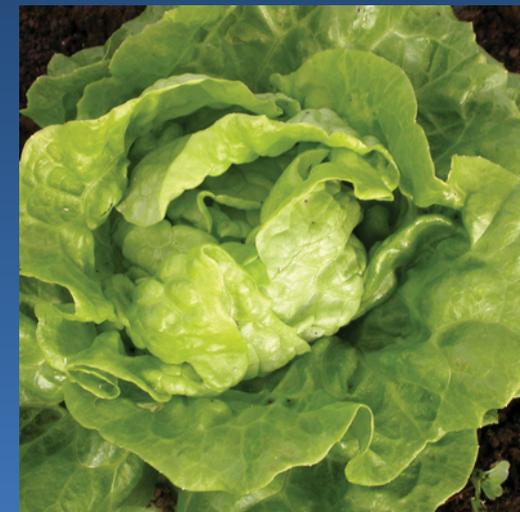
Workshop Varieties

Tom Thumb Lettuce

Heirloom



- Small, round, baseball size
- Good for Containers
- Single serve head



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Lettuce & Kale

BrownBoxSoil image



SALAD Fixings



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BrownBoxSoil image



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