New Mexico FFA

Horticulture Produce

Career Development Event

Horticulture Produce

Revised 7/27/2023

PURPOSE

To stimulate the study of and interest in the science of growing, harvesting, storing, processing, and marketing of fruits, nuts, and vegetables through Agricultural Education curriculum.

OBJECTIVES

- To develop an understanding of the economic importance of the horticulture industry in the United States.
- Help develop an awareness of job opportunities for students who may be interested in careers in Olericuture and Pomology.
- Introduces quality standards and conditions for produce.
- Develops critical thinking skills and analytical skills through identification and judging quality of fruits and vegetables.
- Develop an understanding of cultural growing requirements for individual products and practices.
- Develop consumer awareness in purchasing produce.

COMMON CORE REFERENCES

7-8th Grade

MS-LS2-5. Evaluate competing design solutions for maintaining biodiversity and ecosystem services.*

9-10th Grade

CCSS.ELA-Literacy.RST.9-10.9 Compare and contrast findings presented in a text to those from other sources (including their own experiments), noting when the findings support or contradict previous explanations or accounts.

11-12th Grade

CCSS.ELA-Literacy.SL.11-12.1d Respond thoughtfully to diverse perspectives; synthesize comments, claims, and evidence made on all sides of an issue; resolve contradictions when possible; and determine what additional information or research is required to deepen the investigation or complete the task.

EVENT FORMAT

A. Classes

There will be six classes of vegetables, fruits and nuts. Each class will have four plates of the vegetable, fruit or nut to be placed on quality and condition. The varieties to be judged will be selected from the identification list. One class will be designated as the oral reasons class by contest officials. Note may not be used during oral reason presentations.

NOTE: Samples will not be handled or touched.

B. Math Assessment and Solution

There will be 15 math assessment and solution questions. Each question will be worth 10 points

All About Vegetables West Edition
May be purchased at bookstores, a local nursery, or wherever Ortho Products are sold.

NMSU Circular # 483 - *Growing Grapes in New Mexico*

NMSU Circular - *Growing Pecans in New Mexico* https://aces.nmsu.edu/pubs/_h/H659.pdf

Sunset Western Garden Book , Latest Edition
Available at most bookstores.

NMSU Circular #457Home Vegetable Gardening in New Mexico
http://aces.nmsu.edu/pubs/_circulars/CR457/

Delmar Publishers "Mathmatical applications in Agriculture"

http://www.delmarlearning.com/browse_prodct_detal.aspx?catlD=12346&ISBN=140183549X

NCCER Applied Construction Math (A Novel Approach)

Garden Math

http://gardenmath.blogspot.com/

Garden Math Useful Equivalents

http://pss.uvm.edu/pss123/equivtab.htm

C. Identification

The identification test will consist of two sets of 30 specimens from the identification list. Only marketable specimens will be used in the identification test. An identification sheet without variety names will be provided for each contestant. ID answers are to be placed on Form 14. Must have a minimum of 30 specimen to be completed. Allowed up to two sets/

TEAMS

One teams may enter per school. Each team will pay entry fees and all teams and individuals are eligible for awards.

TEAM MEMBERS

There may be four members to a team with the three highest individual total scores making the total for the team.

EVENT SECTIONS AND POINTS POSSIBLE

Oral Reasons	50 points
Math Assessment	150 points
Identification	600 points

Judging	300 points
Total	1100 points

Horticulture Produce Identification List

Vegetables and Herbs

1 Alfalfa Sprouts
2 Anise
3 Artichoke (Globe)
4 Asparagus
5 Basil
6 Bay Leaf
7 Bean (Black)
8 Bean (Kidney)
9 Bean (Lima)
10 Bean (Navy)
11 Bean (Pinto)
12 Bean (Red)
13 Bean (Snap)
14 Bean Garbanzo
15 Bean Sprouts
16 Beet
17 Bell Pepper
18 Black-eyed Pea
19 Bok Choy
20 Broccoli
21 Broccoli Flower
22 Brussell Sprouts
23 Cabbage
24 Carrot
25 Cauliflower
26 Celeriac
27 Celery
28 Chayote
29 Chinese Cabbage
30 Chives
31 Cilantro
32 Collards
33 Cucumber
34 Dill
35 Eggplant
36 Endive (Regular or French)
37 Garlic
38 Ginger Root
39 Honeydew Melon
40 Horseradish
41 Jicama
42 Kale
43 Kohlrabi
44 Leek
45 Lettuce (Bibb)
46 Lettuce (Head)
47 Lettuce (Leaf)
48 Lettuce (Romaine)
49 Mint
50 Mushroom (Crimini)
51 Mushroom (Portabella)
52 Mushroom (White)
53 Muskmelon (Cantaloupe)
54 Nopales (cactus
55 Okra
56 Onion (any color)
57 Oregano
58 Parsley
59 Parsnip
60 Peas (Green)
61 Pepper (Floral Gem)
62 Pepper (Habanero)
63 Pepper (Jalepeno)
64 Pepper (Long Green Chile)
65 Pepper (Pimento)
66 Pepper (Poblano)
67 Pepper (Serrano)
68 Popcorn
69 Potato (Finger)
70 Potato (Purple)
71 Potato (Red)
72 Potato (yukon gold)
73 Potatoe(Russett
74 Pumpkin
75 Radicchio
76 Radish
77 Radish (Daikon)
78 Rhubarb
79 Rosemary
80 Rutabaga
81 Sage
82 Scallions
83 Shallots
84 Spinach
85 Squash (Acorn)
86 Squash (Butternut)
87 Squash (Mexican Gray Calabicita)
88 Squash (Spaghetti)
89 Squash (Yellow Crook-neck)
90 Squash (Zucchini)
91 Sugar Cane
92 Sweet Corn (Yellow)
93 Sweet Potato
94 Swiss Chard (any color)
95 Tarragon
96 Thyme
97 Tomatillo
98 Tomato (Cherry)
99 Tomato (grape)
100 Tomato (Italian-Roma)
101 Tomato (Salad)
102 Tomato (Yellow)
103 Turnip
104 Yucca Root

Fruits and Nuts

105 Almond
106 Apple (Gala)
107 Apple (Golden Delicious)
108 Apple (Granny Smith)
109 Apple (Red Delicious)
110 Apricot
111 Avocado
112 Banana
113 Blackberry
114 Blueberry
115 Brazil Nut
116 Cashew
117 Cherry (any variety)
118 Chestnut
119 Coconut
120 Craisin
121 Cranberry
122 Date
123 Fig
124 Filbert
125 grape (any color)
126 Grapefruit
127 Guava
128 Kiwi Fruit
129 Kumquat
130 Lemon
131 Lime
132 Macadamia Nut
133 mandarin
134 Mango
135 Nectarine
136 Olive (any variety)
137 Orange (Naval)
138 Orange (Blood)
139 Papaya
140 Peach (any variety)
141 Peanut
142 Pear (any variety)
143 Pear (Asian)
144 Pecan
145 Pineapple
146 Pinon Nut
147 Pistachio
148 Plantain
149 Plum (any variety)
150 Pomegranate
151 Prune
152 Pumpkin Seeds
153 Raisin (any color)
154 Raspberry
155 Star Fruit
156 Strawberry
157 Sunflower Seed
158 Tangelo
159 Walnut
160 Watermelon

Sample Horticulture Produce Math Problems

1. Your anticipated Jalapeno yield is 10 tons per acre. Assuming you will have a 2 % harvest/processing loss how many pounds of jalapenos would be marketed from a 3.5 acre farm?

2. Rhubarb crowns are planted at 2.5 feet intervals. How many crowns would you need for one garden row that is 96 feet long?

3.Beets require .21 inches of water per day. How many inches of water would be needed for the month of July?

4. Joe Greenhand harvested 1200 pounds of watermelons for the farmers market. A watermelon is 92 % water. How many pounds of plant product is Joe actually transporting?

5. If there are 3,000 radish seeds to an ounce. How many seeds would be found in one pound?

6. Crucifer crops require pH above 6.8 . You need to raise the pH of your 50 acre field. How many pounds of hydrated lime need to be applied. (application rate is 1500 lbs. per acre)

7. Commercial peas are grown at a rate of 400,000 plants per acre. How many plants could be grown on 4.25 acres?

8.Your 1 acre tomato patch requires 1.5 lbs. of seed. There are 9,000 seeds to the ounce. Assuming a 90 % germination rate, how many plants can you expect.

9. Baby corn will yield 8,000 unhusked pounds per acre. Ninety percent of the weight is husks, silk etc., that will be removed. How many pounds of husked marketable product remain?

PRODUCE JUDGING STANDARDS

In judging fruits and vegetables for show, remember three main parts:

1. Uniformity of size
2. Uniformity of shape
3. Uniformity of color

They should be typical for the variety. Size is usually what the public would prefer to buy at the market.

Shape - Choose exhibits having the same shape and being typical for the variety.

Color: The specimens should have the same color or color markings, i.e., peaches with a red blush or the fruit should all have the same blush.

The materials to be judged should be:

1. True to type
2. Of good quality
3. In good condition - free of bruises, cuts, discoloration, etc.
4. At proper stage of maturity for eating
5. An example of cultural perfection
6. Free from pest damage
7. Clean

Special Points to Consider in Selecting and Judging Vegetables:

Beans, green and wax

Merits:	Fresh color Uniform in length coloring and maturity Good shape for variety - generally straight but some varieties curve on end Pod brittle, not wilted Fleshy and well filled with pulp from one end to other, but without beans being prominent Beans one-half mature Free from defects Can be shown with or without stems, but should be uniform
Preparation:	Leave stems attached to pod
Faults:	Tough Wilted Pale and discolored Evidence of insect and disease Knife marks on the pod

Beets

Merits:	Uniform in size, color and shape Size from one and one-half to three and one-half inches in diameter Generally dark red with little russeting on crowns No cracks, new varieties including gold colored beet
Preparation:	Cut off tops to approximately one inch
Faults:	Color not within uniform, light streaks visible, damaged, cracked, pithy, wilted, too large and tough for eating

Broccoli

Merits:	Fresh green color Right stage of maturity for eating Flowers tightly budded without yellow showing, crisp Free from worms and aphids Stems should be under six inches long
Preparation:	A few lower leaves may be trimmed off leaving no stubs
Faults:	Small, loosely closed sprouts; yellowish color, wilted

Cabbage

Merits:	Heads solid and firm; salad types 5-8 inches in diameter Kraut types -8 inches in diameter Tender, crisp good weight for size Free from insect damage or disease Type is important as varieties differ in shape Shape may include: round, flat, pointed, red and savoy
Preparation:	Outer leaves should be removed, leaving only the last few that curl at the tips (wrapper leaves) Cut stem one-fourth inch below lowest leaf
Faults:	Poor color, loosely formed, wilted Disease or insect damage Incorrect size or shape

Carrots

	Type very important: Short (3-4"); Half Long (5-7"), and Long (8" and over)
Merits:	Diameter depending on variety Smooth, straight Pale to deep orange, depending on variety; each carrot same size and color
Preparation:	Cut tops off at approximately one inch
Faults:	Off-colored, wilted, rough, cracked, insect damage, crooked or branched

Cauliflower

Merits:	Solid heads, good white color Smooth fine grained texture Crisp
Preparation	Outer leaves trimmed evenly about one to two inches above center of head. Cut stem one-fourth inch below lowest leaf.
Faults:	Wilted Yellow to brown color Rough, grainy texture (ricey)

Cucumbers (Listed under various classifications): Picking - one to three inches long; Slicing - six to eight inches long; and Gherkins (West India) - small pickling cucumbers that have burr-like fruit two to three inches long, one to one and one-half inches thick. Bright green skin with fleshy prickles.

Merits:	Should be even in size, crisp
Preparation:	Leave one-fourth to one-half inch of stem attached
Faults:	Light in color Not uniform in color and size Over mature Misshapen fruit

Eggplant

Merits:	Symmetrical and true to type 3-5 inches in diameter Firm, mature and uniform in color
Preparation:	Stems trimmed one to one and one-half inches Do not wash, but wipe with a damp cloth
Faults:	Wilted, misshapen Poor color, streaks in color of either green or white bruised spots

Herbs

Merits:	Fresh, uniform Clean leaves and stems
Faults:	Dirty, diseased, insect damage, discolored, shriveled

Kohlrabi

Merits:	One and one-half inches to three inches in size; tender; even color
Preparation:	Trim leaves to about one inch of vegetable; trim off long roots
Faults:	Oversized, wilted, hard and pithy

Lettuce (Head)

Merits: Firm, crisp, fresh
Head in good condition

Preparation: Leave most of wrapper leaves in tact

Best to remove few outer leaves after you get to show, as they protect the head
Cut stem or butt with knife leaving one-forth to one-half inch

Faults: Wilted, dry
Shriveled, loose or bolting heads

Muskmelons or Cantaloupe

Merits: Clean, firm
Free from soft spots, scratches, decay
Netting should be deeply ridged over entire melon
Even, good color
Determine ripeness by the "full slip" - vine should detach clean at attachment to melon

Faults: Over or under ripe
Coarse netting
Poor color, blemishes
Too much yellow indicated over ripeness

Okra

Merits: Uniform in size, shape, color and maturity
Typical of variety
Pods should be harvested when half grown, two to four inches long

Preparation: Trim stems one-half to one inch

Faults: Pods woody and fibrous

Onion

Merits: **Green Onions** - one-half to one inch in diameter, showing no bulge
Clear white color, dark green tops
About six inches long, roots trimmed to one-half inch
Dry Onions - Uniform in size, then neck
Good color and shape for variety

Preparation: Cut tops leaving one to two inches on bulb; remove rootlets. Outer scale can be carefully removed, but if damage occurs in inner scales, it is scored down heavily.

Faults: Too many layers of skin removed, thick, soft neck, sunburned.
Cracked scales, damaged.

Pepper, Bell

Merits:	Uniform, true to variety, firm, heavy, smooth, free from blemishes Stems should be attached; all specimens should have the same number of lobes or sections, varying from one to four, solid green color.
Faults:	Dull, rough texture Off color, sunscald

Pepper, Chile

Merits:	Uniform in size and shape Good color, firm Free from blossom-end rot Straight Stems attached
Faults:	Discoloration Shriveling Immature Skin blemishes

Potato

Merits:	Medium size (8 to 10 ounces), 3-6" long for Russet, 2-4" long plump, firm, smooth diameter for Red
Faults:	Immature, blemishes Rough in shape, dirty Select for good uniformity, size and color Free from green color, sprouting and shriveling

Pumpkins & Squash

Pumpkins and squash are difficult to describe because of the great variations available on the market. The items for judging should be representative of the variety; all should have 1/2 to 3" stems to prevent leaking.

Pumpkins

Merits:	Mature, smooth Evenly colored surface (green color indicates immaturity) Fruits may vary from round to oblong Surface is grooved
Preparation:	Cut from stalk, leaving two to three inches of stem attached
Faults:	Misshapen, immature fruit

Summer Squash

Merits:	Fruits small and tender enough to mark with fingernail; ideal length is six to eight inches, 1-2" in diameter
Preparation:	Trim stems to one inch by cutting from vine
Faults:	Fruits large and over-mature

Scallop Squash

Merits:	Fruits small, three to six inches in diameter, with or without stems

Winter Squash

Merit:	Uniform color Free from blemishes, insect and disease damage Fruit typical in shape and variety Fruits should be mature and the rind hard, not easily marked with fingernail
Preparation:	Trim stem to one inch
Faults:	Immature Insect and mechanical damage

Sweet Corn

Merits:	Uniform in length, size and color according to variety, kernels full grown and in the milk stage
Preparation:	Cut stems neatly below the point where the husks are attached If cut high, husks will fall and ruin appearance. Frequently silk is removed to tip of ear by pulling
Faults:	Immature, unfilled grains, over-ripe and hard, uneven rows. Not filled to tips of ears, worm damage.

Tomato

Merits:	Medium size, firm Color clear and typical of variety Clean, no growth cracks
Preparation:	All with stems closely trimmed or all stems removed. Remove blossoms attached.
Faults:	Coarse, over or under-ripe, bruised, soft cracks or corrugation Scarring

Watermelon

Merits: Good weight for size
Medium to large in size
Bright intense green color or even striping over melon. Yellow rather than white spot where melon rested on the ground. Form even and regular without bulges or furrows.

Preparation: Trim stem to one inch

Faults: Light in weight, uneven shape or color, blemishes
Ground spot white

Special Points to Consider in Selection and Judging Fruits:

Apples

Merits: Specimens should be typical of the variety, uniform in size, color and maturity

Free from insect, disease and mechanical damage
Size medium to large, but size is not important factor.

Preparation: Stems should be left attached; remove leaves and spurs

Faults: Not uniform, blemishes

Grapes

Merits: Typical of variety
Berries should be uniform in size, color and maturity

Pears

Merits: Uniform in shape, size, color and maturity, typical of variety

Preparation: Leave stems attached

Peaches

Merits: Uniform in every respect with the ground color of the fruit yellow

Preparation:
Stems of peaches need not be present, but should be uniform with or without stem
Care in handling to prevent bruising is a must

Plums

Merits: Uniform and typical of variety, fresh, plump and full color, free from damage

Preparation: Stems attached; do not remove natural bloom