Welcome to the Wednesday Weekly Webinar!

Presented by: Kyla Splichal, Horticulture Research Specialist, Williston Research Extension Center, NDSU Extension Service

Moderator: Julie Garden-Robinson, Ph.D., R.D., L.R.D., Professor and Food and Nutrition Specialist, Dept. of Health, Nutrition and Exercise Sciences, NDSU Extension Service

NDSU EXTENSION SERVICE

Upcoming Webinars

March 23

The Down and Dirty on Manure, Greenhouses and Food Safety

Esther McGinnis, Ph.D., Assistant professor and horticulturist, Plant science, NDSU Extension Service

March 30

Small Business Savvy: How to Avoid Being the Best-kept Secret

Glenn Muske, Ph.D., Rural and agribusiness enterprise development specialist, Center for community vitality, NDSU Extension Service

April 6

Farm to Market: Safe Food Handling During Processing and Selling Local Foods

Cliff Hall, Ph.D., Professor, Plant science, NDSU

April 13

Facts and Myths About Food Preservation

Julie Garden-Robinson, Ph.D., R.D., L.R.D., Professor and food and nutrition specialist, Health, nutrition and exercise science, NDSU Extension Service

April 20

What to Expect: Food Safety Inspections and Audit Requirements

Shaundra Ziemann-Bolinske, Agent, Family and consumer science, NDSU Extension Service and David Saxowsky, J.D., Professor, Agribusiness and applied economics, NDSU

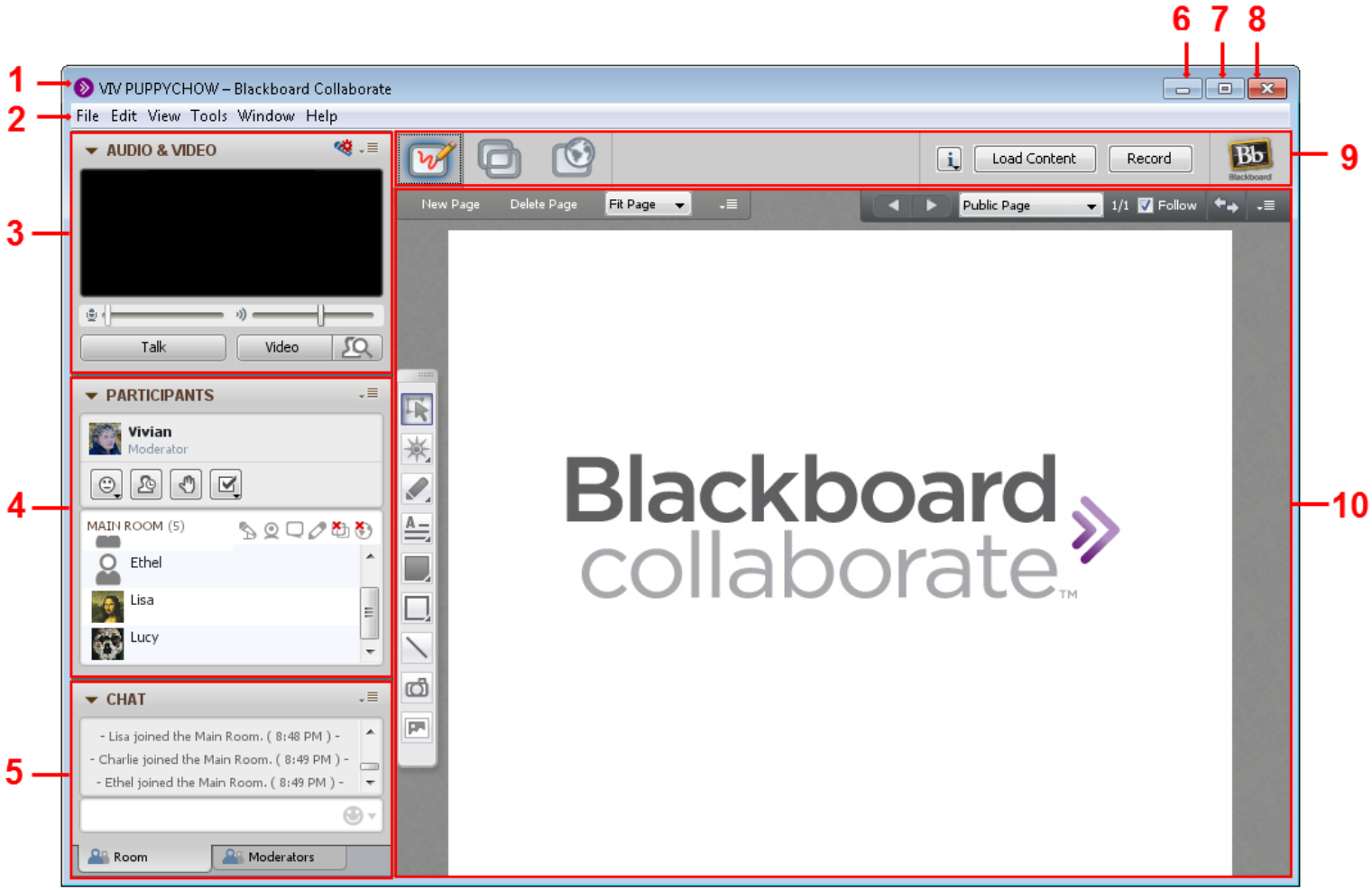
April 27

What to Know About Food Labels, Ingredients and Allergens

Cliff Hall, Ph.D., Professor, Plant science, NDSU and Julie Garden-Robinson, Ph.D., R.D., L.R.D., Professor and food and nutrition specialist, Health, nutrition and exercise science, NDSU Extension Service

A Few Logistics

Everyone will be in the “listening mode” but please type your questions in the “chat pod” to the left of your screen.



A Few Logistics

We will have time at the end of the webinar for questions/answers.

PLEASE fill out the short survey at the end of the webinar. This project was funded by a grant, so your responses to the survey are very important. The link to the online survey will be placed in the chat area and also will be emailed. Please copy and paste the link into your browser.

Our new “field to fork” is a work in progress and new resources will continue to be added.

Raspberries!

Julie Garden-Robinson, Ph.D., R.D., L.R.D., Food and Nutrition Specialist
MacKenzie Hanson, Community Nutrition Practicum Student

Raspberries are part of the rose family, and numerous varieties are available. The low-calorie fruits add flavor, color and nutrition to your menu

Growing

Raspberry plants should be planted in early spring. Summer- and fall-bearing varieties are available. Plant raspberries at least 2 feet apart in rows that are spaced 6 to 8 feet apart. As time passes, prune to allow six to eight canes per hill for optimal yield.

See the NDSU Extension Service publications "Starting a Community Orchard in North Dakota" (H1558) and "Refreshing Raspberries" (H38) for more information.

Storage

Use ripe raspberries right away, and throw away any moldy or damaged berries. Store raspberries in the crisper in your refrigerator at 40 F. Try to use the berries within two days after purchase or picking to ensure freshness. Rinse them right before use.

Nutrition

Without added sugar, 1 cup of raspberries has 64 calories, 1 gram (g) fat, 1.5 g protein, 15 g carbohydrate, 8 g fiber and 1 milligrams sodium. Raspberries also contain potential cancer-fighting natural plant chemicals, including ellagic acid.

Preservation

Raspberries may be frozen, canned or dried.

Freezing: Raspberries can be frozen in various ways.

Unsweetened pack: Place berries on a tray and place in the freezer. As soon as they are frozen, pack into containers in recipe-size amounts, leaving ½ inch head space. Seal, label with the contents and date, and freeze. Raspberries also may be placed directly into freezer containers or bags and frozen.

Sugar pack: To 1 quart (1½ pounds) berries, add ¾ cup sugar and mix carefully. Put into containers, leaving ½ inch head space. Seal, label and freeze.

See the NDSU Extension Service publication "Freezing Fruits" (FN182) for more information.

Canning: Choose ripe but firm, sweet berries with uniform color. Wash 1 or 2 quarts of berries at a time; drain and stem. Prepare syrup if desired (see reference below). Bring syrup to a boil and reduce heat. Spoon prepared berries into hot, clean jars, leaving ½ inch head space. Lightly shake the jars to pack the berries closely (do not crush). Return syrup to boiling. Add the boiling syrup to cover the berries, leaving ½ inch head space. Wipe jar rims and add lids. Process hot-packed berries in pints or quarts in a boiling water-bath canner: 15 minutes (0 to 2,000 feet altitude) or 20 minutes (more than 2,000 feet altitude).

See the NDSU Extension publication "Home Canning Fruit and Fruit Products (FN174) for more information.

Drying: Learn how to make raspberry fruit leather in the NDSU Extension Service publication "Making Fruit Leathers" (FN1586).

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North Dakota State University, Fargo, North Dakota
MARCH 2016

Recipes

Key to abbreviations

c. = cup	oz. = ounce
tsp. = teaspoon	g = gram
Tbsp. = tablespoon	mg = milligram

Raspberry Salad Dressing

1 c. plain yogurt
½ c. fresh raspberries
1 Tbsp. red wine vinegar
2 tsp. table sugar

In a blender, combine the yogurt, raspberries, vinegar and sugar. Blend until smooth and refrigerate until chilled.

Makes eight servings. Each serving has 35 calories, 0 g fat, 2 g protein, 7 g carbohydrate, 2 g fiber and 25 mg sodium.

Raspberry Jam

5 c. raspberries and juice
7 c. sugar
1 box powdered pectin

Half-fill water-bath canner with hot water; place it on the stove and let the water come to a boil while preparing jam. Crush the raspberries with a potato masher. Mix the raspberries and pectin and heat to boiling, stirring constantly. Add the sugar all at once and stir until dissolved. Continue stirring gently until the mixture comes to a full rolling boil that cannot be stirred down. Start timing for one minute and stir constantly while it continues to boil. Remove from heat. Skim any foam from the jam, and carefully ladle the jam into clean jars using a canning funnel. Fill jars to within ¼ inch of the rim. Wipe the rim with a clean, damp cloth. Quickly apply the lid and fasten with a ring. Process for 10 minutes (when water begins to boil again, start timing) in a boiling-water bath.

Makes eight servings. Each 1-tablespoon serving has 45 calories, 0 g fat, 0 g protein, 12 g carbohydrate, 0 g fiber and 0 mg sodium.

Raspberry Applesauce Squares

Crust/Crumb Topping
1½ c. quick-cooking oats
1 c. brown sugar
½ c. butter
½ c. all-purpose flour

Filling
1 c. fresh raspberries
1 c. applesauce
½ c. oat bran
½ c. white sugar

Preheat oven to 375 F. Grease a 9- by 13-inch baking pan. Combine oats, brown sugar and butter using a pastry blender. Add flour and continue combining, using a pastry blender, until crumbly. Spread half the crumb mixture into the bottom of the prepared baking pan. Bake in preheated oven until crust is lightly browned, about 20 minutes. Remove from oven and cool.

Mix raspberries, applesauce, oat bran and white sugar together in a bowl. Spread the raspberry filling onto the cooled crust and sprinkle with remaining crumb topping. Bake until topping is lightly browned, about 20 more minutes.

Makes 12 servings. Each serving has 330 calories, 15 g fat, 3 g protein, 46 g carbohydrate, 5 g fiber and 105 mg sodium.

For more information on this and other topics, see www.ag.ndsu.edu

Today's presenter: Kyla Splichal, Horticulture Research Specialist, Williston Research Extension Center. Kyla's horticulture research includes the following:

- Small fruits, vegetables and flower demonstrations
- Irrigated vegetable crops
- High value specialty crops

How to Grow Berries in North Dakota and Highlights from the Williston Research Extension Center

Kyla Splichal, Horticulture Research Specialist

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Field to Fork

How the Food Safety Modernization Act Affects My Operation

Germs can be introduced at any point in food production

Take steps to ensure traceability and safety

- Keep everything clean
- Be aware of application and harvest dates
- Keep records: who, what, when, how and where

Our Farm

Nesson Valley

Farm Mission Statement

"The Williston Research Extension Center conducts research to increase agricultural productivity in the semi-arid region for northwestern North Dakota while achieving a necessary balance between profitability and conservation of natural resources."

https://www.ag.ndsu.edu/WillistonREC

Raspberries

Our Garden

- 2.5 acres of vegetable, fruit, flower, herb and landscape plants

Watering

- Combination of Missouri River water, well water and rural water

Washing Produce

- Only rural water

Raspberries

Raspberries

Red Fruited Varieties

- Boyne
- Reveille
- K81-6
- Nova
- Latham

Disease and Pests

- Stem Canker disease
- Fruit flies
- Birds

Raspberries

Mulch	• For weed prevention & water retention
Fertilize	• 2x/month
Harvest	• By hand due to delicate nature
Wash	• Only before putting them on the table • Good agricultural practices are essential in the field

Juneberries

Amelanchier alnifolia

30+ cultivars planted (300 total plants)

Netting system used to deter birds

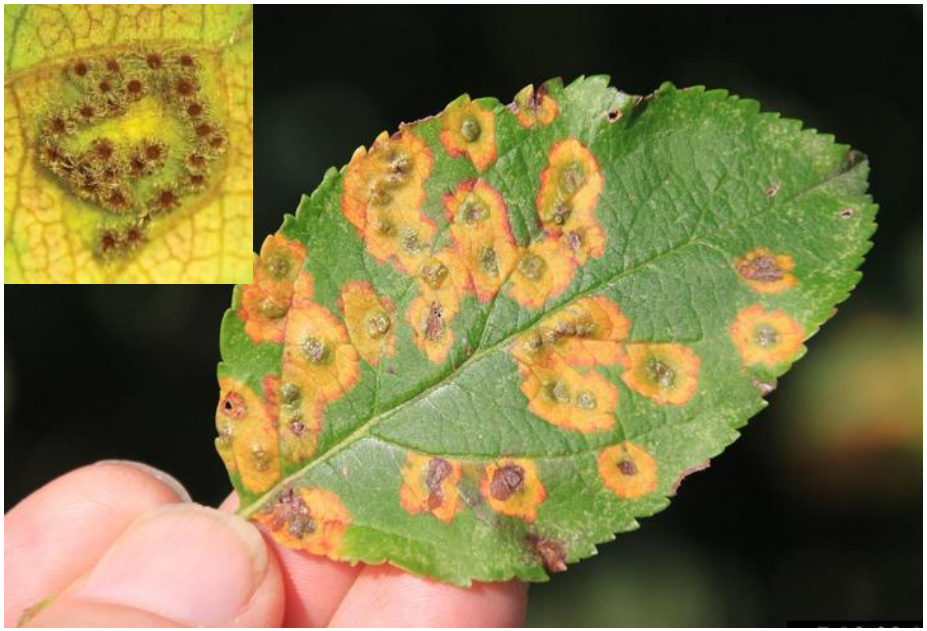
Disease has been a big problem

Regular fertilization plus irrigation raise the cost of this fruit

Juneberries

Cedar Apple Rust

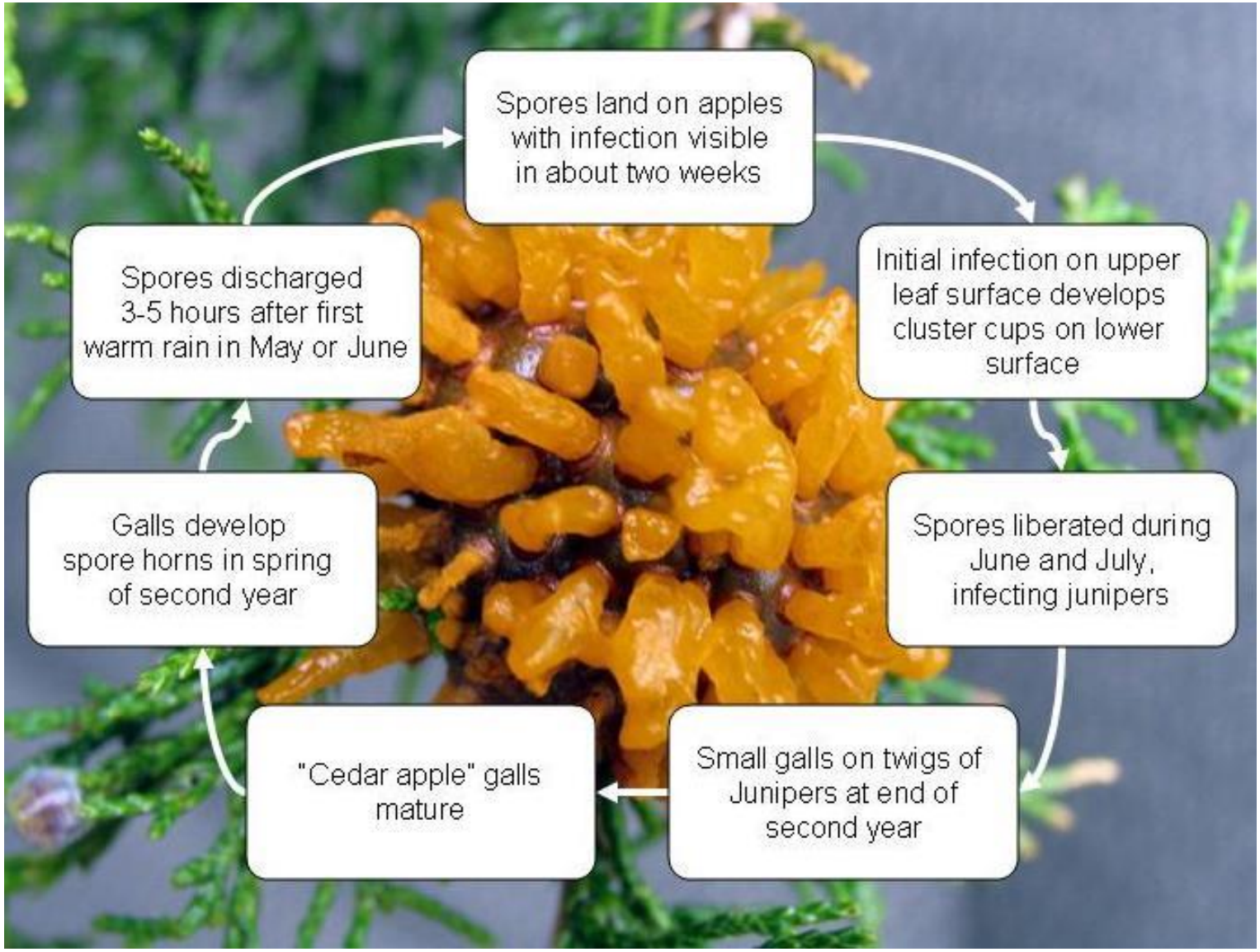
Foliar symptoms



Orange leaf spots with red borders. Spores are generated on the underside of leaf.

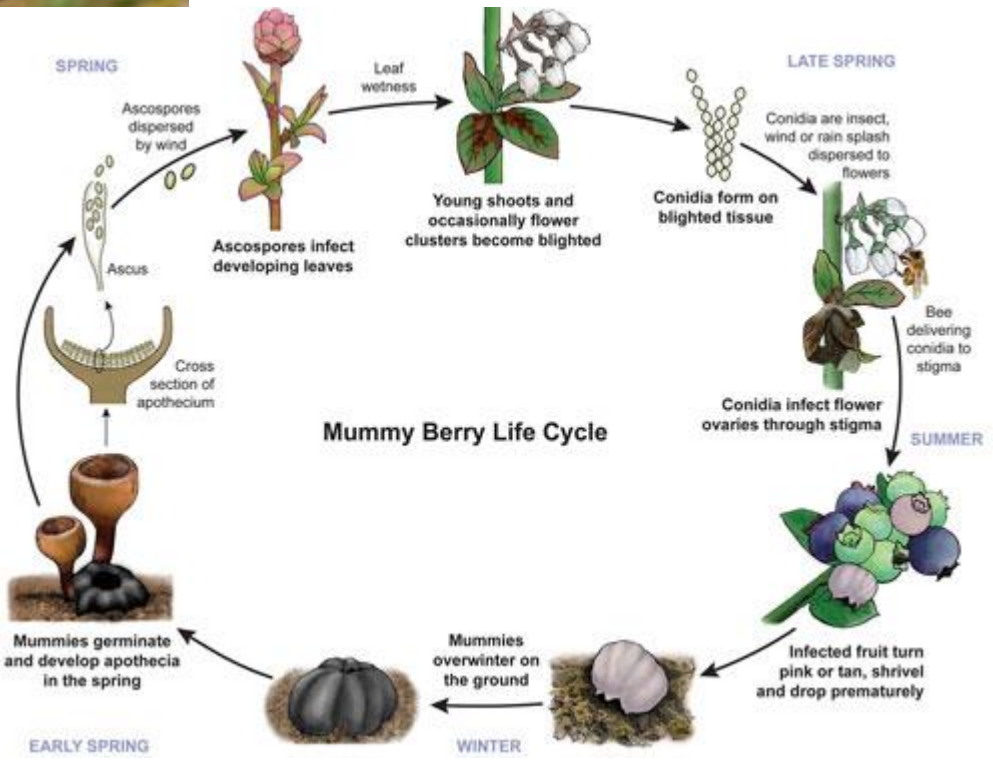
Fruit symptoms

Juneberries



Juneberries

Mummy Berry



Juneberries

Other diseases to note:

- Leaf & Berry blight- *Entomosporium*
- Fireblight
- Brown fruit rot
- *Cytospora* canker
- Powdery mildew

Pests:

- Wooly elm aphids
- Flower thrips
- Mites
- Saskatoon sawflies
- Bud moths
- Pear slug sawflies
- Fruit flies
- Birds

Honeyberries

Lonicera caerulea

Russian haskap

https://www.ag.ndsu.edu/CarringtonREC/northern-hardy-fruit-evaluation-project

Honeyberries

Russian haskap

https://www.ag.ndsu.edu/CarringtonREC/northern-hardy-fruit-evaluation-project

Grapes

Grapes

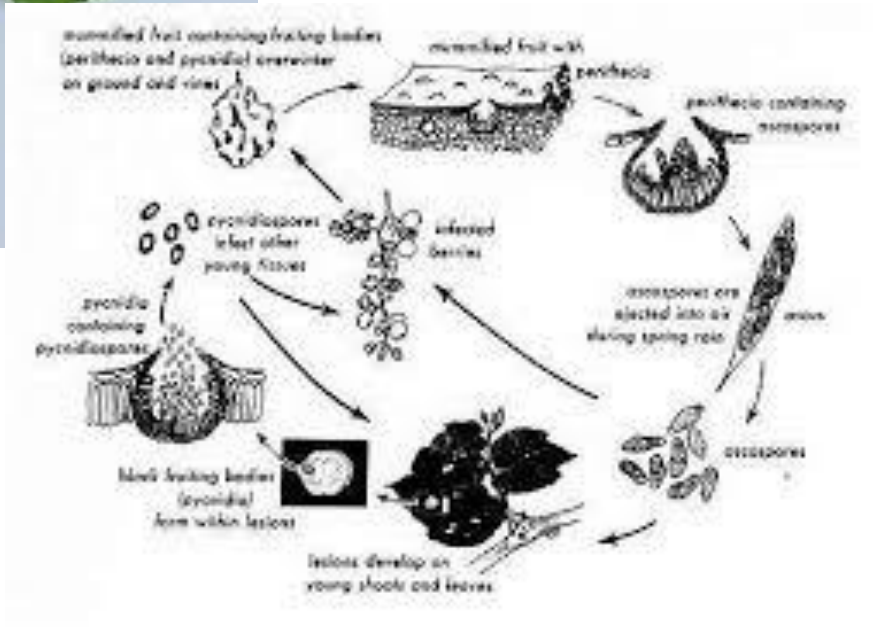
- If you grow grapes once, you'll always want them around.
- Cleanliness is essential year-round

Grapes

Diseases to note:	Pests:
• Black Rot • Powdery Mildew • Phomopsis cane & Leaf spot • Downy Mildew • Botrytis bunch rot • Crown gall	• Grape berry moth • Asian lady beetles • Japanese beetles • Grape phylloxera • Potato Leafhopper • Fruit flies • Birds

Grapes

Black Rot



Disease cycle of grape black rot.

Grapes

Harvesting

- Harvest in early morning
  - Cooler temperature preferable (40 F or below)
- Get the grapes to the cooler as soon as possible

Training

- Many options!

Other Things to Consider

Before the Field

Make a Plan

- Audit logs
- Standard Operating Procedure worksheet
- Deviations and corrective action log
- Product information
- Steps to take when something happens

In the Field

How do you keep pests out?

Inspection of the field before harvest

Tool and vehicle inspections

In the Field

- Harvest methods (hand or machine)
- Availability of handwashing stations
- Manure applications
- How is produce washed?
- Health of harvesters

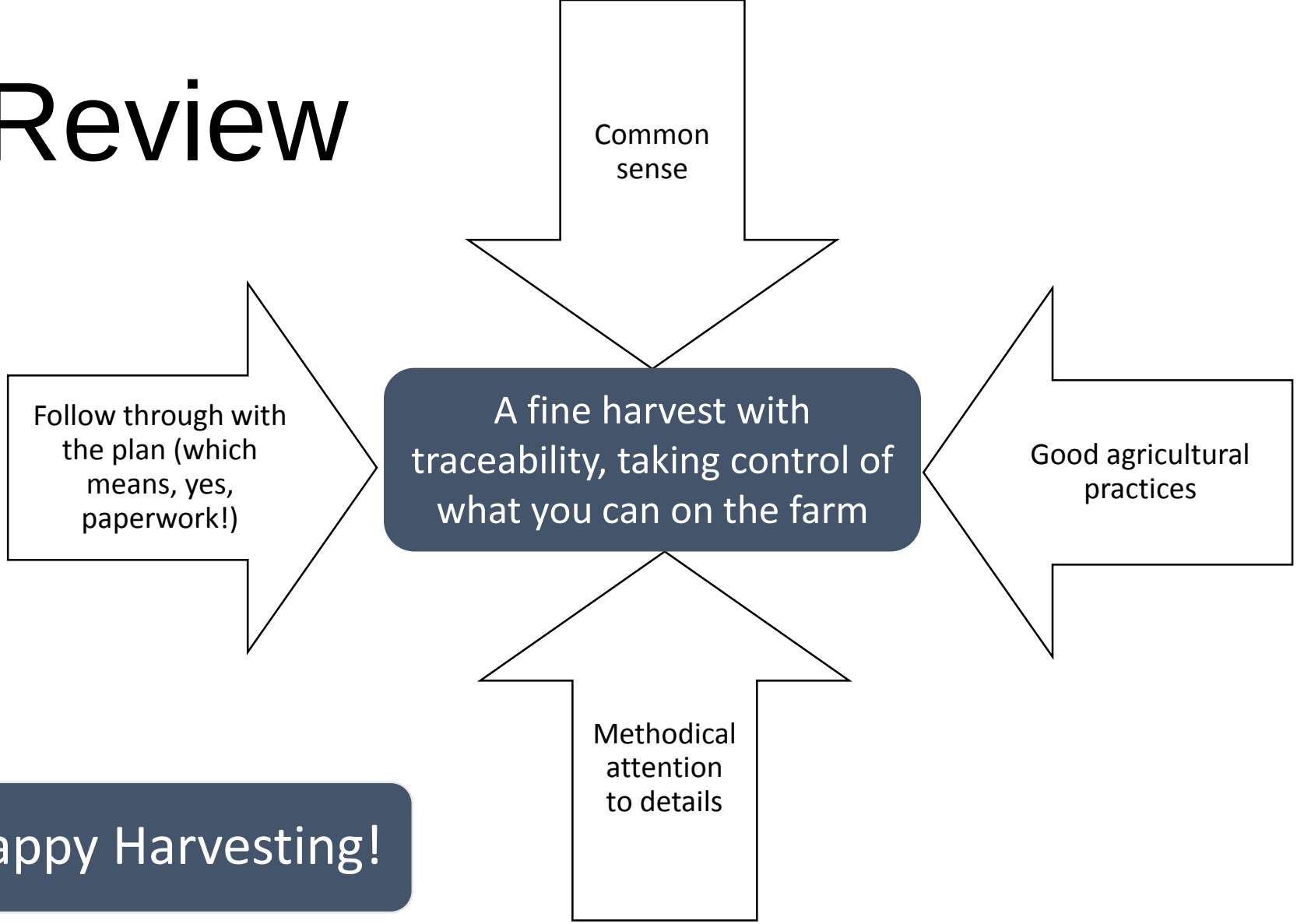
After the Field

- Cleaning
  - Harvest tool and container
  - Farm cart
    - Perform maintenance
  - Packing house and washing line
  - Storage cooler
    - Cleaning log and temperature check
- Transportation log
  - How long from field to cooler?

If there is trouble…

- Traceability
- Responsibility
- Legal Issues

Review



Happy Harvesting!

Thank you for attending the Wednesday Weekly Webinar!

Please fill out the survey.

Kyla Splichal, Horticulture Research Specialist, NDSU Extension Service

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Field to Fork

Questions?