



Microgreens

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NDSU EXTENSION
SERVICE

Battle Between Sprouts and Microgreens



Sprouts



Microgreens

Alfalfa, Radish and Other Sprouts

- ▶ Frequently grown in the winter by home gardeners
- ▶ Fun to grow fresh vegetables in the winter
- ▶ Great nutrition
- ▶ Quick—less than 1 week
- ▶ Very little equipment



Are sprouts safe to eat?

CDC List of Multistate Foodborne Outbreak Investigations of Sprouts		
Year of Outbreak	Type of Sprouts	Kind of Bacteria
2016	Alfalfa	<i>E. coli</i>
2016	Alfalfa	<i>Salmonella</i>
2014	Bean sprouts	<i>Salmonella</i>
2014	Soy sprouts	<i>Listeriosis</i>
2014	Clover sprouts	<i>E. coli</i>
2012	Clover sprouts	<i>E. coli</i>
2011	Alfalfa and spicy sprouts	<i>E. coli</i>
2010	Alfalfa	<i>Salmonella</i>
2010	Alfalfa	<i>Salmonella</i>
2009	Alfalfa	<i>Salmonella</i>

Over 30 reported outbreaks of foodborne illness related to raw sprouts since 1996, Foodsafety.gov

Problem with Sprouts

- ▶ Bacteria live on the seed surface
- ▶ Disinfecting the seeds with a bleach solution cannot guarantee that all bacteria are killed
- ▶ Seed coat not smooth--has microscopic nooks and crannies that harbor bacteria
- ▶ Even if only a few bacteria survive, the seeds are kept moist
- ▶ Conducive environment for bacteria to multiply



Warm, moist environment =
rapid bacterial growth

Food Safety

- ▶ US Government has categorized sprouts as a “POTENTIALLY HAZARDOUS FOOD”
- ▶ Recommends that the following individuals avoid raw sprouts:
 - ▶ Children
 - ▶ Elderly
 - ▶ Pregnant women
 - ▶ People with immune-compromised conditions
- ▶ Cooking sprouts does kill harmful bacteria

Microgreens



- ▶ Trendy
- ▶ Served at fancier restaurants
- ▶ Very nutritious
- ▶ Easy to grow
- ▶ Lower risk of food-borne illnesses

Sprouts v. Microgreens

Sprouts

- ▶ Eating a germinated seed
- ▶ Eat whole sprout: seed, roots, stem, cotyledons (no true leaves)
- ▶ Grow in water; bacteria transfers from seeds to plant
- ▶ Potentially hazardous food



Microgreens

- ▶ Later maturity stage
- ▶ Eat stem and first true leaves (don't eat the seed or roots)
- ▶ Grow in potting soil; seed buried
- ▶ Not labeled as a potentially hazardous food



Microgreen Supplies

- ▶ Disposable roasting pan, seed starting flat, or takeout container
 - ▶ Flat, open tray; don't need individual cells; must be clean
 - ▶ Better if it has drainage holes; otherwise have to be more careful with water
- ▶ Brand new potting mix
 - ▶ Don't use garden soil, compost or manure
- ▶ Seeds
 - ▶ Arugula, radish, peas, kale, mustard, beets, Swiss chard, basil
 - ▶ Lettuce is too delicate
 - ▶ Make sure seeds are not treated with fungicide
 - ▶ Seed
 - ▶ Cheaper to buy in bulk
 - ▶ Local garden centers
 - ▶ Johnny's Selected Seeds—great variety



Can seed more densely than this

Planting

- ▶ Add moistened potting mix to container; about 1.5 inches deep
- ▶ Even out the potting mix but don't compact it
- ▶ Spread seeds at a density recommended on seed packets
- ▶ Peas—a little less dense (1/4 inch apart)
 - ▶ Must soak them 8 hours before planting to speed germination
- ▶ Cover with a dusting of potting soil; 1/8 of an inch or less
- ▶ Moisten with spray bottle
- ▶ Cover with dome or plastic wrap only until germinates; then remove
- ▶ Check regularly to see if it needs water; will dry out faster once covering is removed
- ▶ Don't waterlog them



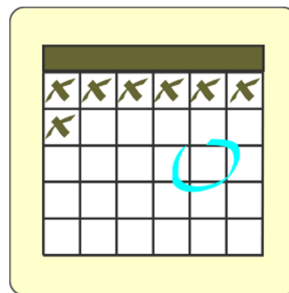
Growing conditions

- ▶ Sunny window
- ▶ Or under fluorescent lights
- ▶ Minimum of 4 hours of light
- ▶ 65-75 deg. F



Timing

- ▶ 10-14 days from seeding
 - ▶ Kale
 - ▶ Mild Micro Mix
 - ▶ Mizuna
 - ▶ Mustard
 - ▶ Radish
- ▶ 12-18 days
 - ▶ Peas



Harvesting



Kale (left); pea shoots (right)
Can seed more densely than this

- ▶ Harvest most microgreens when 2-3" tall
- ▶ Should have their first set of true leaves (not cotyledons)
- ▶ Harvest pea shoots when 3-6" tall
 - ▶ Very flavorful!

Harvesting

- ▶ Harvest with clean scissors above the soil line; clip the shoots
- ▶ Leave the roots and seed in the soil



Preparing them

- ▶ Rinse and dry them
- ▶ Refrigerate if you don't use them right away; can store for 2-3 days
- ▶ Usually eat them raw
- ▶ Can eat them alone with salad dressing
- ▶ Add to a lettuce salad
- ▶ Top a sandwich
- ▶ Add to a soup



Rinsing pea shoots

Taste and Nutrition

- ▶ Radish, mustard, kale are a little spicy!
- ▶ Pea shoots taste like peas
- ▶ USDA study : in general microgreens have 5 times the level of vitamins and carotenoids of a mature plant!
- ▶ Nutritional content depends upon individual species
- ▶ Research is ongoing!

