Kentucky Harvest of the Month

MARCH: MICROGREENS

Types of Microgreens

- Mustard
- Cilantro
- Kale
- Microgreen mixes (including 'spicy')

Sprouts:
- Pea shoots
- Broccoli
- Radish
- Sunflower

What are microgreens?

Microgreens are edible young plants that you can grow in a short period of time. They sprout from seeds of many kinds of vegetables and herbs and are harvested by cutting the young seedlings at the base above their root

Microgreens vs. sprouts

While you may hear microgreens referred to as sprouts, they are not the same thing! Sprouts are newly germinated seeds and are only 2-4 days old. The "leaves" you see with sprouts are not true leaves, they are the cotyledons (or seed leaves). Microgreens are a couple of weeks old and their leaves are "true leaves".

Sprout 2-4 days → Microgreen 7-10 days → Baby Green 2-3 weeks → Mature Green 1-2 months

Ideas for Your Classroom

Elementary School

- Grow different types microgreens in your classroom and then allow your students to investigate them. Compare and contrast taste, color, smell, and other characteristics!
- _Seed Survivor Sunflower Microgreens Lesson_ (click for link; great for virtual learning!)

Middle School

- _Microgreens Math_ (see attachment - good for early high school as well)

High School

- Grow (or purchase already grown) several kinds of microgreens and sprouts (don't tell your students which ones are which). Discuss the life cycle of a plant and plant morphology (sprouts only have cotyledons but microgreens have true leaves!). Have students investigate the microgreens and sprouts to identify which growth stage different varieties are in.
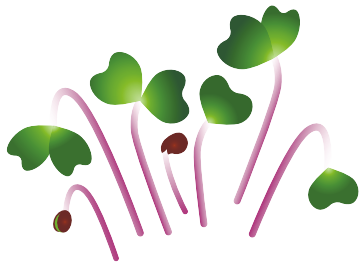
Kentucky Horticulture Council

Microgreens Math

Microgreens are edible young plants that you can grow in a short period of time (1-3 weeks). Microgreens germinate from seeds of many different vegetables and herbs including broccoli, kale, mustard, basil, lettuce and more! Microgreens are harvested by cutting the young seedlings at the base above their roots. Farmers plant microgreen seeds in trays and need to know how many seeds to plant. Today, we will learn how to determine the weight of the seeds that should be planted in each tray.

Sprout	Microgreen	Baby Green	Mature Green
2-4 days	7-10 days	2-3 weeks	1-2 months

*First, let's go through an example together. You want to grow mustard microgreens in a rectangular tray that is **12 inches by 5 inches** and you need to know how many seeds to plant in the tray. On the seed packet, the labeler gives you the following information:*

Seeds per pound: **8,900 seeds/lb**   Germ Rate: **76%**   Optimal Seed Density: **6 seeds/in^2**

1. Calculate the total growing area of your tray.

   growing area = length x width

2. Given the optimal seed density, calculate the total optimal seeds per tray.

   optimal seeds per tray = growing area x optimal seed density

3. Not all seeds will sprout. Given the germ rate (the average percentage of seeds that will sprout), what is the adjusted optimal seeds per tray?

   adjusted optimal seeds per tray = total optimal seeds per tray ÷ germ rate

4. It would be difficult to count tiny seeds. Let's measure by weight instead!
   a. First, convert the number of seeds per pound into number of seeds per gram.

   Seeds per gram = seeds per pound ÷ grams per pound (453.592)

   b. Then, calculate the number of grams of seed per tray.

   Grams of seed per tray = adjusted optimal seeds per tray ÷ seeds per gram

*Now, try one on your own! Let's say you wanted to grow a Red Veined Sorrel Microgreen Mix. You have a tray that is a circle with a **diameter of 8 inches**. On the seed packet, the manufacturer gives you the following information:*
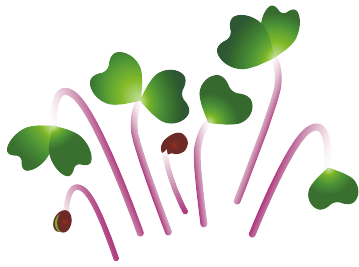
Seeds per pound: **685,611 seeds/lb**   Germ Rate: **91%**   Optimal Seed Density: **10 seeds/in²**

1. Calculate the total growing area of your tray.

2. What is the total optimal number of seeds per tray?

3. What is the adjusted total number of seeds per tray?

4. Convert the number of seeds for the tray to weight in grams.

Microgreens Math

Microgreens are edible young plants that you can grow in a short period of time (1-3 weeks). Microgreens sprout from seeds of a variety of vegetables and herbs including broccoli, kale, mustard, basil, lettuce and more! Microgreens are harvested by cutting the young seedlings at the base above their roots. Farmers plant microgreen seeds in trays and need to know how many seeds to plant. Today, we will learn how to determine the weight of the seeds that should be planted in each tray.

Sprout	Microgreen	Baby Green	Adult Green
2-4 days	7-10 days	2-3 weeks	1-2 months
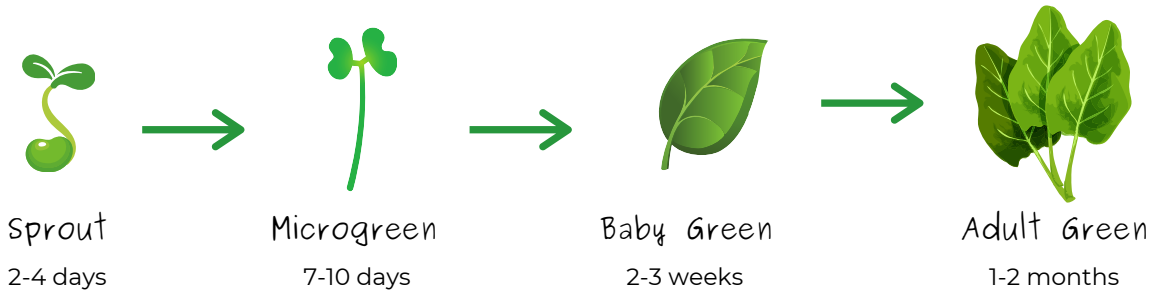
*First, let's go through an example together. You want to grow sunflower microgreens in a rectangular tray that is **12 inches by 5 inches** and you need to know how many seeds to plant in the tray. On the seed packet, the manufacturer gives you the following information:*

Seeds per pound: **8,900 seeds/lb**   Germ Rate: **76%**   Optimal Seed Density: **6 seeds/in²**

1. Calculate the total growing area of your tray.

   growing area = length x width

   growing area = 12 in x 5 in = 60 in²

2. Given the optimal seed density, calculate the total optimal seeds per tray.

   optimal seeds per tray = growing area x optimal seed density

   optimal seeds per tray = 60 in² x 6 seeds/in² = 360 seeds

3. Not all seeds will sprout. Given the germ rate (the average percentage of seeds that will sprout), what is the adjusted optimal seeds per tray?

   adjusted optimal seeds per tray = total optimal seeds per tray ÷ germ rate (decimal)

   adjusted optimal seeds per tray = 360 seeds ÷ .76 = 473.68 seeds (round to 474)

4. It would be difficult to count tiny seeds. Let's measure by weight instead!
   a. First, convert the number of seeds per pound into number of seeds per gram.

   seeds per gram = seeds per pound ÷ grams per pound (453.592)

   seeds per gram = 8,900 seeds/lb ÷ 435.592 grams/lb = 20.43 seeds/gram

   b. Then, calculate the number of grams of seed per tray.

   grams of seed per tray = adjusted optimal seeds per tray ÷ seeds per gram

   grams of seed per tray = 473.68 seeds ÷ 20.43 seeds/gram = 23.19 grams

*Now, try one on your own! Let's say you wanted to grow a Red Veined Sorrel Microgreen Mix. You have a tray that is a circle with a **diameter of 8 inches**. On the seed packet, the manufacturer gives you the following information:*

Seeds per pound: **685,611 seeds/lb**   Germ Rate: **91%**   Optimal Seed Density: **10 seeds/in²**

1. Calculate the total growing area of your tray.

   growing area = πr^2 = 50.27 in²

2. What is the total optimal number of seeds per tray?

   optimal seeds per tray = 50.27 in² x 10 seeds/in² = 502.7 seeds (round to 503)

3. What is the adjusted optimal number of seeds per tray?

   adjusted optimal seeds per tray = 502.7 seeds ÷ .91 = 552.42 seeds (round to 553)

4. Convert the number of seeds for the tray to weight in grams.

   seeds per gram = 685,611 seeds/lb ÷ 435.592 grams/lb = 1,573.98 seeds/gram

   grams of seed per tray = 552.42 seeds ÷ 1,573.98 seeds/gram = 0.35 grams