Hula Hoop Math

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How might you predict yield in a field of soybeans?

- You have a hula hoop and a field of soybeans.
- How might the hula hoop give you a prediction of how many soybeans will be produced?
- Why does this matter?

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Your turn!

Use the hula hoops to predict yield.

- Toss the hoop on the field three different times
- Calculate the average plants from the numbers in the hoop for each toss
- Measure the diameter of your hoop
- Use the factor on the worksheet to determine the number of plants/acre in your “field”

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Data

Yield data	Field 1	Field 2	Field 3
Average bushels			

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Factors that affect soybean yield

Row spacing: 7, 10, 15, 20, 22, 30, or 36 inches

Seeding rate: 75,000, 125,000, 175,000, or 225,000 seeds per acre

Planting method: drill or planter

Other events beyond a grower's control: drought, flooding, erosion, etc.

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Row spacing

Benefits of closer row spacing (less than 30″)

- Canopy closure before R3 when seed pods begin to set, resulting in fewer weed seedlings able to grow
- Canopy closure helps prevent soil moisture loss
- Equal distribution of plants allows for greater light interception and increased leaf area
- Harvesting is easier since combine can more easily cut and collect plants/seeds
- Harvesting is more efficient due to no cultivator ridges

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Row spacing

Concerns about narrow row spacing

- Diseases like brown stem rot and soybean cyst nematode (SCN) can affect yield
- Plant proper variety for environmental conditions
- Lack of proper equipment (need planter specifically for soybean): drill?
- Split-row planters give versatility
- High seed cost and uneven growth in field
- Need higher seeding rate if drill is used
- Plant establishment is higher for narrow rows than wide rows
- Potential to inhibit insecticide penetration, if applied

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Seeding rates

Using the table below, determine which seeding rate results in the highest percentage of survival...

Soybean seeding vs final population

Planted (seeds/acre)	75,000	125,000	175,000	225,000
Final population in 15″ row	71,500	107,800	146,500	174,400
Final population in 30″ row	62,700	95,900	122,000	153,900

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Equipment used

Drill

- Spotty or non-uniform seeding rate
- Often requires higher seeding rate to make up for uneven distribution
- Increased seed cost for higher rate/acre

Planter

- Gives uniform seeding rate
- Wider row spacing

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Related careers

- Agronomists help farmers determine their yield, scout for pests, test their soils, discuss growing practices.
- People who work at co-ops (Legacy, Andersen's, TruPointe, etc.) help farmers to:
  - determine fertilizer blends based on soil tests.
  - apply herbicides and pesticides.
  - store and measure the moisture content of harvested products.
  - determine feed blends for livestock.
- Visit **grownextgen.org/careers** for more agriculture career information.

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