



# Kentucky Harvest of the Month



## DECEMBER: WINTER SQUASH

### Pumpkin or Squash?

All pumpkins are squash but not every squash is a pumpkin! What we know as pumpkins and winter squash have essentially the same genetic make-up. In common language, pumpkins are usually used for decoration and winter squash is usually used for eating. Pumpkins have strong stems and squash stems are usually light and hollow.

### Did you know...?

- Summer squash has much softer skin than winter squash. Winter squash will last much longer than zucchini/summer squash because of this.
- Squash are in the Cucurbitaceae family, which includes cucumbers, melons, pumpkins, and gourds.
- The name "winter squash" refers to the fact that they store well during the winter (they are harvested in the fall).
- Butternut squash - quite possible the most beloved winter squash - was a result of years of breeding of crookneck squash in an attempt to create a smaller and more stackable variety.

## Ideas for your Classroom

### Elementary:

- *Discovering Winter Squash Activity* (attached)
- Map the History of Squash Activity (Activity #5 - Vermont Harvest of the Month)
- Do a taste test of different roasted winter squashes and discuss the differences and similarities in how they taste

### Middle:

- Growing the Three Sisters Lesson (Agriculture in the Classroom) - can be used for late elementary to middle school
- Watch this Montana Harvest of the Month Video on Winter Squash! (while made in Montana, all content is relevant to KY)

### High school:

- *Squash Genetics Worksheet* (attached)
- Make winter squash recipes in culinary class - butternut squash soup is a great meal almost every kid will love!



# Discovering Winter Squash

Grade Level: Elementary

**Summary:** Students will investigate different types of winter squash including size/shape/weight/etc. and discuss their similarities and differences.

**Instructions:** Obtain at least 3-4 different winter squash varieties (see images below for a couple options). You will need two of each variety - one you will use for whole measurements and the other you will cut open for the students to observe the seeds. Put the seeds and the whole squash at stations. Have the students rotate around the stations and fill out the table to answer the questions about each one. Afterwards, have students compare the varieties by doing a venn diagram with 3 of the squash.

Butternut  
Squash



Acorn Squash



Delicata  
Squash



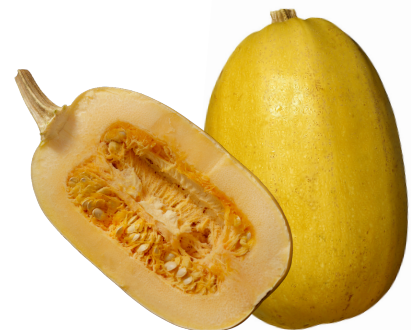
Kabocha  
Squash



Ambercup  
Squash



Spaghetti  
Squash



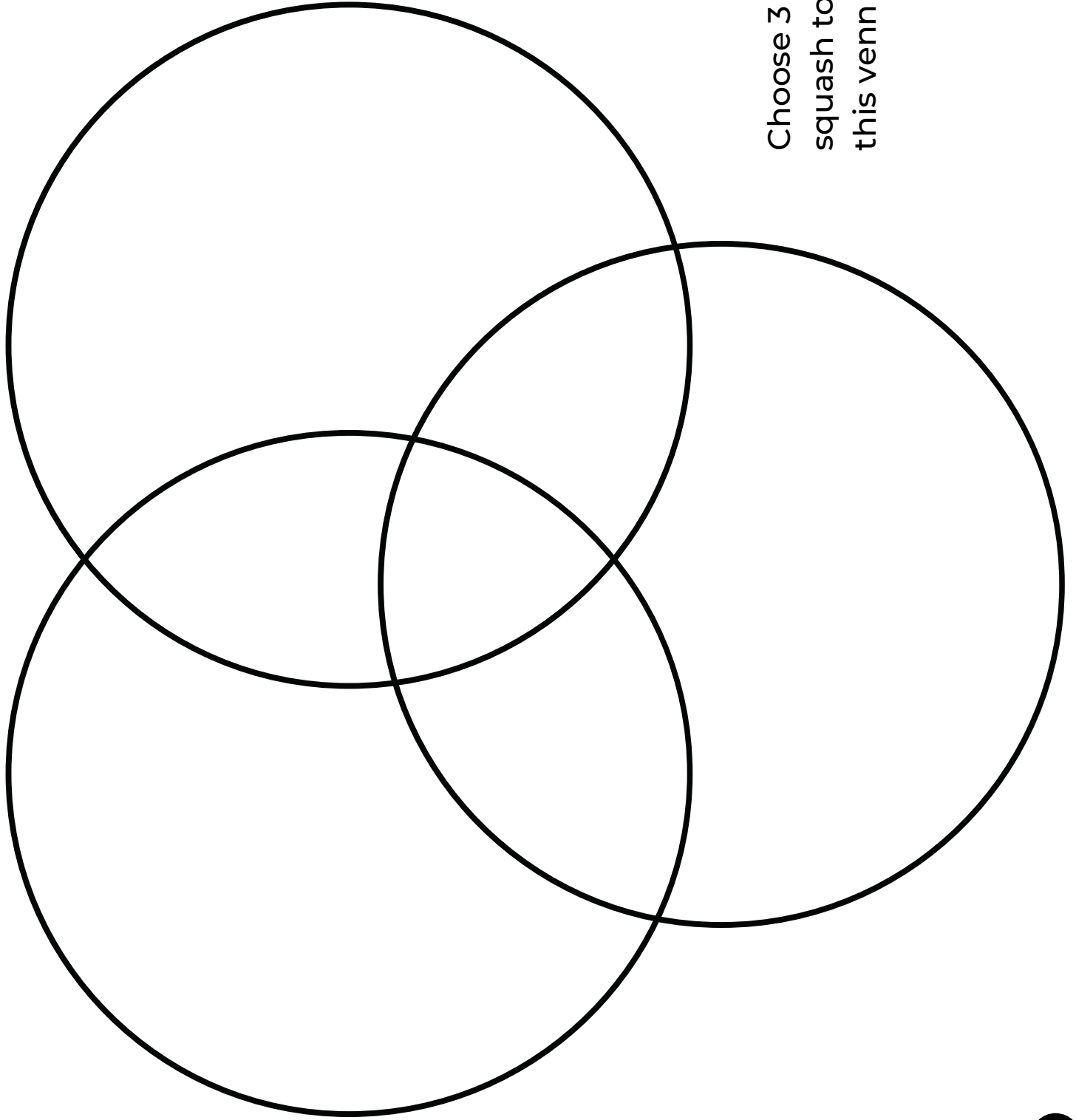
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# Discovering Winter Squash

Today you will be investigating different winter squash varieties! Fill out the table below with the information for the different varieties.



Draw a picture of the Squash	How much does it weigh?	How long and wide is it?	Draw a picture of the seeds	What other observations do you have of the squash?



Choose 3 of the squash to compare in this venn diagram.



Name: \_\_\_\_\_

# Squash Genetics

Members of the squash family are “monoecious”, meaning they produce separate male and female flowers on the same plant. It is easy to tell the difference as female flowers have small, immature fruits at the base of the petals that grow into squash; male flowers do not grow squash. In order for the squash to grow, pollen from the male flower must be transferred to the female flower and this is done so mainly by honeybees, which fly from flower to flower transferring pollen. The female flowers of each crop can only be fertilized by pollen from male flowers of the same species but cross pollination can occur between varieties within a species.

Summer squash, pumpkins, gourds and some types of winter squash belong to the same plant species, *Cucurbita pepo* and thus may cross pollinate with one another. However, when cross pollination occurs, we do not see the effect the first year. Instead, if the seeds are saved and planted, the plants will produce a hybrid fruit that will be different from either of the parents.



Image from gardeningknowhow.com

If striped squash (S) is dominant to spotted squash (s), answer the following questions.

a. Write the genotype for a homozygous striped squash and a heterozygous striped squash.

b. Write the genotype of a homozygous spotted squash.

c. Draw a Punnett square and cross the heterozygous striped squash with the spotted squash.

d. Based on the Punnett square in the previous questions, what percentage of the offspring are striped? What percentage are spotted?

e. Draw a Punnett square and cross two offspring from the problem above.

f. What percentage of this second generation appear striped squash? What percentage appear spotted?

Name: \_\_\_\_\_

# Squash Genetics - KEY

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a. Write the genotype for a homozygous striped squash and a heterozygous striped squash.

SS, Ss

b. Write the genotype of a homozygous spotted squash.

ss

c. Draw a Punnett square and cross the heterozygous striped squash with the spotted squash.

	S	s
S	SS	Ss
s	Ss	ss

d. Based on the Punnett square in the previous questions, what percentage of the offspring are striped? What percentage are spotted?

50% are striped ( $Ss = 2/4$ ) and 50% are spotted ( $ss = 2/4$ ).

e. Draw a Punnett square and cross two offspring from the problem above.

	S	s
S	Ss	ss
s	Ss	ss

Possible Answer #1

	S	s
S	SS	Ss
s	Ss	ss

Possible Answer #2

	S	s
S	SS	ss
s	ss	ss

Possible Answer #3

f. What percentage of this second generation appear striped squash? What percentage appear spotted?

Possible Answer #1: 50% Striped/50% Spotted

Possible Answer #2: 100% Striped

Possible Answer #3: 100% spotted