

How to Hand Pollinate Open Pollinated Corn

Key Words

Zea mays L. – the scientific name of corn.

Race – a class of corn in which all plants of that class share certain characteristics, such as ear shape and number of kernel rows.

Open-pollinated variety – a variety of corn that is named for the manner in which seed of the variety is propagated across generations.

Self-pollination – the type of pollination that occurs when pollen from a single plant falls on the silks of that same plant.

Cross-pollination – the type of pollination that occurs when pollen from one plant falls on the silks of a different plant.

Inbreeding – a system of mating in which mates are more likely to be related than would occur if mating was random. Self-pollination is an extreme type of inbreeding.

Inbred – a pure-breeding strain of corn.

Single-cross hybrid – the type of hybrid that is produced when two different inbreds are cross-pollinated.

Hybrid vigor – the phenomenon of a hybrid plant having greater vigor than its parents.

(From University of Nebraska Plant Science website)

Tools Needed:

- Pollination bags – Lawson #402 Tassel Bags and Lawson #217 Shoot Bags
- Stapler
- Pocketknife or small knife

A few key tips:

- It is best to not hand pollinate on a rainy or extremely windy day
- If you can find any information on your specific variety of corn, it would be helpful to know what the characteristics are of the plant and what to look for in a healthy plant
- Grow at least 200 plants of a variety in order to avoid inbreeding depression and encourage genetic diversity

- Female part of the corn plant is called a **Ear Shoot**, and where the pollen lands is called the **Silk**
- Male part of the plant is called a **Tassel**, and the pollen is called the **Anther**

Day One – the afternoon or night before

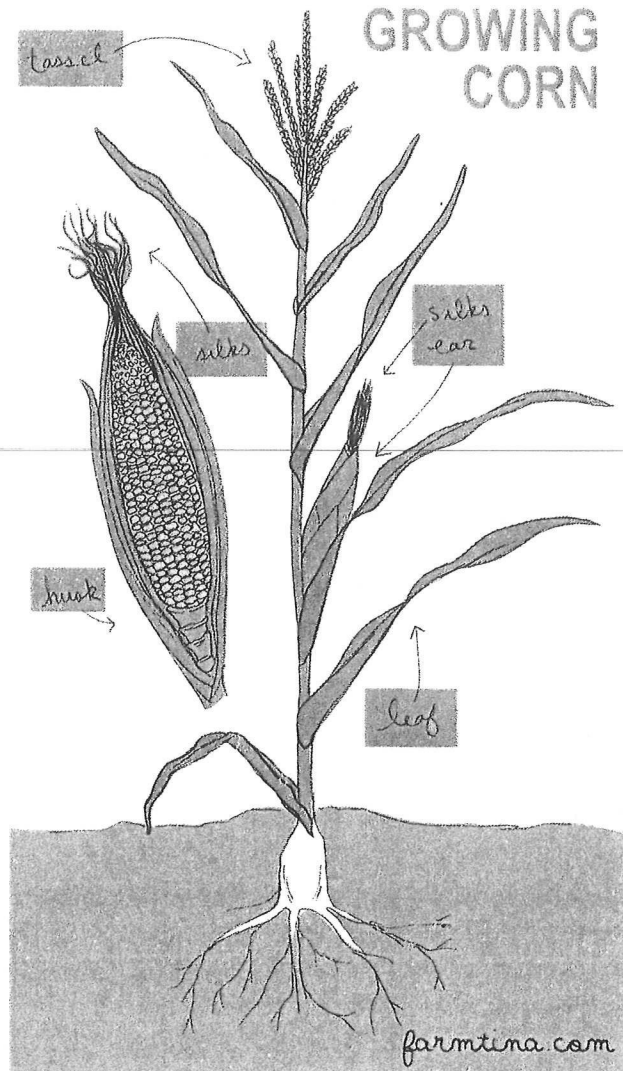
1. (This step can be done even a couple of days before) Locate the female ear shoots that are exposed but not silking out yet
2. Grab the leaf covering the ear shoot and in one swift motion pull downward and remove the leaf to make bagging easier.
3. Cover the ear shoot with a Lawson #217 Shoot bag and push down over it until the bag catches and becomes wedged in between the corn stalk and ear shoot – this should be enough to hold it in place
4. As the silks develop you can remove the bag and cut the tip off of the ear shoot so there is a clean surface for pollination, the cut should be about pea sized.
5. Also, bag up tassels that are ready and showing some yellow anther but not all. The tassels can be found at the top of the corn plant and somewhat look like a turkey foot
6. Bag the tassels with a Lawson #402 tassel bag and use a paperclip to close the bag on the plant

Day Two – preferably between 8am and 12pm

1. Take Tassel bag from the night before and bang it against your hand and shake to remove the pollen into the bag
2. Remove the tassel bag carefully so as to not spill out any pollen and fold it over
3. Take the bagged pollen to a female ear shoot of a **different** plant, be aware that pollen has a short life span of about an hour so don't lose track of time
4. In one quick motion, remove the silk bag and place the folded pollen bag over the silk
5. Slowly unfold the brown tassel pollen bag over the silk and shake to remove the pollen, don't remove the bag at this point.
6. The pollen bag will remain on the plant until the corn is ready
7. Wrap the pollen bag around the corn stalk and staple it to itself

- For a review of this process please see the amazing video made by Frank Kutka which gives a very clear explanation of this process
- The video is at: <https://www.youtube.com/watch?v=v9KgyxyR5Wo>
- Or search YouTube for: "Keeping OP Corn Using Hand Pollination "

- Thank you especially to Frank Kutka for sharing his knowledge and insight with us today, we are so honored!



How To Hand Pollinate Squash

A few key points to know:

- Squash have male and female flowers on the same plant (monoecious)
- Male flowers: have no swelling at the base of the flower (See Image 1)
- Female flowers have a swelling that looks like a baby squash (ovary) (See Image 1)
- Each flower opens only once and stays open for about 12 hours so it is important to only use flowers that haven't opened yet to ensure there has been no pollination from other sources

Day One - the afternoon or night before

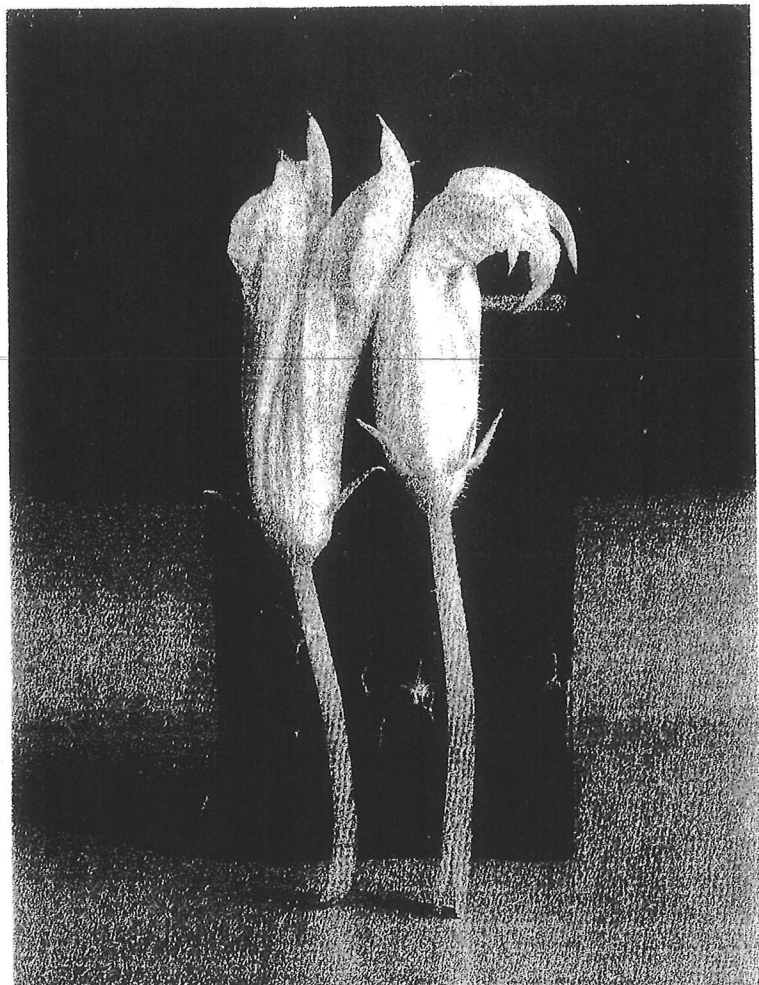
1. Identify male and female flowers that haven't opened yet from the same variety. Try to find two or more males for every female. Disregard any flower that is dried, faded, or open.
2. Close identified flower buds securely using clothes pins, twist ties, or tape - being careful not to damage the petals or internal parts of the flower.
3. Because marked flowers easily become lost in the sea of squash leaves, it helps to mark where the plant/blossom is by using a stake or surveyors flag, using one color for male flowers and another for female.

Day Two - preferably morning

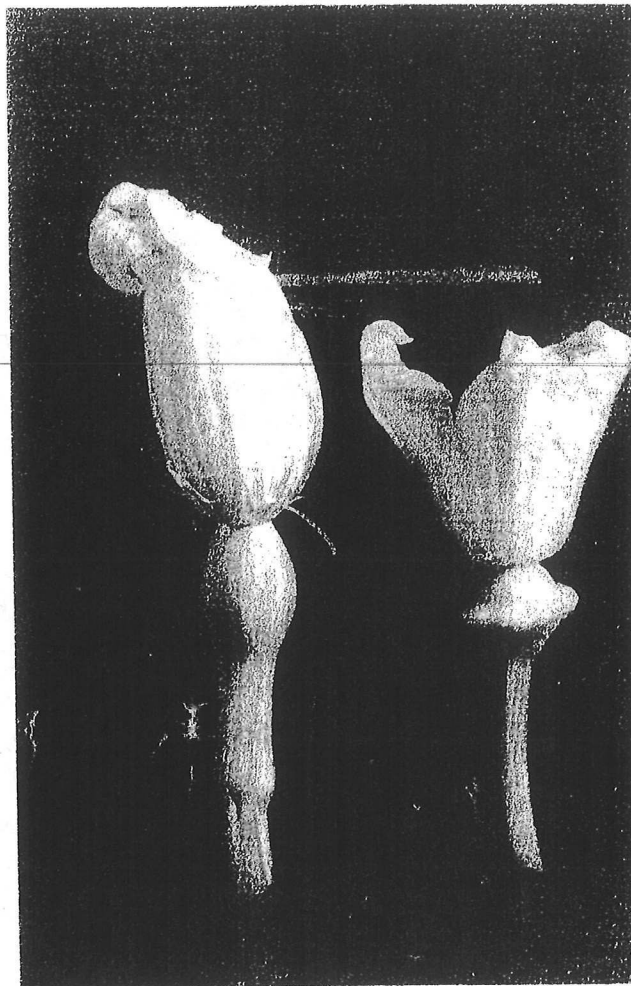
1. Find the male flowers marked the night before and pick them with their stems intact by cutting them where the stem connects to the main plant. If a flower that you tied off somehow still opened up, don't use it for pollination.
2. Identify a female flower and before opening it, prepare the male flower.
3. Carefully open the male flower and peel away all the petals to expose the inner parts known as the anthers which will be covered in pollen. Repeat this process with several male flowers.
4. Carefully set down the male flower being sure to not to allow any bee or other pollinator from having access (I like to use a small plastic container that is the length of the flower and stem)
5. Remove the clothes pin or tie from the female flowers, ideally the petals should slowly expand indicating the female is receptive
6. Quickly apply the pollen from the male flowers by using it like a q-tip in a rolling movement around the female stigma (central part of the inside of the flower).
7. Carefully close the pollinated female flower, using a clothes pin, twist tie, or a new piece of tape. An optional step is to place a cotton ball over the stigma of the pollinated female flower before closing it up.
8. Lastly, mark the pollinated flower and plant for easy identification and if pollination was successful, the base of the female flower will begin to swell and develop fruit.

Image
#1

Male



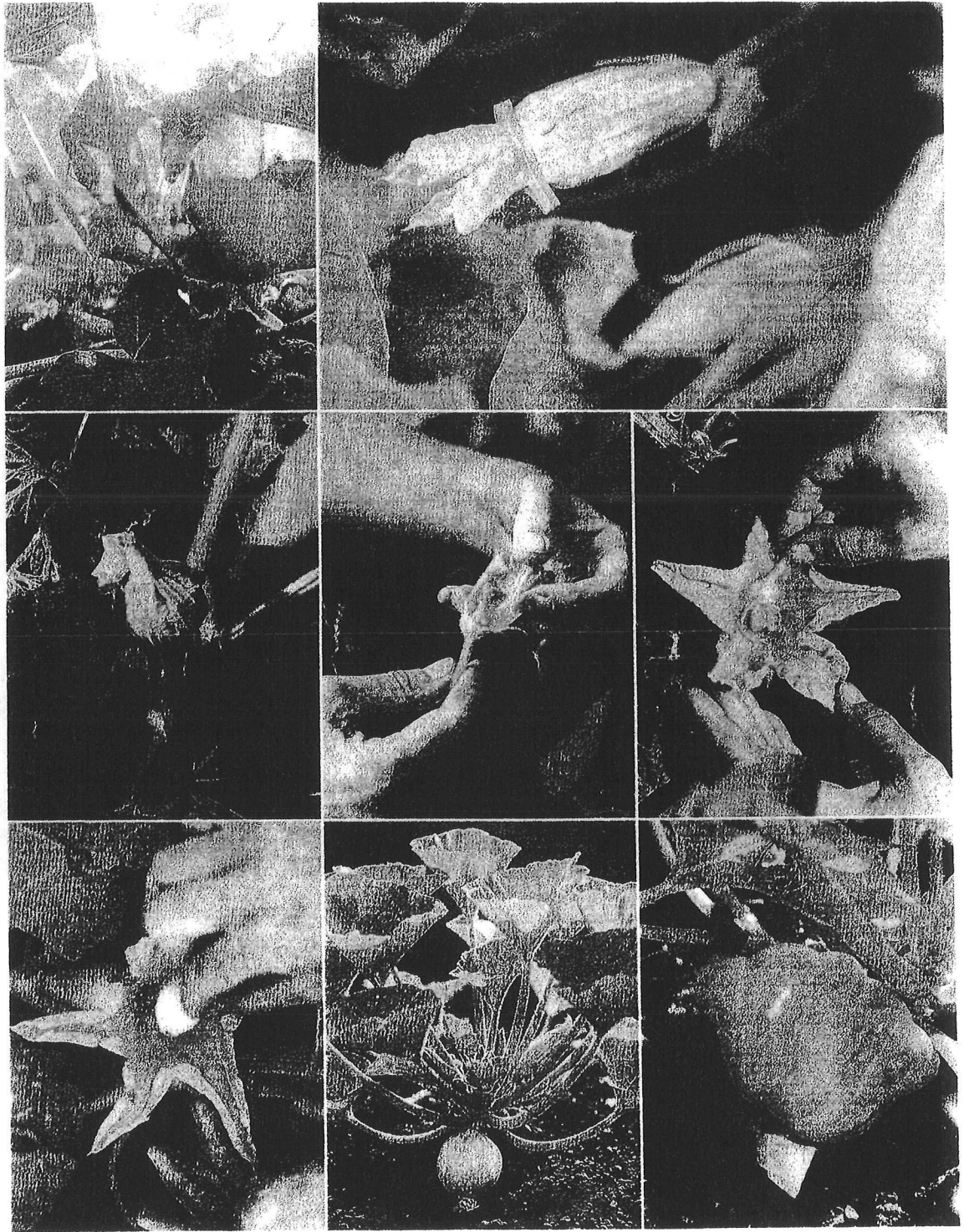
Female



IT TAKES TWO. LEFT: MALE BLOSSOMS. RIGHT: FEMALE BLOSSOMS

Images Courtesy of
The Compleat Squash
by Amy Goldman

Hand Pollination of Squash



LEFT TO RIGHT, TOP ROW: ON BENDED KNEE, SEARCHING FOR BLOSSOMS, MALE SECURED. MIDDLE ROW: RECEPTIVE FEMALE, READY, SET. GO-TRANSFER POLLEN. BOTTOM ROW: PROTECTING STIGMA, SWELLING FRUIT, SUCCESSFULLY HAND POLLINATED, ON A BUSH PLANT, GELBER WITH PURE SEED INSIDE, TAPE ADHERENT TO BLOSSOM END.