

A How To Guide on Shoot Bagging and Self Pollinating Corn

Equipment and Materials

In order to successfully shoot bag and self pollinate corn in the field you are going to need specific equipment. You will all be issued the following items, safety glasses, one stapler, one set of pruning shears, and one pollinating apron. Photos and a brief description of this equipment can be seen below

Safety Glasses:

You will be issued safety glasses to wear in the field. **It is required you wear them at all times when corn leaves are near your face.**



Stapler:

You will use staplers to staple tassel bags over each ear you pollinate.



Pruning Shears:

You will use pruning shears to cut back ear shoots on the corn plants to increase silk exposure.



Pollinating Apron:

You be issued a pollinating apron to hold all equipment and material which you will use through pollinating season.



There are also several materials you will use throughout the course of shoot bagging and pollinating, these materials are shoot bags, paper clips, staples, and tassel bags. Photos of these materials can be seen below.

Shoot Bags:

You will use shoot bags to cover ear shoots on corn plants before they are ready to silk.



Paper Clips:

You will use paper clips to help hold tassel bags on the tassel.



Staples:

You will use staples to affix the tassel bag over each pollinated ear.



Tassel Bags:

You will use tassel bags to collect pollen for pollination.



Process of Shoot Bagging and Self Pollinating

In the following section you will receive step by step instructions on how to shoot bag and self pollinate corn. Before you learn the step by step instructions for shoot bagging and pollinating you will receive a brief overview. When shoot bagging you will place shoot bags over the top ear shoot (female part of the plant) so that pollen can not fall on the silks and fertilize the ear. To perform a pollination you will place and secure a tassel bag over the tassel (male part of the plant) and take it down the next day. You will then pour the pollen from the tassel bag onto the ear shoot.

Below you will find the step by step instructions.

Basic Plant Anatomy:

For the purpose of shoot bagging and pollinating corn there are two areas on the plant which must be monitored constantly. Those areas are the tassel (top picture) and the ear shoot (bottom picture).

The tassel is the male portion of the plant and it contains anthers which contain the pollen. As a side note anthers can range in color from plant to plant. Ear shoots are the female portion and eventually ear shoots will grow silks. Silks are the portion of the plant which are receptive to pollen and silks can also range in color. When pollen falls onto receptive silks it starts the fertilization process and eggs will be fertilized leading to corn kernels. Therefore it is crucial ear shoots are covered to prevent unwanted pollination and fertilization.



Shoot Bagging Process

Shoot Bagging – Step One

The first step of shoot bagging is identifying ear shoots to cover with shoot bags. To efficiently shoot bag you should only place shoot bags on shoots which are roughly the length and width of your pinky finger or bigger. Similar to the top picture.



An example of an ear shoot you shouldn't shoot bag is the center picture. This shoot is too thin and the shoot bag would most likely blow/fall off and you would have to do it again the next day.



You should never shoot bag ear shoots which look similar the bottom picture because they have already silked out and have been contaminated with pollen



Shoot Bagging – Step Two

The second step of shoot bagging is making sure you properly covered the shoot. When you place the shoot bag over the shoot makes sure you actually cover the shoot and do not place it behind the shoot. Also, you should make sure the side with the print is facing outward.



Lastly, always make sure you are shoot bagging the top most shoot. And always double check plants which have already been shoot bagged to make sure there isn't a new shoot. An example of someone who wasn't paying attention while shoot bagging is given to the right



Pollinating Process

Pollinating Step One: Identification of Anthers and Silks

The first step in the pollinating process is identifying plants which are ready to be pollinated. To determine this you want to find plants which are shedding pollen and have silked out.

You should keep your eye open for tassels which have about an inch or more of anthers exposed. The tassel in the picture above is ready to be bagged.



Then you should check to see if there is a ear shoot under the shoot bag which looks similar the bottom picture. If both of these criteria are met move to step two, if they are not met keep looking for plants that will.



Pollinating Step Two: Cutting Back

The second step of pollinating is cutting back the ear shoot. The purpose of cutting back is to increase the length of silking and to increase surface area for pollen to fall on.



The first thing you should do is get your pruning shears and lift the shoot bag up to a point where you can cut about a dime sized piece of ear shoot off the top, similar to the picture at the right.



Now cut off the top part of the ear shoot so it looks similar to the picture at the right.



Next you will want to fold the top of the shoot bag back to indicate that ear shoot has been cut back.



**Pollinating - Step Three:
Putting Up Tassel Bags**
The first step of putting up “hanging” tassel bags is to physically put the tassel inside of a tassel bag (as seen to the right).



The second step of hanging the tassel bag is to place the flag leaf (the upper most leaf) up against the back of the bag (as seen to the right).



The third step you are going to do is take the bag and fold it in half with the flag leaf inside the crease (as seen to the right). This will help support the tassel bag if it is windy.



Next you are going to take both corners of tassel bag and fold it up tightly so there is no gap between the bag and stem of the tassel. Then place a paper clip on the fold as seen in the picture to the right. You will leave the tassel bag up for one day before taking it down.



Pollinating – Step Four: Taking Down Tassel Bags

To complete the last step you want to make sure the ear shoot you cut back the day before looks similar to the picture at the right.



If the ear shoot looks similar proceed to the next part. If the ear shoot looks like the picture at the right then wait one more day and then take down the bag.



Now that you know your ear shoot is ready to receive pollen pull out your pruning shears and cut the tassel off. Then gently tap the bag in your hand and gently remove the tassel.



Next remove the shoot bag from ear shoot and quickly dump/pour the pollen from the tassel bag onto the exposed ear.



Last you must quickly cover the ear shoot you just pollinated with the tassel bag and secure it to the plant. You do this by stapling the back two flaps of the bag behind the stalk about three inches from the bottom the bag. You have now successfully shoot bagged and self pollinated corn.



Special Considerations

There are several things you must keep in mind while shoot bagging and pollinating. You must always make sure you put the shoot bag over the ear shoot and not behind it and you must always make sure you cover any ear you pollinate with the tassel bag and not place the bag behind the pollinated ear shoot. Failing to do either of these will usually result in the loss of that plant. Also, remember safety glasses must be worn at all times when corn leaves come close to your face.

Frequently Asked Questions

There are several common problems which will likely arise while you are shoot bagging and pollinating. These problems and answers to these problems can be found below.

Common Shoot Bagging Questions

Question: What do I do if I come across a top ear shoot which has already silked out while I am shoot bagging?

Answer: **Do Not** place a shoot bag over it, remove the top ear shoot that has silked out and place a shoot bag on the lower shoot, providing there is a lower shoot, and the lower shoot has no silks or has not been covered already.

Common Pollinating Questions

Question: What should I do if I am pollinating and come across an ear shoot that was cut back the day before but the silks didn't grow out?

Answer: Leave the tassel bag up and come back tomorrow to see if the silks have grown out at all.

Conclusion

In this document you have been provided with step by step instructions on how to shoot bag and self pollinate corn. You should now feel comfortable going to the field and performing these tasks. If you have any questions regarding these steps please feel free to ask your supervisors.