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## **Basic guidelines in Good Production Practices to ensure high quality non-GMO food-grade soybeans**

*Welcome to the team of farmers that are committed to producing high quality food grade soybeans!*

*As quality comes with attention to detail, here are some basic details in Good Production Practices that will help you achieve success in producing high quality soybeans*



# PLANTING

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## CROP ROTATION

Previous year's crop should be non-soybean crop. Non-soybean crop rotation is best and alternating years is fine.

If only choice is soybean/soybean rotation, then previous year soybean crop cannot be a GMO variety. Must be a non-GMO food grade crop and needs to be of similar type. Example: natto variety on natto ground, soymilk variety on soymilk ground. Consult with your Richland contract agent.

Soybean volunteer plants do occur the next season, we need to manage.

## CLEANING PLANTING EQUIPMENT

Prior to planting non-GMO food grade soybean, make sure planter is cleaned along with seed tenders, belt conveyers, or any other seed handling equipment. Be especially diligent if previous job was a GMO soybean.

## BUFFER STRIP

If planting a field of Non-GMO Food grade soybeans that directly abuts to a GMO soybean field, it is recommended that a 5 ft non-planted buffer strip is incorporated to prevent any accidental co-mingling at harvest.

If a 5 ft buffer strip is not practical, other management tools can be incorporated such as mowing the border or harvesting the border for standard elevator beans.



# HARVESTING

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## MOISTURE

Ideal harvest moisture for food grade soybean is 10-14%.

If necessary, 14-16% can be successfully natural air dried in your storage bin using good natural air-drying principles.

References for further details on natural air-drying principles

- <https://www.ag.ndsu.edu/extension-aben/documents/NDSU%20Offers%20Soybean%20Drying.pdf>
- <https://www.ag.ndsu.edu/alerts/soybean-storage/enhancing-soybean-storage-starts-with-harvest-moisture>

## CLEANING COMBINE AND GRAIN CARTS

Basic cleaning and blowing out header and grain tank on combine is required.

Open all trap doors on the combine and run as empty as possible.

Harvest 50-100 feet with traps open and allow these beans to fall on the ground.

Close everything up and harvest 200 feet to flush the rest of combine and dispose of these beans to your local elevator.

Flushing the combine is most important step.

To summarize in general: clean the header and grain tank, run a little on the ground, run a little into grain tank and dispose to elevator market. Your combine will be good to go.

**Grain Cart:** Important to clean the grain cart including inspection that product is not hung up in corners, etc.

## CLEANING TRUCKS

Make sure trucks and hopper trailers are completely clean. This requires someone to climb into the trucks and hopper trailers with a broom. Just opening traps and bouncing empty a bit down the road is not adequate.

## MECHANICAL DAMAGE

Mechanical damage is an important quality requirement.

Treat your food grade soybean like you would a seed bean to insure minimal mechanical damage.

Gentle harvest settings on the combine is a must.

## STAINING IN SOYBEANS

Whether it be from soil, dust or green weeds, Staining is our most common quality problem. It can be managed. The goal needs to be nice, clean, bright yellow soybean seed coats.

### Minimizing dirt stains

- Land rolling helps minimize dirt stains
- If land rolling is not an option, tilting the combine header helps.
- Be on look-out for pocket gopher mounds and badger holes. Lift head up over these. Scooping up a pile of dirt creates a lot of dirt staining. In case of sprayer ruts, it is best to combine at angle across the rut to prevent mud ridge from scooping into the header.
- In the very early morning when dew is present, you may have to delay harvesting to later in the morning as the moisture from the air may make the soybean sticky and dust can stick to the beans creating a dirty film that is adhered to the seed coat.
- The same is applicable in the evening. When air is still and dew starts to set in, you may have to stop harvesting as the moisture from the air can lead to dirt stains due to moisture and dust. Something to keep an eye on. 1st hour after sunset can sometimes be the worse. Depends.

### Minimizing weed stains

- Recommend the use of approved pre-harvest chemical for desiccation to kill the weeds. Another option is harvesting around serious weed patches. Then go back and harvest the weed patches separately and take that product to your local grain elevator.
- Some growers will use bush hog mowers to mow their most serious weed patches if they occur. Usually, there are very few soybeans in a serious weed patch.



# STORAGE

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Flush auger

Clean the bins and sweep around the edges.

Make sure take out auger flight is clean or flushed.

Traditional grain auger equipment will work fine provided it is in good working condition and not wore out. Again, think seed beans.



**Aeration:** Usually 0.2 to 0.5 CFM is adequate for normal cooling/aeration of dry soybean less than 14%. For soybean above 14%, CFM of 0.5 or greater is best.

**At Harvest:** Completely cool down soybean immediately at harvest or shortly after harvest. Depending on CFM, it can take 7-10 days of continuous aeration to completely move the temperature front through the grain mass.

Aggressive aeration immediately after harvest also ensures that any green pod or plant material is completely dried. This will go a long way to prevent a storage problem.

**After Harvest:** Shortly before the winter sets in, aerate soybeans again to colder grain temperatures. Less than 35 OF is best. Keep in mind the significant fan time necessary to completely move the temperature front through the grain mass.

**Coring:** If practical, coring the bins is always good practice. Even if it is just to move the core to a separate bin.

**Winter Months:** Check bins monthly and run aeration periodically as needed.

**Spring Months:** It may be best to wait until mid-spring to warm up soybean from wintertime grain temperatures. Grain mass will remain cold until you decide it is time for spring warm up. Again, significant fan time may be required to completely move temperature front through the grain mass.

**Summer Months:** Usually best to run aeration only at night when nighttime temperatures are below 65 OF.

**Resources on aeration principles:**

<https://crops.extension.iastate.edu/soybean-storage-tips>

<https://www.ag.ndsu.edu/cpr/stored-grain/harvesting-and-storing-soy-beans-09-13-18>

Power point presentation on soybean drying tips available at

<https://www.ag.ndsu.edu/graindrying/corn-and-soybean-page>

*High quality food grade soybean is not difficult to manage. Some extra care and time are all that is required. Your current soybean farm equipment and set-up is enough. Like most things, “quality brings value”. That is the essence of a premium price food grade soybean production contract.*



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