



# Seed Processing in Re-Export Countries

September 2022





# Agenda

## Seed processing in re-export countries

Introduction

Seed Lot Reception

Traceability

Precautions

Cleaning & Sizing

Storage

Application of Treatment/Packaging

## A brief introduction



**Richard D. Winn**

15 years at

**HM●CLAUSE**

**Native & living today in Idaho  
lived in CA, FL, GA, Japan, Chile, Spain**

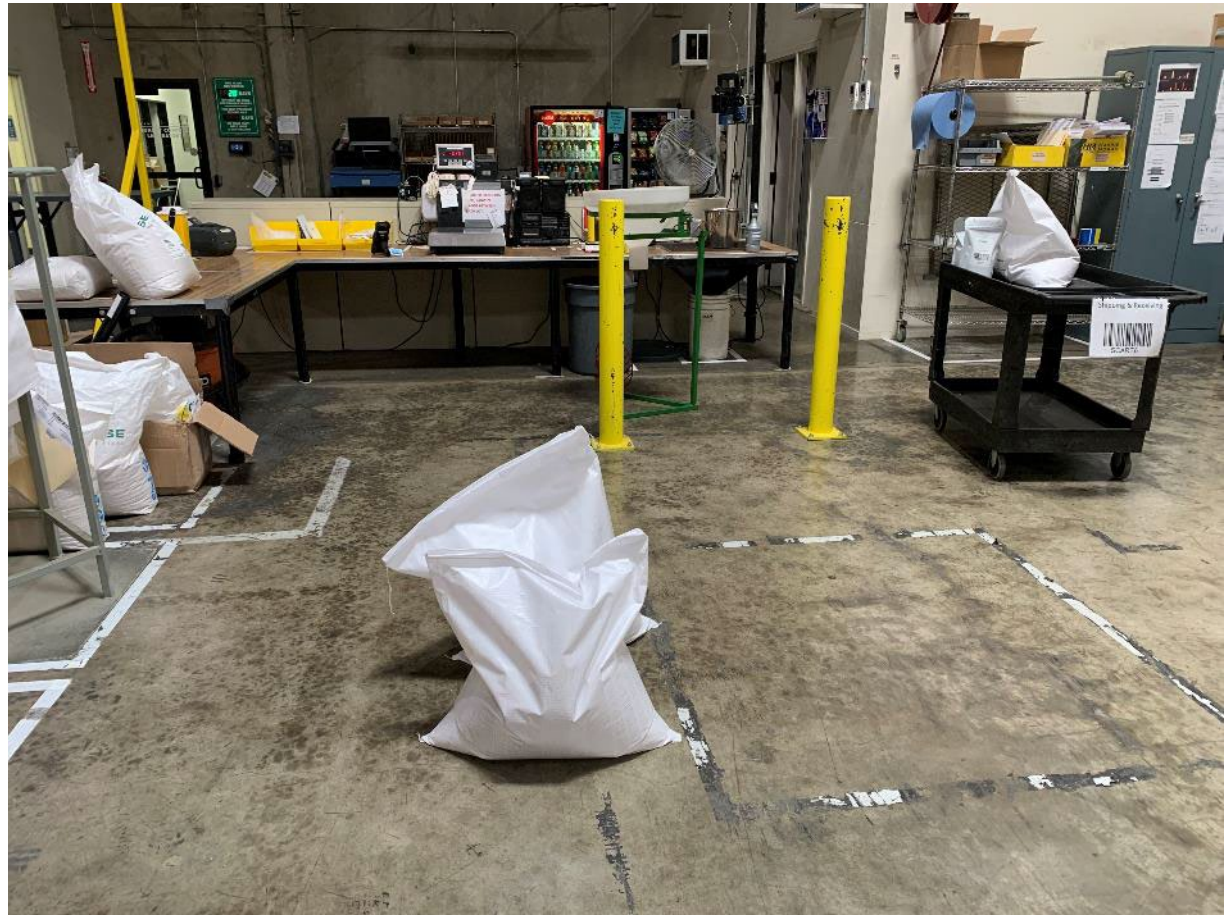
**MS in Agribusiness & MBA Kelly School of Business**

**Started my career in seed in 1996**



# Seed Reception – imported from foreign country or domestic

- ONLY work on one batch at a time
- Double checks by two operators in receiving prior to putting barcodes on batches
  - Includes item #, batch, weight, descriptions, etc.
- Two forms of identification on seed at all times
  - One label inside the container and one label on the outside
- Use liners in every container (bags or bins) – discarded, never reused
- Dockage representative samples pulled
  - Crop analysis, % clean out, pathology, germination, genetic purity, moisture, etc., depending upon species





## Container sizes

- 1.0 KG (max) – Large Foil
- 1.0 – 5.999 KG – Small Polybag
- 6.0 – 20.0 KG – Large Polybag
- Up to 80 KG's max (4 large Polybags)
- 80 KG's (min.) up to 1500 kg – Metal Bin





# Container sizes



# Sanitization

- Every surface that comes into contact with seed should be sanitized with a disinfectant solution and 60 seconds of drying time before wiping off.
- This includes, but is not limited to:
  - Any parts of the equipment in contact with the seed prior to disinfection
    - This includes processes in Receiving, Dockage, and Milling.
  - Inspection tabletops
  - Containers and pans for sampling & weighing
  - Probes for sampling
  - Funnels used to transfer seed
  - Bins & totes used to transfer seed
  - Machine cleaning or sizing screens





# Traceability – Enterprise Resource Planning (ERP) – JDE, SAP, etc.

- Unique Production Lot number – batch changes at every step

Custom D - Consultation des stocks par lot

Selection general criteria   Selection dates   Display quality tests

Species Group \* Bank57/GE   Finishing Level \*   Branch \*   Species \*   Seed Category \*   Primary \* KG   Crop \* Bank57/SS   Treatment \*   Omit Zero Quantities ☐   Variety Status \* \*   GMO \*   Receipt and exit on WO ☒   Planner Number \*   Variety \*   Only ancestor lots ☐   Buyer Number \*   Item Number \*

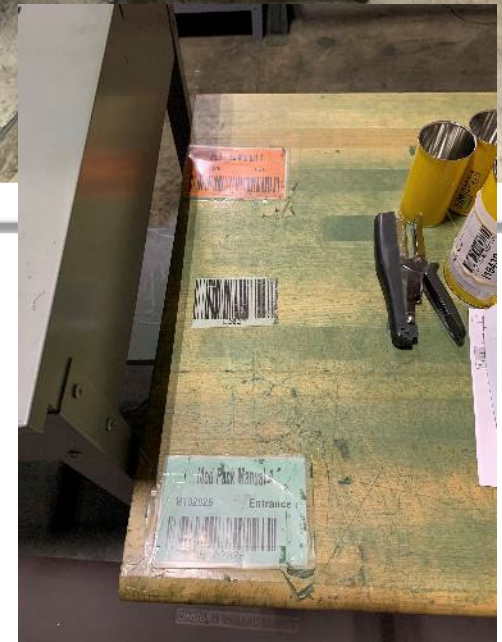
Records 1 - 21

|                          | Descr | Specie | Crop | prod lot receipt Date | Variety | COUNTRY | Description                                       | Principal Desc.                                   | Branch | Creation Date | N°lot/ Batch | Father Lot | Product Lot | CALSZ | SQLB | Initial Quantity | PHYTO     | HYBLAB  | FEVALEL | OFFTYLAB | Inventory Quantity |
|--------------------------|-------|--------|------|-----------------------|---------|---------|---------------------------------------------------|---------------------------------------------------|--------|---------------|--------------|------------|-------------|-------|------|------------------|-----------|---------|---------|----------|--------------------|
| <input type="checkbox"/> | Corn  | 700    | R10  | 10/23/19              | H82348  | US      | Corn PLACER SH2 Pro   Treat. Bag 100 kg H M S 4 N | Corn PLACER SH2 Pro   Treat. Bag 100 kg H M S 4 N | NAM    | 03/25/20      | H86632       | H20592     | PL226175    | MF    | 3286 | 289.855          | P-19-0716 | 95.40.. | 4.60..  | 0.00..   |                    |
| <input type="checkbox"/> | Corn  | 700    | R10  | 10/23/19              | H82348  | US      | Corn PLACER SH2 Pro   Treat. Bag 100 kg H M S 4 N | Corn PLACER SH2 Pro   Treat. Bag 100 kg H M S 4 N | NAM    | 06/18/21      | 108705       | H20594     | PL226175    | MR    | 2802 | 97.072           | P-19-0716 | 95.10.. | 4.90..  | 0.00..   |                    |
| <input type="checkbox"/> | Corn  | 700    | R10  | 10/23/19              | H82348  | US      | Corn PLACER SH2 Pro   Treat. Bag 100 kg H M S 4 N | Corn PLACER SH2 Pro   Treat. Bag 100 kg H M S 4 N | NAM    | 01/12/22      | 141588       | H20595     | PL226175    | LR    | 2384 | 171.265          | P-19-0716 | 100.0.. | 0.00..  | 0.00..   |                    |
| <input type="checkbox"/> | Corn  | 700    | R10  | 10/23/19              | H82348  | US      | Corn PLACER SH2 Pro   Treat. Bag 100 kg H M S 4 O | Corn PLACER SH2 Pro   Treat. Bag 100 kg H M S 4 O | NAM    | 10/15/20      | H65783       | H20594     | PL226175    | MR    | 2802 | 711.859          | P-19-0716 | 95.10.. | 4.90..  | 0.00..   |                    |
| <input type="checkbox"/> | Corn  | 700    | R10  | 10/23/19              | H82348  | US      | Corn PLACER SH2 Pro   Treat. Bag 100 kg H M S 4 O | Corn PLACER SH2 Pro   Treat. Bag 100 kg H M S 4 O | NAM    | 12/17/20      | H78593       | H20595     | PL226175    | LR    | 2384 | 95.147           | P-19-0716 | 100.0.. | 0.00..  | 0.00..   |                    |
| <input type="checkbox"/> | Corn  | 700    | R10  | 10/23/19              | H82348  | US      | Corn PLACER SH2 Pro   Treat. Bag 100 kg H M S 4 O | Corn PLACER SH2 Pro   Treat. Bag 100 kg H M S 4 O | NAM    | 02/11/21      | H82015       | H20594     | PL226175    | MR    | 2802 | 32.357           | P-19-0716 | 95.10.. | 4.90..  | 0.00..   |                    |
| <input type="checkbox"/> | Corn  | 700    | R10  | 10/23/19              | H82348  | US      | Corn PLACER SH2 Pro   Treat. Bag 100 kg H M S 4 O | Corn PLACER SH2 Pro   Treat. Bag 100 kg H M S 4 O | NAM    | 05/13/21      | 104231       | H20595     | PL226175    | LR    | 2384 | 152.236          | P-19-0716 | 100.0.. | 0.00..  | 0.00..   |                    |
| <input type="checkbox"/> | Corn  | 700    | R10  | 10/23/19              | H82348  | US      | Corn PLACER SH2 Pro   Treat. Box 5 kg BL S 4 N    | Corn PLACER SH2 Pro   Treat. Box 5 kg BL S 4 N    | NAM    |               | H84074       | H20595     | PL226175    | LR    | 2384 |                  | P-19-0716 | 100.0.. | 0.00..  | 0.00..   |                    |
| <input type="checkbox"/> | Corn  | 700    | R10  | 10/23/19              | H82348  | US      | Corn PLACER SH2 Pro   Treat. Box 5 kg BL S 4 N    | Corn PLACER SH2 Pro   Treat. Box 5 kg BL S 4 N    | NAM    | 01/27/21      | H84636       | H20595     | PL226175    | LR    | 2384 | 19.029           | P-19-0716 | 100.0.. | 0.00..  | 0.00..   | .951               |
| <input type="checkbox"/> | Corn  | 700    | R10  | 10/23/19              | H82348  | US      | Corn PLACER SH2 Pro   Treat. Box 5 kg BL S 4 O    | Corn PLACER SH2 Pro   Treat. Box 5 kg BL S 4 O    | NAM    | 01/27/21      | H84073       | H20595     | PL226175    | LR    | 2384 | 19.029           | P-19-0716 | 100.0.. | 0.00..  | 0.00..   |                    |
| <input type="checkbox"/> | Corn  | 700    | R10  | 10/23/19              | H82348  | US      | Corn PLACER SH2 Pro   Uthr. Bag 100 kg H M S      | Corn PLACER SH2 Pro   Uthr. Bag 100 kg H M S      | NAM    | 10/15/20      | H66006       | H20593     | PL226175    | LF    | 2530 | 322.754          | P-19-0716 | 100.0.. | 0.00..  | 0.00..   |                    |
| <input type="checkbox"/> | Corn  | 700    | R10  | 10/23/19              | H82348  | US      | Corn PLACER SH2 kg R d S d                        | Corn PLACER SH2 kg R d S d                        | NAM    | 10/23/19      | PL226175     |            | PL226175    |       |      | 3,061.000        | P-19-0716 |         |         |          |                    |
| <input type="checkbox"/> | Corn  | 700    | R10  | 10/23/19              | H82348  | US      | Corn PLACER SH2 kg S Uthr. (H M)                  | Corn PLACER SH2 kg S Uthr. (H M)                  | NAM    | 12/16/19      | H12026       | PL226175   | PL226175    | MF    |      | 453.000          | P-19-0716 | 93.10.. | 6.90..  | 0.00..   |                    |
| <input type="checkbox"/> | Corn  | 700    | R10  | 10/23/19              | H82348  | US      | Corn PLACER SH2 kg S Uthr. (H M)                  | Corn PLACER SH2 kg S Uthr. (H M)                  | NAM    | 12/16/19      | H12027       | PL226175   | PL226175    | LF    |      | 454.000          | P-19-0716 | 100.0.. | 0.00..  | 0.00..   |                    |
| <input type="checkbox"/> | Corn  | 700    | R10  | 10/23/19              | H82348  | US      | Corn PLACER SH2 kg S Uthr. (H M)                  | Corn PLACER SH2 kg S Uthr. (H M)                  | NAM    | 12/16/19      | H12028       | PL226175   | PL226175    | MR    |      | 1,128.000        | P-19-0716 | 95.10.. | 4.90..  | 0.00..   |                    |
| <input type="checkbox"/> | Corn  | 700    | R10  | 10/23/19              | H82348  | US      | Corn PLACER SH2 kg S Uthr. (H M)                  | Corn PLACER SH2 kg S Uthr. (H M)                  | NAM    | 12/16/19      | H12029       | PL226175   | PL226175    | LR    |      | 622.000          | P-19-0716 | 100.0.. | 0.00..  | 0.00..   |                    |
| <input type="checkbox"/> | Corn  | 700    | R10  | 10/23/19              | H82348  | US      | Corn PLACER SH2 kg S Uthr. (H M)                  | Corn PLACER SH2 kg S Uthr. (H M)                  | NAM    | 01/31/20      | H20592       | H12026     | PL226175    | MF    | 3286 | 301.000          | P-19-0716 | 95.40.. | 4.60..  | 0.00..   |                    |
| <input type="checkbox"/> | Corn  | 700    | R10  | 10/23/19              | H82348  | US      | Corn PLACER SH2 kg S Uthr. (H M)                  | Corn PLACER SH2 kg S Uthr. (H M)                  | NAM    | 01/30/20      | H20593       | H12027     | PL226175    | LF    | 2530 | 344.000          | P-19-0716 | 100.0.. | 0.00..  | 0.00..   |                    |
| <input type="checkbox"/> | Corn  | 700    | R10  | 10/23/19              | H82348  | US      | Corn PLACER SH2 kg S Uthr. (H M)                  | Corn PLACER SH2 kg S Uthr. (H M)                  | NAM    | 01/31/20      | H20594       | H12028     | PL226175    | MR    | 2802 | 858.000          | P-19-0716 | 95.10.. | 4.90..  | 0.00..   |                    |
| <input type="checkbox"/> | Corn  | 700    | R10  | 10/23/19              | H82348  | US      | Corn PLACER SH2 kg S Uthr. (H M)                  | Corn PLACER SH2 kg S Uthr. (H M)                  | NAM    | 01/31/20      | H20595       | H12029     | PL226175    | LR    | 2384 | 475.000          | P-19-0716 | 100.0.. | 0.00..  | 0.00..   |                    |

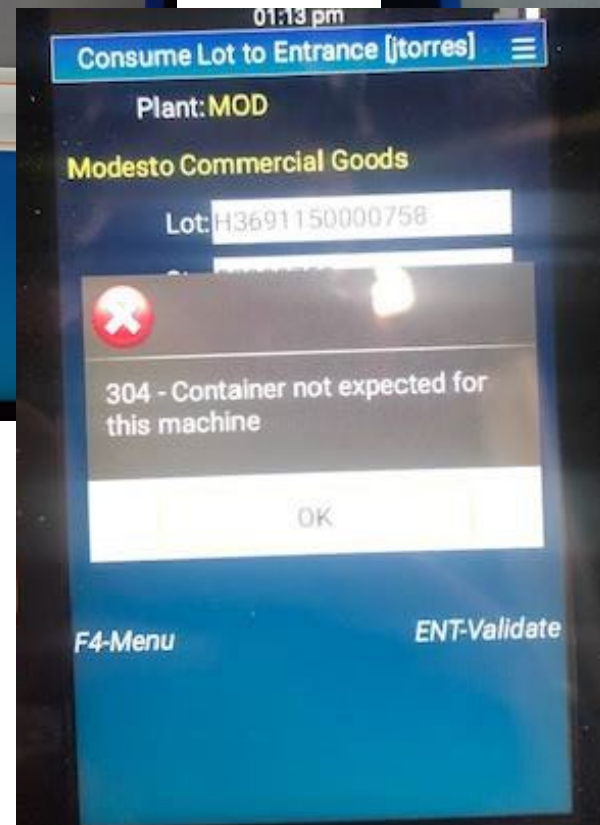
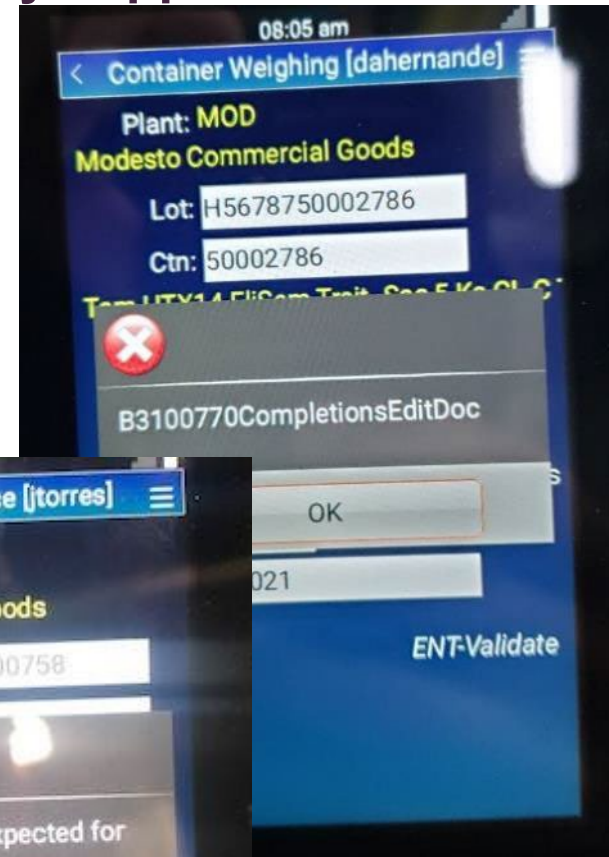
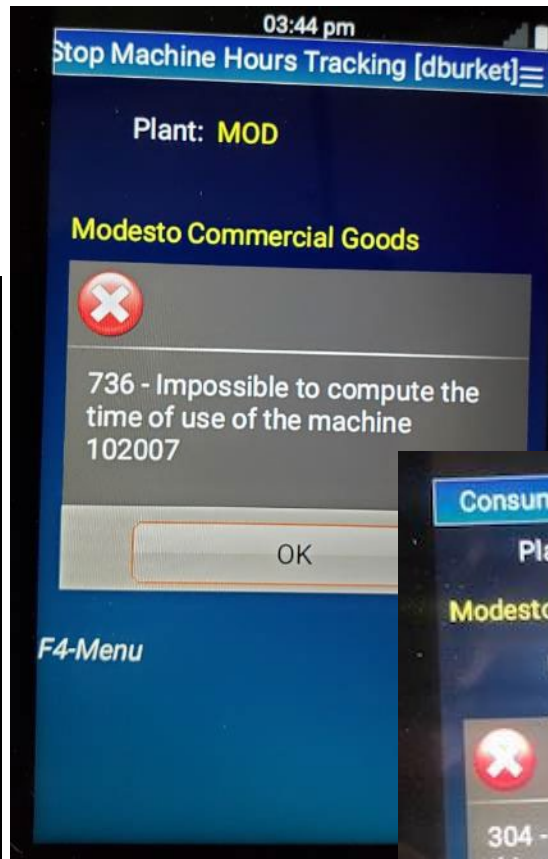


# Traceability – Use of barcode (RFGEN) software – double check at every step, every movement

- Batch matches WO Parts List
- Machine matches WO routing
- Batch matches Machine via WO and must be scanned on consuming at machine entrance
- Container used on machine exit is empty
- New batch label is printed and scanned to machine exit
- Error messages if a machine is stopped but there are un-consumed (un-scanned) containers
- Error message if final weight is higher than initial weight on certain WO's (cleaning via seed-to-track processing)
- Error message if a large amount of waste was generated on a work order
- Blocks in JDE and RFGEN if a WO isn't completed yet and someone tries to use the new batch



# Barcoding errors that stop mistakes before they happen.





# Precautions

- Clear bags for samples are used to help check for contamination/mixtures
- Seed Inspection (visual inspection of the seed) is performed on representative samples after every work order to look for defects or mixture/contamination
- ISTA certification on all Receiving, Milling, and Treatment operators
- Only full time and seasonal HMC operators are allowed to handle seed with open bags, temporary employees are not allowed unless a permanent employee is shadowing them
- Annual Quality training for all operators in the Plant.
- Communicating errors: Each operator should immediately alert a supervisor in the case of a perceived abnormality or assumed contamination or mixture. When in doubt, shout it out!!
  - A mixture caught in the Plant is significantly better and less expensive than a mixture caught in the field.



# Cleaning & Sizing

- Work orders or lot labels placed on machines while processing, as well as all containers on each exit
- Blow downs with compressed air of all equipment and surfaces in between batches
- Run different species back-to-back (mill breaks) to avoid varietal cross contamination
- Curtain placed between machines to minimize contamination when running/cleaning machines
- Each container is kept covered while machine isn't running
- Machine logs (digital and manual) are kept in all processing departments





## Cleaning & Sizing





## Cleaning & Sizing





## Cleaning & Sizing









# Storage

- Most seed species are stored in controlled storage (10-15C and 35% humidity), including ALL parent seed.



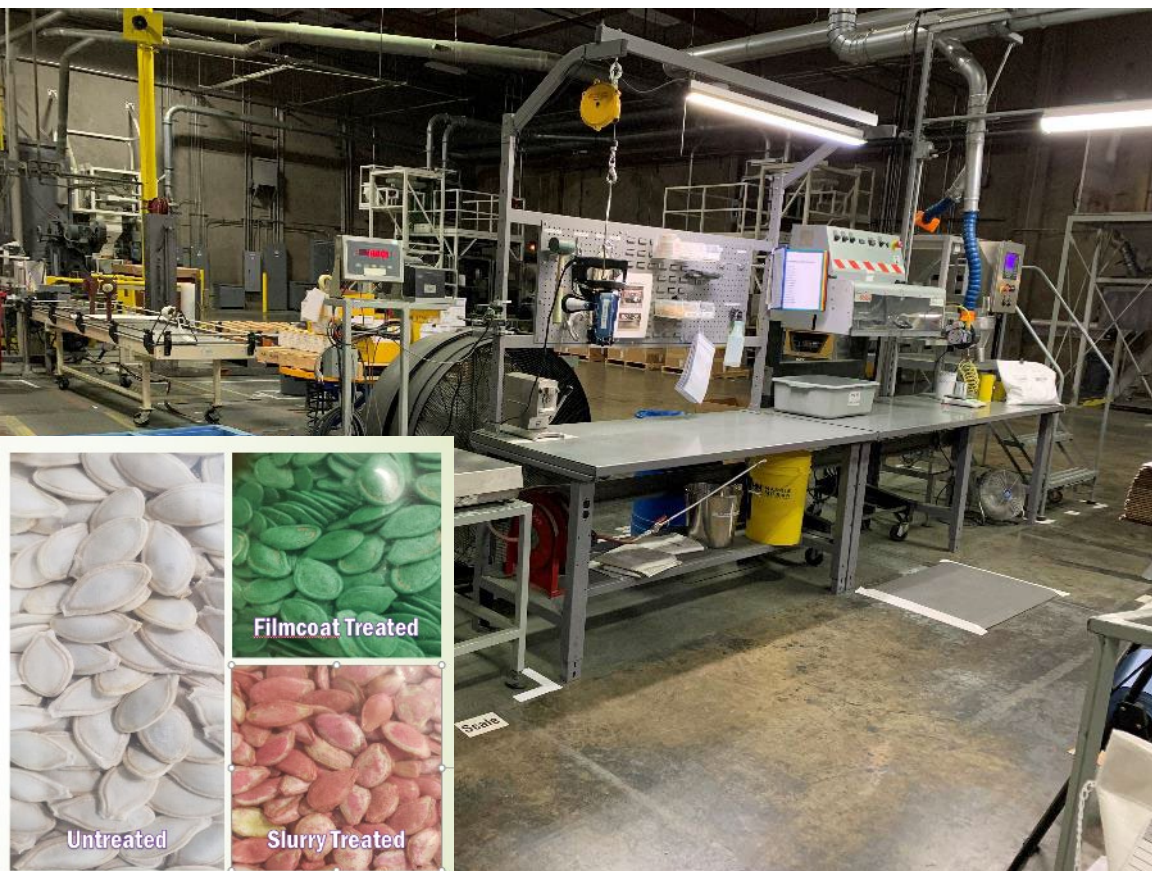
## List of species needed to be in the AC-Room

- Broccoli
- Cabbage
- Carrot
- Cauliflower
- Eggplant
- Endive
- Lettuce
- Melon F1
- Onion
- Pepper F1
- Squash F1
- Tomatillo
- Tomato F1
- Watermelon F1



# Application of Treatment/Packaging

- ONLY one batch treated / package at a time. Must wear gloves when handling treated seed.
- Must apply Treated seed stickers when putting treated seed into the warehouse (place on RFGEN label)
- Only use designated processing bins for treated vs untreated seed
- All treated seed and trash with treatment dust/residue must be disposed of in segregated trash bins





## Summary

- In the many countries of origin much is done to produce healthy, clean seed.
- In our specialized factories (USA, Europe):
  - Traceability is a must, avoiding cross-contamination
  - Knowledgeable specialists supervise every step
  - The seed only gets cleaner, more uniform (sized in many cases)
  - Risk is REDUCED with each process (extraction, drying, cleaning, sizing, SAT, etc.)
  - Even for storage pests, the risks are mitigated (cold storage, fumigation, etc.)

# ANY QUESTIONS?

