North Dakota

Approved Seed Conditioner's Manual

Table of Contents

Section 1. **Introduction**

Section 2. **General Requirements**

Section 3. **Requirements to Operate as an Approved Seed Conditioner**

Seed Conditioner Permit

Renewal of Permit

Revocation of Permit

Facility Management

Section 4. **Equipment**

Primary Cleaning Equipment

- Air-screen
- Disk separator
- Indent cylinder
- Gravity table
- Aspirators
- Precision grader
- Spiral separator
- Secondary Equipment

Section 5. **Housekeeping Requirements**

General Requirements

Conditioning Equipment

Section 6. **Annual Facility Inspections**

General Process

Deficiencies – Probationary Status

Permits

Conditioning Plants – Fixed Facilities

Mobile Seed Conditioners

Table of Contents

Section 7. **Sourcing Seed**

Locating the Seed You Want

Variety Selection

Classes of Certified Seed

Section 8. **Intellectual Property Rights**

General Information

Types of Variety Protection

Basic Requirements for PVP Title V Varieties

Conditioning Protected Varieties

Penalties for Violations

Section 9. **Conditioning**

Testing Seed Prior to Conditioning

Sale of Unconditioned Field Inspected Seed

Conditioning at an Approved Plant

Grower's Declaration

Field Inspection Reports

Lot Sizes and Numbering

Section 10. **Sampling**

Sampling Seed for Final Certification

Available Tests & Sample Size Requirements

Sampler's Reports

Official Samples

Obtaining Test Results Online

Section 11. **Final Certification**

Conditioning

Testing

Table of Contents

Section 11. Final Certification (continued)

Seed Tests Required for Labeling Certified Seed

Re-testing Samples

Labeling

Research Fees

Section 12. Seed Sales Permit and Fees

North Dakota Seed Laws

Application for Seed Sales Permit

Annual Report of Seed Sales

Fees

Inspection

More Labeling Information

Section 13. Labeling Requirements for Agricultural Seed

North Dakota Seed Labeling Requirements

Section 14. Seed Sales

Bulk Seed

C# Certificate

Retail Only Certificate

Downgrading Seed Lots

Combined Lots

Additional Bulk Certificates

Seed Transfers – Legal Movement of Certified Seed

Rejected Lots

Substandard Lots

Common Seed

Germination Tests

Table of Contents

Section 15. Carryover Seed

Conditioned Seed

Unconditioned Seed

Section 16. Seed Laws and Regulations

Federal Seed Laws

North Dakota Seed Laws

Section 17. Interagency Certification

For Seed Certified by Another State

For Field Inspected Seed From Another State

Section 18. Canadian Seed

Purchasing Canadian Seed for Resale

Purchasing Canadian Seed for Seed Production

Selling Seed Into Canada

Seed Tests and Documents Required to Export Seed to Canada

Guidelines for NDSU Varieties Licensed in Canada

Section 19. Seed Regulatory

Purpose of the Regulatory Program

Services Provided

Section 20. Fee Schedules

Licensing and Permits

Field Inspection

Final Certification

Lab Fees

Variety Research Fees

Section 21. Seed Department Deadlines

Table of Contents

Section 22. Reporting Requirements

Labeling Fee Report

Research Fees

Carryover Seed Report

Section 23. Glossary of Terms

Section 24. Appendices

A. Agreement to Operate as a North Dakota Approved Plant to Condition Seed

B. Plant Clean-Down Checklist

C. Seed Sampler's Report

D. Instructions for Completing Sampler's Report

E. Research Fee Report Form

F. Application for Seed Sales Permit

G. Annual Report of Agricultural, Vegetable and Flower Seed Sold in ND

H. Example of C# Bulk Certificate

I. Example of Retail Only R# Bulk Certificate

J. Example of Common Seed Label

K. Declaration of Carryover Seed Report

L. Certificate of Transfer

M. Fee Schedule

N. Relabeling Request for Carryover Certified Seed form

O. Instructions for Completing the Relabeling Request for Carryover Certified Seed form

Acknowledgements

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Section 1 – Introduction

Seed conditioners play an integral role in the delivery of quality seed products for the agricultural industry. Any seed conditioner may be designated by the State Seed Department as an approved conditioner to condition field-inspected seed for final certification provided the conditioning plant is properly designed, equipped and managed to maintain the identity and purity of a seed lot.

Designation as a North Dakota Approved Conditioner permits you to condition seed that passed field inspection by an authorized NDSSD field inspector. Approved conditioners are responsible for maintaining the identity of seed throughout the conditioning process, bagging or bulk handling, labeling and marketing.

This manual was developed as a supplement to Bulletin No.51, North Dakota Field Seed Certification Standards. It is intended to provide approved conditioners additional information on business practices related to conditioning certified seed.

The most up-to-date certification rules and seed standards may be found on the State Seed Department website.

Section 2 – General Requirements

General Requirements

Seed conditioning plants and mobile cleaners must be approved by the North Dakota State Seed Department to condition field-inspected seed for final certification. To be approved, conditioners must meet certain minimum requirements for management practices and equipment. Seed Department requirements are established to ensure compliance with the Federal Seed Act Regulations Part 201, § 201.73, concerning processing of certified seed.

1. Facilities shall be available to perform processing without introducing admixtures.
2. Identity of the seed must be maintained at all times.
3. Records of all operations relating to certification shall be complete and adequate to account for all incoming seed and final disposition of seed.
4. Processors shall permit inspection by the certification agency of all records pertaining to all classes of certified seed.
5. Processors shall designate an individual who shall be responsible to the certifying agency for performing such duties as may be required by the certifying agency.

These are general requirements of the Federal Seed Act. Specific requirements are detailed in Bulletin 51, North Dakota Field Seed Certification Standards. As the state's officially designated seed certification agency, the State Seed Department has the authority to establish rules and regulations for the production, conditioning and handling certified seed.

Section 3 – Requirements to Operate as a North Dakota Approved Seed Conditioner

North Dakota Seed Conditioner Permit

A permit is required to operate as an approved seed conditioner in North Dakota. Permit applications are mailed to managers of facilities with current licenses in August of each year. Facility managers should complete the application and return to the department with the annual fee by the appropriate filing deadline. New facilities coming on-line must be inspected prior to receiving any field-inspected seed into the facility. Facility managers should call the department to arrange for an inspection well in advance of their anticipated start-up.

Permission to operate as an "Approved Conditioning Facility" will be granted on an annual basis following an inspection of the facility by a Seed Department inspector. If the inspector is satisfied the facility meets the requirements of the agreement, follows all certification requirements and North Dakota and federal seed laws and regulations, the facility will be granted a seed conditioner's permit.

Permits are issued on an annual basis. Inspections generally take place each year in October and November. Facility managers and the designated samplers are under agreement to properly handle all seed, to maintain appropriate records and to draw representative samples of all seed lots for certification according to certification rules and regulations. Specific requirements for facility management are included on the "Agreement to Operate as a North Dakota Approved Facility to Condition Seed for Final Certification" ***(Appendix A*).**

Approved conditioners with multiple facilities or mobile units must have a separate permit for each facility or mobile unit, unless the additional cleaning facility is on the same site, or under an adjoining roof. An approved conditioning plant must be separate from any commercial grain handling facility.

Growers who condition their own seed using their own equipment on their own premises are not required to have a permit. However, they are not allowed to condition seed for other growers, nor are they allowed to purchase field-inspected seed from other growers with the intent to condition and sell as certified seed.

Renewal of Permit

The permit to operate as an approved conditioner may be renewed annually. Facilities with current permits will receive a new agreement form each year in August. Facility managers must complete the form and return it to the department by September1. Inspections begin mid-October. Any changes to the facility or personnel must be noted on the agreement.

Revocation of Permit

Permission to operate as an Approved Conditioning Facility is granted on an annual basis and may be revoked at any time without notice under the following circumstances:

1. Conditions specified in the agreement are not fulfilled
2. Violations of state certification standards
3. Violations of state seed laws
4. Violations of the Federal Seed Act
5. Violations of the U.S. Plant Variety Protection Act

Facility Management

Facility managers must understand and agree to all of the requirements on the permit application. The facility manager is responsible for ensuring all personnel that handle certified seed are properly trained and capable of meeting the following requirements:

1. The facility manager and employees shall maintain a clean plant at all times, including headhouse, conditioning area, pit, scale area, bins, basement area and all bulk bins located outside the facility.
2. All handling equipment, conveying equipment and bins shall be inspected and approved annually.
3. All handling equipment, conveying equipment and bins shall be thoroughly cleaned before any lot of certified seed is conveyed and stored in the facility. Augers must be reversible. Hopper bins must have access ports, inside ladders or another means of access approved by the department.
4. All bins shall be labeled and an up-to-date bin chart maintained and accessible. Bin charts must list each bin on the site that holds field-inspected, or certified seed. Information that must be included on the bin chart includes bin identification, kind, variety, class and lot number.
5. An authorized sampler shall draw representative samples from the entire lot of seed during or after conditioning. The un-tampered, representative sample must be placed into an official seed sample bag. See **Section 10** for sampling instructions.

6. The authorized sampler must complete a Seed Sampler's Report and Grower's Declaration, if required, on all seed lots conditioned and sampled for final certification. The Seed Sampler's Report and representative sample must be submitted to the North Dakota State Seed Department for testing.

7. All bagged seed must be properly tagged. All unused certification tags must be destroyed or returned to the Seed Department as soon as the lot has been tagged.

8. A completed bulk certificate must be issued for each load of bulk certified seed at the time of delivery. The Seed Department paper copy of bulk certificate(s) log sheet and all unused bulk certificates must be returned to the Seed Department by Sept 1. For on-line bulk certificates, log into your account, find the appropriate bin and lot number. Fill out the appropriate customer bulk certificate. At final disposition of the lot or at season end print out a copy of each log sheet and retain with your records.

9. Complete and accurate records must be maintained for a period of three years for all seed conditioned and sold. Records shall include labeling information, purchaser, and the amount of seed sold.

10. A representative two-pound sample of each seed lot labeled by the conditioner must be retained for one year from the date of final disposition of the lot. Samples must be identified by Kind, Variety, Class and Lot Number.

11. Conditioners shall pay all certification, testing fees and applicable research fees on all seed labeled in their name.

12. Labels must be placed on all bins, identifying kind, variety, lot number and class of seed.

13. Off-site bins or satellite bin locations shall be managed in the same manner as those at an approved facility. Bins shall be listed on a separate Bin List registered under the name of an approved facility. All satellite locations shall be inspected annually by a department inspector.

Section 4 – Equipment

Seed conditioning equipment is designed to take advantage of differences in the physical characteristics of seed or inert matter. Effective separation depends on the degree of differences in the physical characteristics of the seed. Modern seed conditioning equipment can make separations based on the following:

1. Size
2. Length
3. Weight
4. Shape
5. Surface texture
6. Color

Different equipment is designed to accomplish specific separations. A combination of machines is required to achieve a finished product that meets seed certification standards.

Primary Cleaning Equipment

Width Separator

Air-screen machine. ***Required for small grains***.

The air-screen machine is the basic seed cleaner in most cleaning facilities. The air-screen machine makes separations based on differences in size, width and weight of seed, using three cleaning elements; aspiration, scalping screens and grading screens. Most air-screen machines have at least two screens, while some have as many as six or more.

The typical four-screen machine is set up in the following manner:

1. First screen - scalping
2. Second screen - grading
3. Third screen - close scalping
4. Fourth screen - fine grading

Operation

The seed to be cleaned is fed from the bottom of the feed hopper by means of a feed roll. The seed is introduced into the machine, and aspirated with airflow to remove light chaffy material and dust before they reach the top scalping screen. The perforations in this screen should be large enough to allow the seed being cleaned to drop through easily, but small enough to scalp off the

large foreign material such as stems, sticks, dirt, and seed larger than the seed being cleaned. A round-hole screen is usually best for removing long material such as straw, sticks, and stems.

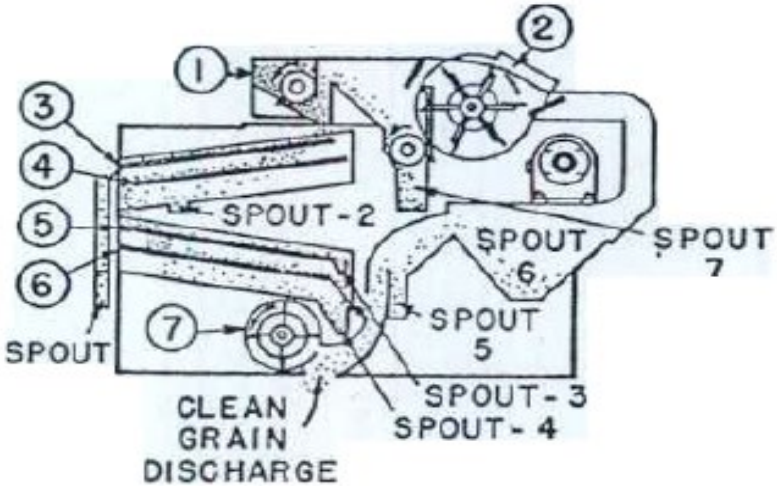
The lower sifting screen has small holes that retain the desired seed while allowing smaller seed to pass through.

The third screen serves as the close scalper. It removes any foreign material or seed larger than the seed being cleaned but small enough to have passed through the first screen.

The seed that drops through the third screen goes over the fourth screen for final close grading. The fourth screen has perforations a little larger than the second screen. It removes any seed or other material, e.g., weeds, smaller than the seed being cleaned but which was too large to drop through the second screen. Splits and immature seeds are removed by this screen.

As the good seed drops off the fourth screen it drops through the lower aspirator. This air blast blows out the light seed and trash that was not removed by the upper aspirator and screens. For efficient cleaning, the lower air should be strong enough to suck out a few good seed.

By selecting both the size and the shape of the upper and lower screens, precise separations are possible with the air-screen machine. This technique is often used to remove weed seeds or broken seeds, particularly in cereal grains.



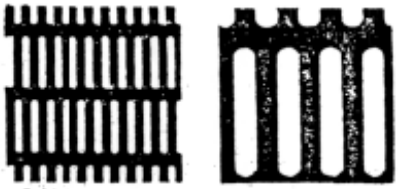
1. Roll feed hopper
2. Top suction fan
3. Top screen top shoe
4. Bottom screen top shoe
5. Top screen bottom shoe
6. Bottom screen bottom shoe
7. Bottom aspirator

Other Adjustments

1. Screen pitch changes the slope of the screens. A steep slope on the scalper sieve results in a sharper separation. Scalpers are usually set at a greater slope. The bottom screens should be flattened to the point that undesirable seed and small inert matter will have time to pass through.
2. Shake speed affects separation. A fast speed makes sharper separations. Too fast tends to bounce the seed so rapidly that they don't have time to drop through. Too slow and the seed tend to lie dead on the screen and clog it.

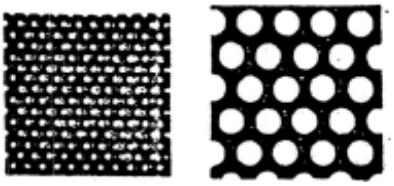
Examples of screens and perforations used in seed cleaning.

Oblong Holes



3/64 x 5/16 8 x ¾

Round Holes



1/25 10/64

Triangle Holes

9/64 or 5 ½ V 11/64 or 6 ½ V

Wire Mesh

3 x 14 18 x 18

The following tables show suggested screens for specific crops. Consult the operating manual for the specific model used in your facility.

PERFORATED METAL SHEET

ROUND HOLES

Fractions	64ths	
1/25	5½	24
1/24	6	25
1/23	7	26
1/22	8	27
1/21	9	28
1/20	10	29
1/19	11	30
1/18	12	31
1/17	13	32
1/16	14	34
1/15	15	36
1/14	16	38
1/13	17	40
1/12	18	42
	19	44
	20	48
	21	56
	22	64
	23	72
		80

OBLONG HOLES

Fractions	64ths
1/24x½	5x¾
1/22x½	5½x¾
1/22x½ Diag.	6x¾
3/64x5/16	6½x¾
1/20x½	7x¾
1/18x¼	8x¾-D
1/18x¾	9x¾
1/16x¼-A	10x¾-E
1/16x½	11x¾-F
1/15x½	12x¾-G
1/14x¼-B	13x¾-H
1/14x½	14x¾-I
1/13x½	15x¾-J
1/12x½-C	16x¾-K
	17x¾
	18x¾
	19x¾
	20x¾
	21x¾
	22x¾
	24x¾-L
	32x1

TRI-ANGLES

64ths
5
8
9
10
11

OBLONG CROSS SLOT

Finished Screens Made Only in "9" and "8" Model Widths. Sheet Sizes 26" x 61⅛" and 26" x 53¼"

6x¾
7x¾
8x¾
9x¾
10x¾
11x¾
12x¾
13x¾
14x¾
15x¾
16x¾
18x¾
10½x¾
11½x¾
12½x¾

ROUND HOLE HALF SIZES

6½
7½
8½
9½
10½
11½
12½
13½
14½
15½
16½
17½
18½
19½
20½
21½
22½

OBLONG HALF SIZES

8½x¾
9½x¾
10½x¾
11½x¾
12½x¾
13½x¾
14½x¾

WIRE CLOTH

SQUARE OPENINGS

3x3
4x4
5x5
7x7
8x8
9x9
10x10
12x12
14x14
15x15
16x16
17x17
18x18
20x20
22x22
24x24
26x26
28x28
30x30
32x32
34x34
36x36
38x38
40x40
45x45
50x50
60x60

OBLONG OPENINGS

2x8	4x8½	6x14
2x9	4x15	6x15
2x10	4x16	6x16
2x11	4x18	6x18
2x12	4x19	6x19
3x14	4x20	6x20
3x16	4x22	6x21
3x16 SP.	4x24	6x22
3x18	4x24 SP.	6x23
3x20	4x26	6x24
3x21	4x28	6x25
	4x30	6x26
	4x32	6x28
	4x34	6x30
	4x36	6x32
		6x34
		6x36
		6x38
		6x40
		6x42
		6x50
		6x60
		18x20
		20x22

Screen sizes available for air-screen machines.

SUGGESTED SCREENS FOUR SCREEN CLEANERS

Four Screen Cleaners - Use Col. 1 for top screen in top shoe, Col. 2 for bottom screen in top shoe, Col. 3 for top screen in bottom shoe, and Col. 4 for bottom screen in bottom shoe.

Three Screen Cleaners - Use Col. 1 for top screen, Col. 3 for middle screen, and Col. 4 for bottom screen.

COMMODITY	COL. 1	COL. 2	COL. 3	COL. 4
Alfalfa	1/14 or 1/13	6x26	1/15 or 1/14	6x24
Alsike Clover	1/18	6x34	1/19	6x32
Alsike, Sorrel from	1/18	6x34	6x20, 6x21, 6x22	6x32
Alsike, Mustard from	1/18	6x34	3/64 x 5/16, 6x20, 6x21	6x32
Alsike, Yellow Trefoil from	1/18	6x34	6x22, 1/21, 1/22	6x32
Alsike, Night Flowering Catchfly from	1/18	6x34	6x20 or 6x21	6x32
Alspice, Whole	21	6	20	8/64 x 3/4
Anise	14	1/20	12	1/18
Barley	11/64 x 3/4 or 24	1/14 x 1/2	22, 21 or 20	1/13 x 1/2
Beans, Cranberry	32	14/64 x 3/4	30	16/64 x 3/4
Beans, Yellow Eye	24	11/64 x 3/4	22	12/64 x 3/4
Beans, Lima	56	16	48	20
Beans, Baby Lima	32	17	30	19
Beans, Red Kidney	30	13/64 x 3/4	28	14/64 x 3/4
Beans, Navy or Pea	22	10/64 x 3/4	20	11/64 x 3/4
Beans, Large Yellow Soy	22	10/64 x 3/4	20	11/64 x 3/4
Beans, Small Black Soy	20	6/64 x 3/4	18	7/64 x 3/4
Beans, Soy, Black Flat	18	7/64 x 3/4	16	8/64 x 3/4
Beans, Soy, Wild Morning Glory from	18	7/64 x 3/4	16	11, 12
Beans, Pinto	26	9/64 x 3/4	24	10/64 x 3/4
Beans, Great Northern	26	10/64 x 3/4	24	11/64 x 3/4
Beans, Mung	14	7	13	8/64 x 3/4
Beet Seed	24	7	22 or 20	8
Bent Grass	26x26	60x60	28x28	50x50
Bermuda Grass	6x28	6x42	6x30	6x40
Brome Grass	10	9 tri. or 6x26	1/13 x 1/2	6x24
Blue Grass, Canadian	1/18	6x42	1/20	6x40
Blue Grass, Kentucky	6x28	6x42	26x26	6x40
Buckwheat	16	7	14	6/64 x 3/4
Cabbage Seed	10	1/18	8	3/64 x 5/16
Canary Grass	9	6x26	3x16	6x24
Caraway Seed	1/14 x 1/4	6x24	1/16 x 1/2	6x22
Carrot Seed	7	6x28	1/12	6x26
Cane Seed	12	1/14 x 1/2	10	1/13 x 1/2
Carpet Grass	1/15	6x40	6x28	6x38

COMMODITY	COL. 1	2	COL. 3	COL. 4
Celery Seed	1/14	30x30	1/16	28x28
Clover, Hop	1/20	6x36	1/25	6x34
Clover, Ladino	1/18	6x34	1/20 or 1/21	6x32
Clover, Crimson	6	6x24	1/13	6x22
Clover, Bur Hulled	1/12	6x24	1/13	6x22
Clover, Dalea or Woods	6	6x23	1/13	6x22
Clover, Red	1/15	6x24 or 6x26	3/64 x 5/16	6x22 or 6x24
Clover, Red, Hares Ear Mustard from	3/6 x 5/16	6x24	3/64 x 5/16	6x24
Clover, W.B. Sweet	1/12	6x26	1/14	6x24
Clover, W.B. Sweet, unhulled	10	6x26	8	6x24
Clover, White Dutch	1/16 - 1/18	6x34	1/18, 1/19, 1/20	6x32
Clover, White Dutch, Dock from	1/16	6x34	6x22 or 6x23	6x32
Comin	14	1/25	12	1/22
Corinder	15	1/13 x 1/2	13	1/12 x 1/2
Corn, Cleaning only	32	14	28,30	16
Cotton Seed, delinted	20	9/64 x 3/4	18	10/64 x 3/4
Cotton Seed, not delinted	40	12/64 x 3/4	36	13/64 x 3/4
Crested Wheat Grass	1/16 x 1/2	6x30	1/18 x 1/4	5 tri.
Crotalaria	12	6	1/12 x 1/2	7
Cucumber Seed	18	8	17 or 16	9
Dallas Grass	8	1/15	3x14	1/14
Fescue, Meadow	1/13 x 1/2	6x21	1/14 x 1/14	4x22 or 5 tri.
Fescue, Chewings	3/64 x 5/16	6x32	1/22 x 1/2	6x30 or 5 tri.
Fescue, Ky 31	3/64 x 5/16	6x32	1/22 x 1/2	5 tri. or 6x30
Fennel	14	1/16	12	1/14
Flax, Bison	1/16 x 1/2	1/14	1/18 x 3/4	1/13
Flax, Golden	1/13 x 1/2	1/12	1/14 x 1/4	6
Flax, Small	3x16	1/14	3/64 x 5/16	1/12
Flax, Walsh & Viking same as Bison				
Garbanzos (chick peas)	30	11/64 x 3/4	26	12/64 x 3/4
Hemp	14	1/13 x 1/2	12	1/12 x 1/2
Johnson Grass	10	1/18	8	1/16
Kaffir Corn	14	1/14 x 1/4	12	1/12 x 1/2
Lentils	18	12	7/64 x 3/4	12 or 13
Lespedeza, Korean	6	1/17, 1/18	6x15 or 1/18 x 1/4	1/16
Lespedeza, Kobe	8	1/16	6x14 or 1/18 x 3/4	1/14
Lespedeza, Sericea, Unhulled	7	1/15	1/14 x 1/4	6x26
Lespedeza, Sericea, Hulled	1/15	6x28	1/16 or 3/64 x 5/16	6x26
Lettuce	4x18	24x24	6x20	20x20
Melon, Water	28	14	24	16
Melon, Musk	20	7	16	9
Milo, Maize	14	1/13 x 1/2	13	1/12 x 1/2
Millet, German	8	1/22 x 1/2	6	3/64 x 5/16
Millet, Siberian	7	1/20	1/12	1/15

COMMODITY	COL. 1	COL. 2	COL. 3	COL. 4
Millet, Proso	9	3/64 x 5/16	7	1/18 x 1/4
Mustard, White	9	1/22 x 1/2	7	3/64 x 5/16
Mustard, Brown	7	1/22	1/12	1/20
Oats	24	1/16x1/2 or 11 tri.	11/64 x 3/4	1/14 x 1/2
Oats, Corn from	10/64x3/4 or 9/64x3/4	1/16 x 1/2	9/64x3/4 or 8/64x3/4	1/14 x 1/2
Oats Grass, Tall Meadov	1/12 x 1/2	6x30	1/14 x 1/2	6x28
Okra	16	3/64 x 5/16	14	1/18 x 3/4
Onion Seed	11	1/15	9, 8	1/14
Orchard Grass	3/64 x 5/16	6x32	1/22x1/2 or 1/24x1/2	6x32 or 5 tri.
Onion Sets	1/14	3x3	1"	3x3
Peas, Austrian Winter	20	12 or 9/64 x 3/4	17	10/64 x 3/4
Peas, Blackeye	24	12 or 9/64 x 3/4	22	10/64 x 3/4
Peas, Canada Field	22	10 or 9/64 x 3/4	20	10/64 x 3/4
Peas, Cow	22	12 or 10/64 x 3/4	21	11/64 x 3/4
Pepper Seed, Red	14	1/12	12	7
Pepper, Black	18	6/64 x 3/4	16	7/64 x 3/4
Pinion Nuts	32	12/64 X 3/4	30	14/64 x 3/4
Poa Bulbosa	10	4 x 24	7	4x 22
Pop Corn, Pearl	21	10	20	11
Psyllium Seed	4x18	6x38	6x20	26x26
Pumpkin Seed	36	18	32	20
Radish Seed	10	1/14	9 or 8	1/12
Rape, Dwarf Essex	7	1/23	1/12	1/22
Rape, German	9	1/18	7	1/16
Red Top	26x26	60x60	28x28	50x50
Red Top, Timothy from	26x26	60x60	6x34	50x50
Rice, Paddy	22	6 or 7	20 or 21	1/14 x 1/2, 1/13 x 1/2
Rice, Hulled	14	1/12	12	14x14
Rye Grass, English	3/64 x 5/16	6x32	1/22 x 1/2	6x32 or 5 tri.
Rye	14	1/16 x 1/2	12	1/14 x 1/2
Rye, Vetch from (100% impossible)	7/64 x 3/4	8	7/64 x 3/4	9
Sesbania	10	1/18 x 1/4	8 or 9	1/18 x 3/4
Sesame Seed	6	4x26	1/18 x 1/4	1/16
Spinach	14	1/14	11 or 12	1/12
Squash Seed	34	20	32	23
Sudan Grass	12	1/22 x 1/2	10	3/64 x 5/16
Sunflower Seed	24 to 32	10	24 to 32	11
Timothy	1/18	6x36	1/19 or 1/20	6x34 or 6x32
Timothy, Sorrel from	6x20 or 6x21	6x36	6x20 or 6x21	6x34 or 6x32
Timothy, Red Clover from	6x24	6x36	6x26	6x34
Timothy, Pepper Grass from	1/19	6x34	1/20	6x32
Timothy, Black Plantain from	1/19	6x32	1/20	6x30

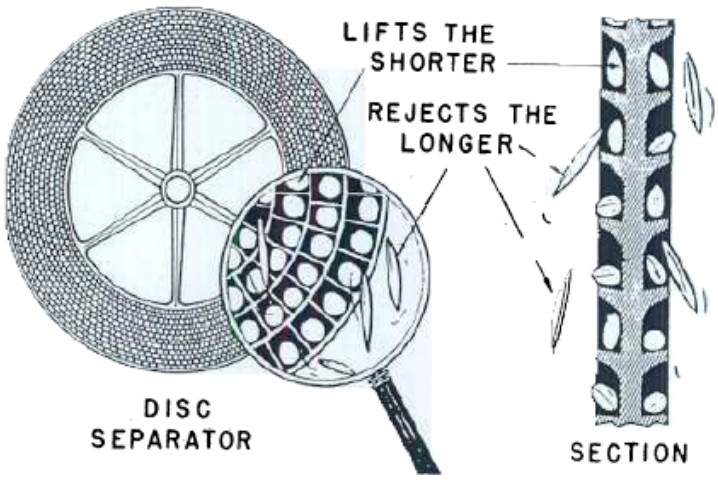
COMMODITY	COL. 1	COL. 2	COL. 3	COL. 4
Timothy, Red Top from - - - - - - - -	1/19	6/36	1/20	6x34
Timothy, Buckhorn from - - - - - - -	1/20	6x30	1/22	6x30 or 6x28
Timothy, Alsike from - - - - - - - -	1/20	6x34	1/25 or 6x26	6x32
Tobacco Seed - - - - - - - - - - - -	30x30	50x50	32x32	40x40 or 50x50
Tomato Seed - - - - - - - - - - - -	12	1/14	10	1/12
Trefoil, Birdsfoot - - - - - - - - -	1/14	6x26	1/16	6x24
Turnip Seed - - - - - - - - - - - -	1/12	1/22	1/14	1/20
Vetch - - - - - - - - - - - - - - - -	16	6/64 x 3/4	14	6/64x3/4 or 7/64x3/4
Wheat - - - - - - - - - - - - - - - -	16	1/13 x 1/2 or 8 or 9	14	1/13 x 1/2 or 10 tri.
Wheat, Oats from - - - - - - - - - -	12	1/13 x 1/2	11	1/13 x 1/2
Wheat Grass, Western - - - - - - - -	1/13 x 1/2	4x24	1/14 x 1/2	4x22

Length Separators (capable of removing both long and short fractions)

Disk separator or indent cylinder. ***Required for small grains***.
Some varieties of seed have nearly the same width or thickness and would be impossible to separate if it were not for differences in their length. The indent cylinder or disk separator accomplishes further sizing by length or shape. In this case, small indentations or pockets allow seeds of certain size to enter, but larger or longer seeds are rejected. Seeds that enter the indents are carried into an upper trough, while the excluded seeds continue through the lower part of the machine. This technique is often used to remove weed seeds or broken seeds, particularly in cereal grains.

1. Disc Separator

The disc separator consists of a series of discs mounted vertically on a horizontal shaft. Each disc contains hundreds of undercut pockets on each side. The pockets serve two functions (1) to remove seed from long stems and straw and (2) as a splitter to divide seed into fractions. Typical disc diameters are 15, 18, 21, or 25 inches.



Face and cross-section of a single disc.

Disc Pocket Shapes

V pockets (vetch) have a round lifting edge and a horizontal leading edge. These are used to lift and separate short, round-shaped seed from the seed mixture.

R pockets (rice) have a flat horizontal lifting edge and a round leading edge. The R pockets are designed to lift and separate tubular and short elongated seed from a mixture.

Square pockets (square faced) have a horizontal sloping lifting edge, horizontal leading edge.

Disc Pocket Size

On the V and R discs, the number indicates width dimension in millimeters.

On the square pocket discs, there is no size dimension. The letter is no indication of relative size.

There are over 75 different disc size-shape relationships ranging from 2.5 millimeters in V and R pockets to more than ½ inch in square pockets.

Operation

As the discs revolve, the pockets lift out the short seed and reject the long seed. The long seeds are conveyed by the flights on the disc spokes to the end of the machine and discharged through the tailings opening. Raising and lowering the tailings gate regulates the length of time the seeds are exposed to the cleaning action. Short particles are lifted out of the mass and discharged into the lifting discharged spout when trap doors are closed or the return conveyor if trap doors are open.

Adjustments

1. Feed rate
2. Position of tailings gate
3. Position of trap doors
4. Arrangement of conveyor blades

2. Indent Cylinder Separator

A cylinder separator consists of a long cylinder with hundreds of semi-spherical indentations that line the insides of the cylinder. Cylinder dimensions range from 17 – 24 inches in diameter and from 56 – 90 inches long. Cylinder indent size depends on the crops being conditioned and weed and other crops to be removed. Indent sizes are listed in 64ths of an inch and range from a No.2 to a No 60. Thirty sizes are available.

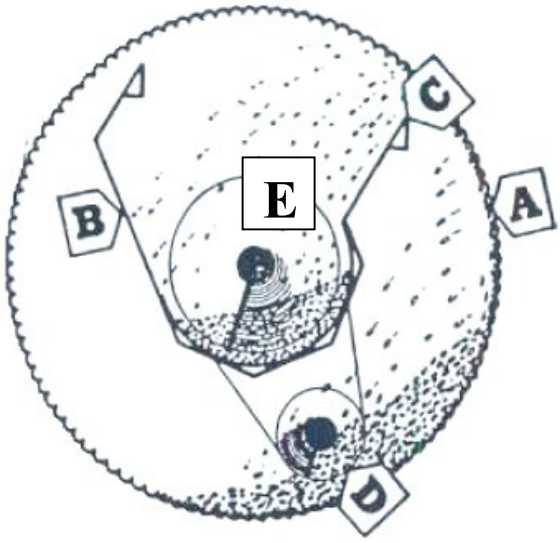
Operation

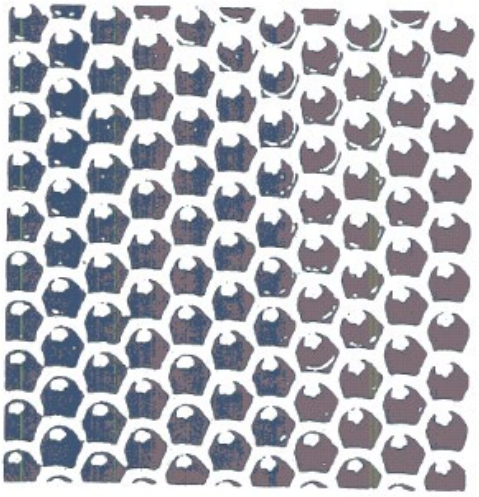
As the cylinder revolves (commonly between 50-60 RPM) the short seeds are lifted out of the seed mass due to a combination of centrifugal force, specific gravity, weight of the product, and indent size. The seed lifted by the indents drops into a trough inside the cylinder. The degree of separation is controlled by the position of the separating edge of the trough. If the trough set too low some long seeds will be removed. If the trough set too high – short seed picked up will fall back into the mixture. Some cylinder separators are equipped with variable speed drives which should be adjusted according to the height or level of the trough.

Cylinder speed is critical. If the speed is too fast some of the longer seed will be picked up and short seed may be carried over the top. If too slow, the cylinder may reject some of the short seed that should be lifted out.

The retarder is a dam at the discharge end of the cylinder. The position of the retarder may be adjusted to hold the seed at any desirable level.

A leveler or conveyor is the means of conveying seed through the machine that is not lifted. The level is adjusted by elevating the feed end. The screw conveyor keeps the seed mass level, prevents stratification and conveys material to the discharge end of the machine.





Cross section of an indented cylinder. A, cylinder wall with indentations; B, adjustable trough to catch lifted seed; C, separating edge of adjustable trough; D, conveyor that conveys long material out of cylinder; E, center screw conveyor that conveys short, lifted material out.

Comparison of the Length Separators

Advantages of the Disc Separator

1. Greater lifting capacity per square foot of floor space.
2. Extremely long life; high wear resistance.
3. Rerun adjustment and disc rotor flexibility.
4. Low maintenance.
5. Not affected by seed coat texture, density or moisture content of seed.
6. May run more than one size of discs.
7. Performs well on lighter seed (<45 lbs. per bu.), i.e. grass.
8. Good where a large mass of material is to be lifted.

Disadvantages of the Disc Separator

1. Application inflexibility – no quick change disc feature.
2. Disc plugging, i.e., flax, corn, soybeans.

Advantages of the Indent Cylinder Separator

1. Greater and easier adjustability; can perform a more precise length separation.
2. Easier to clean out.
3. With split cylinder – can change indents quickly.
4. More effective for sizing oats, length grading of hybrid corn and making separations where small amounts are lifted.

Disadvantages of the Indent Cylinder Separator

1. Low capacity compared to disc separator.
2. Can perform only one separation per indent.
3. Does not perform as well on seeds weighing less than 45 lbs./bu, thus it is more practical to use it with small grains, corn and soybeans, than with grasses.
4. Seed coat texture, weight, and moisture all combine to affect separation.

Gravity Table

This machine is designed to separate seeds that are similar to good seed in size, shape, and seed coat characteristics but differ in weight or specific gravity. Examples of removable material include:

Insect damaged seeds	Deteriorated or rotten seeds	Moldy seeds
Scab (wheat)	Sterile florets	Ergot or sclerotia
Sand, dirt	Weeds or other crops differing in weight	

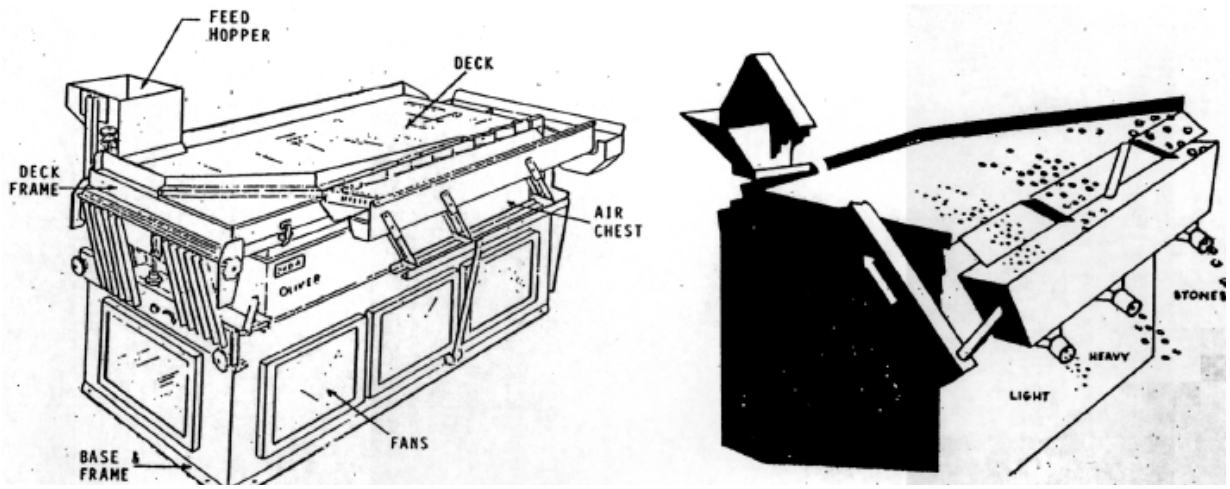


Diagram of gravity tables.

Parts of a Gravity Table

1. Base and Frame - Single unit and must provide a solid foundation and a level surface from which the deck is adjusted.
2. Fans - One or more, located inside air chest or above table
3. Air Chest - Airtight chamber located beneath the deck produces static pressure. Air is forced up through the porous deck
4. Deck - The surface on which seeds are separated. Made of porous material (e.g., cloth, woven wire screen, perforated sheet metal). Made to oscillate.
5. Feed Hopper - Designed to regulate seed flow onto the deck
6. Drive System - Makes the deck oscillate
7. Discharge System - Open side of the deck in which seeds flow off

Principles of Separation

In order to separate seeds differing in specific gravity, the machine must first stratify the seeds then separate the seeds.

Operation

The seed to be separated flows across an inclined reciprocating deck. The deck is mounted on incline toggles, which impart two motions to it; (1) up and down motion and (2) backward and forward motion. The deck is covered with an open mesh material through which air is blown or sucked. Air is used to float the seed resulting in stratification (light seed on top) The up and down motion speeds up the stratification. The backward and forward motion then causes the heavier seed to travel uphill because these seeds are in contact with the deck surface and the resulting friction pushes the seed uphill.

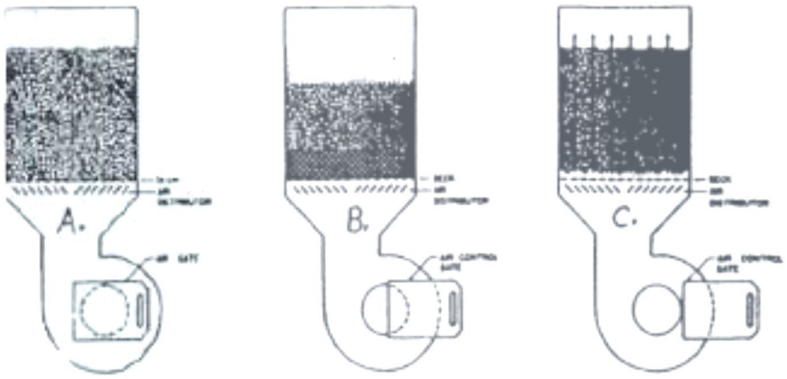


Diagram of stratification on the gravity separator deck: (A) seed mixture fed onto the porous deck contains heavy intermediate and light seeds randomly distributed; (B) proper air adjustment separates seed into vertical weight zones, with light seeds at the top and heavy seeds at the bottom; (C) excessive air destroys the stratification by blowing heavy seeds into the upper zones and causing them to mix randomly with light seed.

Rules of Gravity Table Separation

Rule 1. Particles of the same size but differing in specific gravity can be separated.

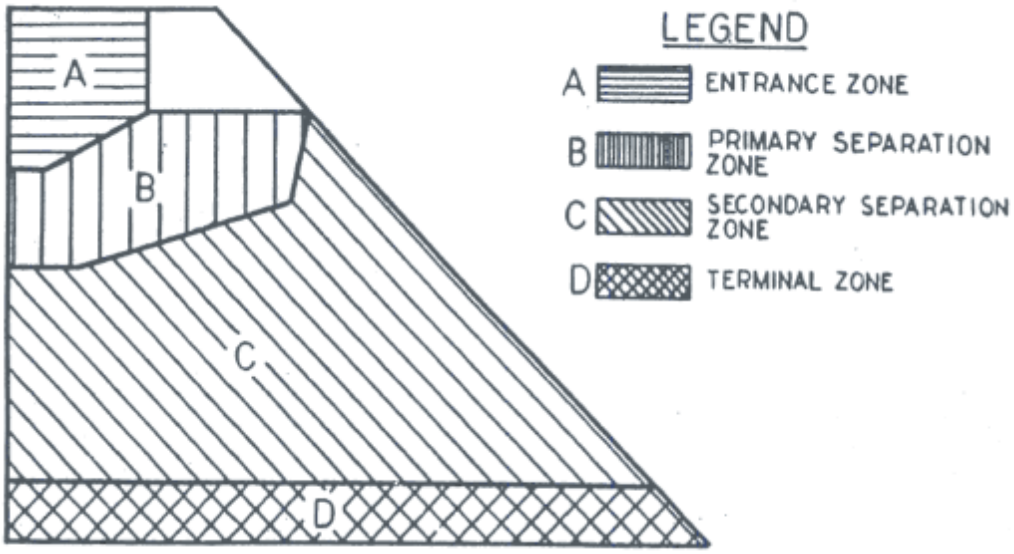
Rule 2. Particles of the same specific gravity but differing in size, will be graded according to size.

Rule 3. Particles differing in both size and specific gravity cannot be efficiently separated.

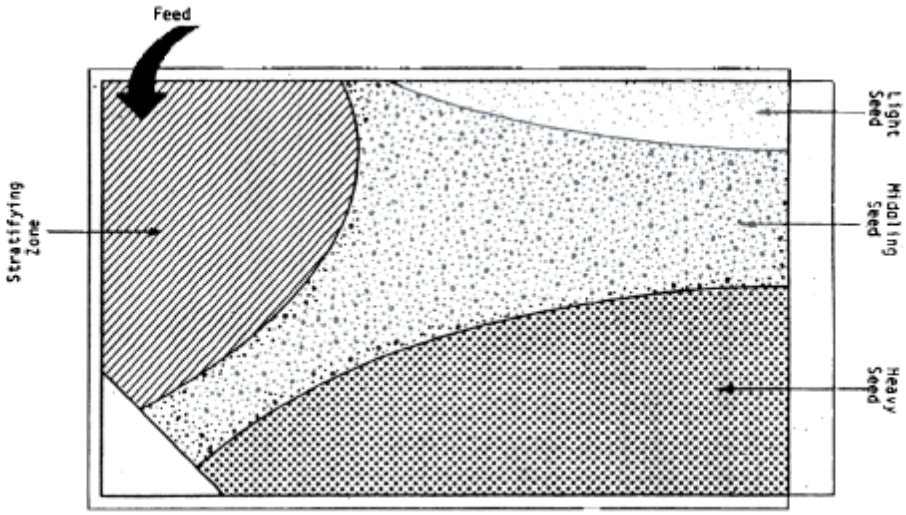
Gravity Table Adjustments

1. Amount of Air - Determines the amount of stratification.
2. Longitudinal Inclination of Deck - Seed must be made to travel uphill, heavy seed uphill, light seed downhill.
3. Lateral Inclination of Deck - Should be such that a uniform layer of seed is discharged all along the front edge of the deck. Decreasing slope means more material will flow toward the high end of the deck. Increasing slope means more flow toward low end.
4. Feed Rate - Regulated by adjusting the feed hopper. Rate should be uniform and the deck completely covered.
5. Speed or Shake of the Deck – Increasing speed causes seed to move uphill. Decreasing speed causes seed to move downhill.

Product Separation Zones

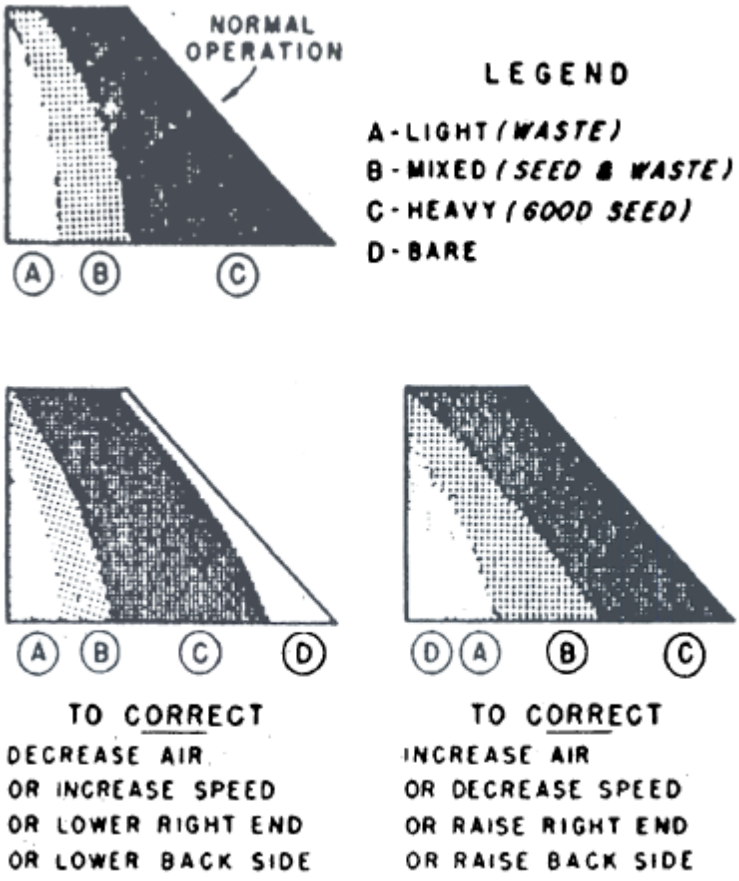


Zones of stratification and separation on the deck of a gravity table. Vertical stratification occurs in A. Separation of vertical layers occurs in B and C. Seed discharge from deck along D.

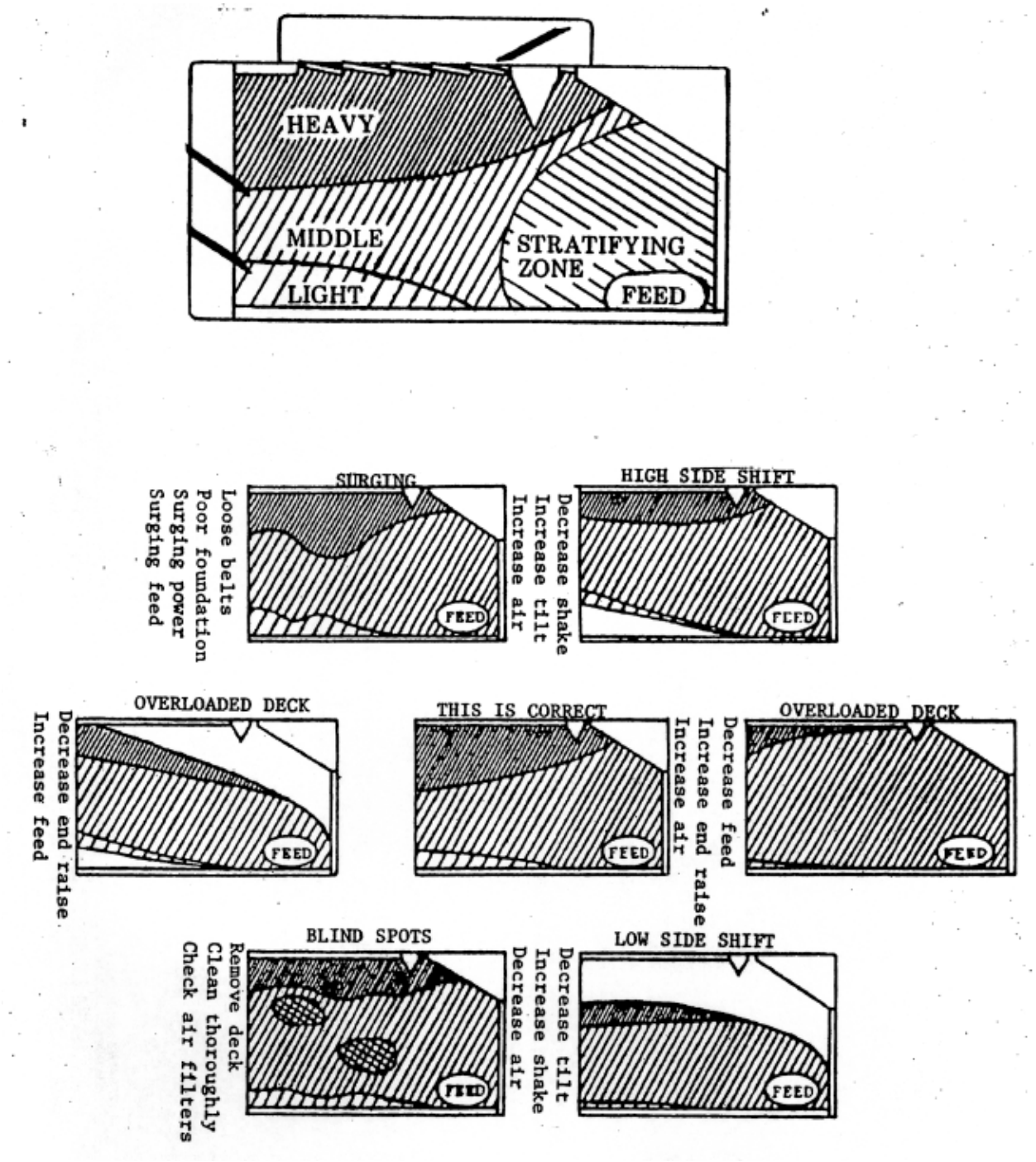


Top view of gravity table showing flow pattern of seed across the deck.

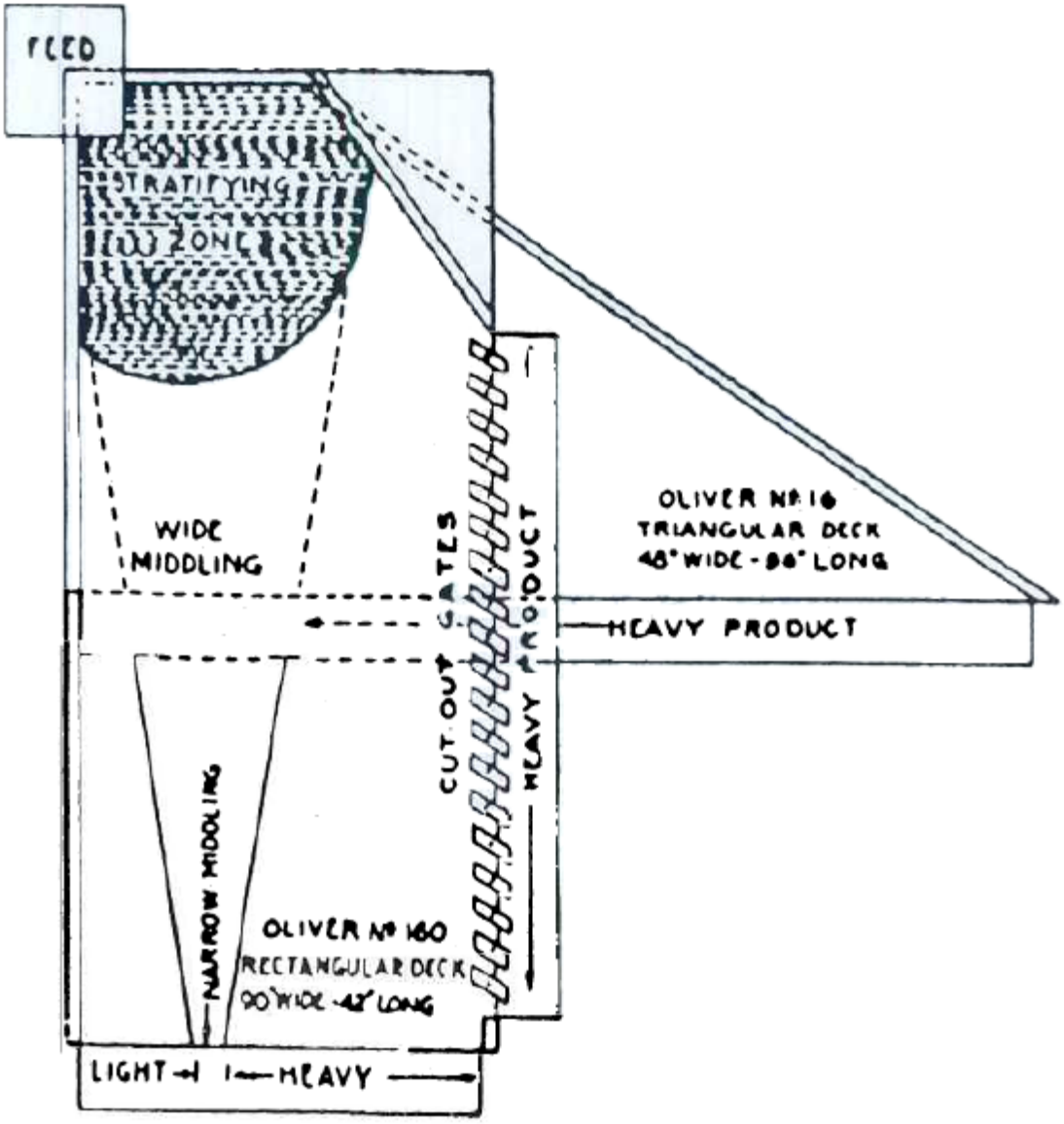
Triangular Deck - Normal operation and corrective actions.



Rectangular Deck - Normal operation verses corrective action.



Comparison of rectangular and triangular gravity separator decks.

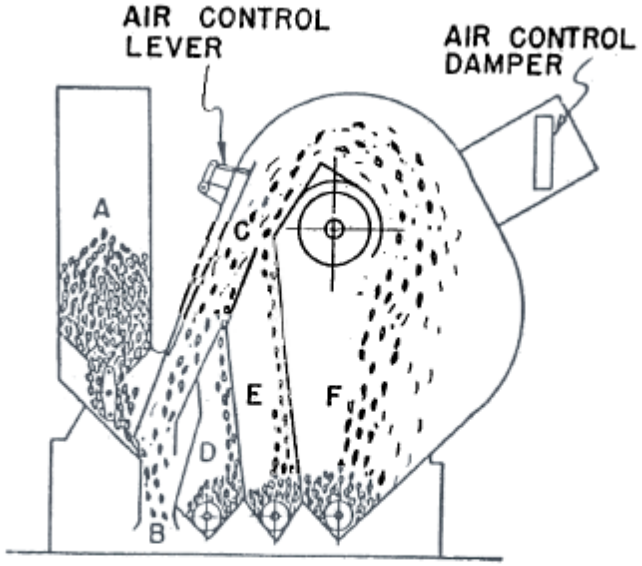


Aspirators and Pneumatic Separators

Aspirators separate seed by pulling a negative-pressure air stream through a column. Pneumatic separators separate by forcing a positive-pressure air blast through a separating column. Light seed has a low terminal velocity and is carried along with the air stream. Heavy seed, with a terminal velocity higher than air, will pass through it and fall. Aspirators may separate seed into several fractions.

Adjustments

1. Rate of feed - Flow should be uniform and at a rate so that the particles can act independently.
2. Air flow - Controlled by fan speed; adjustable damper in fan discharge pipe; adjustable air vane. When the cross section is restricted, air velocity increases. When cross section enlarges, air velocity decreases



Fractionating Aspirator. Seed flow diagram. (A) feed intake; (B) heaviest seed; (C) air separation area; (D) next heaviest seed; (E) third heaviest seed; (F) lightest particles.

Precision Grader

The precision grader is a width separator and grader or sizer. They are as effective in removing contaminating weed seed and other crop seed as they are in sizing-grading corn or sunflowers. They can make an extremely precise separation of particles according to their width and

thickness. Width separations are made using the round-hole screen while slotted screens are effective for thickness.

Operation

Seed to be conditioned or sized is fed into one end of the rotating cylinder. A combination of gravity, centrifugal force, and product pressure acts to force each particle into the perforations. This press-fit action ensures that the particles smaller than the openings pass through. The round openings can be recessed to help turn the seed on end to either go through or pass over the opening. The oblong screens can be ribbed to help turn the seed on edge so that they can be graded according to thickness.

Some common uses

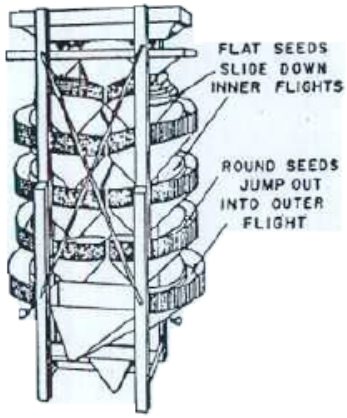
1. Remove wild oats from barley.
2. Conditioning and size-grading barley, oats and wheat.
3. Removal of splits from soybeans, edible beans

Spiral Separators

The spiral separator separates seeds according to shape, density, and the degree of roundness or the ability to roll. It is based on the principle that one seed will roll more readily than the other. Spirals are useful for separating seeds that have little variation in thickness and length. Spirals are commonly used for removing splits from soybeans

Operation

The seeds are fed onto the spirals from a hopper at the top. Round seed travels at a much faster speed as they move down the inclined flights. The momentum of the round seed increases to a point where they run over the edge of the inner flights, drop into the outer flight and are discharged.



Secondary Equipment

Augers - All augers that handle certified seed shall be reversible. A rocker switch should be installed to reverse augers. Switching wires inside a fuse box is not acceptable under OSHA electrical standards. Call the manufacturer for more information.

Bins - All bins shall have lower access ports or inside ladders to permit access for cleaning and inspection. All bins shall be labeled (numbered). Labels shall be placed on all bins of certified seed, identifying kind, variety, lot number and class of seed.

Bin chart - In place with labeled bins and up-to-date.

Bin lids - Numbered and in place.

Broom - Telescoping fiberglass broom to sweep inside walls of all bins is recommended.

Legs - All legs shall have bottom access for cleanout, and must be constructed of metal. Legs constructed of wood are not permitted.

Pits - Dumping pits need to be steel or tin-lined and must be accessible for cleaning.

Vacuum and air - required to properly clean the facility.

Other

Records - Records of all seed conditioned and sold shall be maintained for three years. Records shall include labeling information, and amount of seed sold and purchaser.

Seed samples - A two-pound sample of all certified seed shall be maintained for a minimum of one year after the final disposition of the seed lot. Samples shall be labeled with lot number, variety and class. If the conditioner is not the labeler, the conditioner shall provide the labeler a sample.

Section 5 – Housekeeping Requirements

General Requirements

The facility manager and employees shall maintain a clean facility at all times. This includes the head house, conditioning area, pit, scale area, bins, leg, boot, basement area, and all bulk bin sites located outside of facility. Whether a facility conditions certified seed or common seed, facilities are expected to be clean. All conditioning equipment must be thoroughly cleaned before any lot of seed eligible for certification is conditioned. Facilities should be cleaned from the top down, beginning with head house, overhead bins

Conditioning Equipment

Augers

Augers shall be thoroughly cleaned between varieties. All augers shall be reversible and must also be vacuumed after reversing.

Belt Conveyors

Belt conveyors need to be checked for any seed that may adhere to belts because of moisture, grease, etc. A broom may be held against belts to remove seed. Be certain to blow the bracing between the belts with air to clean.

Bins

Access bins through lower access ports or by attached inside ladders. Use a telescoping broom to sweep inside walls of all bins. Corrugated steel bins have a lot of potential for seed to become lodged in seams. Use air to clean bottom slides and horizontal poke holes on hopper bins. Extra care must be taken to clean perforated, aeration floors and ducts. Mounting brackets for internal components such as aeration rockets, bean ladders, etc. also hold seed, so check these items also, as well as the lip surrounding access ports. Seed will collect on the top of these. Make sure slides are clean. Cracks in concrete floors should be sealed to prevent seed from lodging in them. Lower auger boots are a potential source of seed contamination. These need to be cleaned.

Air-Screen Cleaner

All screens shall be removed from cleaner and thoroughly cleaned. The mill must be thoroughly cleaned with air and vacuum. Check for seed that may stick in ball trays or brushes.

Length Graders
These machines vary a lot in design and accessibility for cleaning. Troughs must be emptied and drums vacuumed and blown with air. Seed will stick on the backside of the trough. After emptying the trough, tip trough back to allow seed to fall off. Pull off lower cap on front lift auger let drain, then blow with air. Allow machine to run for a period of time to allow it to empty.

Disc Separators
Seed tends to lodge in discs and must be removed. Many operators have manufactured picks to remove the lodged seed. High pressure air is also helpful. This machine should run for a period of time to allow it to empty.

Gravity Table
This machine must be vacuumed and blown with air to clean it. It usually works best if done while the table is running. Check for lodged seed along edges and under ribs of table. Ribs on some tables loosen and hold seed under them. Any loose ribs must be repaired.

Legs
Legs shall be cleaned by opening or removing bottom slides and vacuuming and blowing with air. Cups need to be checked for loose bolts or lodged seed.

Distributors
Distributors need to be inspected for any wear, mechanical problems and lodged or spilled seed. Vacuum as needed. Caps can be placed on some distributors to avoid contamination in bins.

Headers
Check headers for wear and needed repairs. A header with a pin-hole is a good source for bin contamination and dirty floors.

Pipes
Check condition and repair any holes. Bags or duct tape may not be used to repair holes or seams that leak.

Floors
Floors and work areas of conditioning plants shall be cleaned daily. There may be situations where floors need to be cleaned several times a day to prevent contamination and maintain proper appearance of a certified seed plant. Spills from equipment failures need to be cleaned up as soon as possible.

Scale Areas
Scales are generally located separately from a cleaning plant. In some cases, the dump is located on the scale and requires a thorough cleaning of scale surface after dumping each load and between varieties (especially under the scale seal). The appearance of all scale sites needs to be clean.

Pits
Pits need to be inspected and thoroughly cleaned between all varieties. Surface grates and horizontal I-beams can be serious sources of contamination.

Head House
Some cleaning plants are constructed with a head house. The head house needs to be inspected regularly and cleaned whenever there is a dust buildup or seed spillage resulting from equipment problems (worn pipes, distributor, header etc.). Repair leaking pipes properly. Bags may not be taped around holes or seams. Check bins inside head house for wear. Make sure deflectors are in place.

Spiral Cleaners
Spirals need to be accessible for cleaning and inspection.

Color Sorter
Accessibility for cleaning and inspection is required.

Plant Clean-down Form
A form documenting facility cleaning procedures can be beneficial in ensuring that seed is not contaminated during the conditioning process. Larger facilities generally have several employees involved in cleaning and maintenance. Forms are useful to verify that employees have completed the areas they are responsible for and to ensure that all parts of the facility have been cleaned. Cleaning forms are also useful in training new employees in proper cleaning procedures and as a reminder of specific areas that require attention during the process.

An example of a conditioning plant clean-down form is provided in ***Appendix B***. The Seed Department has developed a generic form that plants may use and adapt to their specific needs. This form is available electronically in Microsoft Excel so changes can be made easily, and printed at your location. Call the department to receive a copy of the file by email.

Standards
Cleaning equipment by flushing only is not acceptable in a certified cleaning facility. However, after thoroughly cleaning the equipment it may be beneficial to condition some seed and then discard that seed before cleaning and storing a new lot of certified seed.

Section 6 – Annual Facility Inspection

General Process

On-site inspections are completed by the North Dakota State Seed Department during the months of October through December of each year, prior to issuing a new permit. Regulatory inspections will be completed each spring to obtain seed samples, check for proper labeling and identification of seed and current germination test dates. Upon successful completion of the inspection, the facility will be approved to condition and handle certified seed. Copies of these inspection reports will be provided to the facility management for their files.

Deficiencies – Probationary Status

Deficiencies noted during the annual inspection will be documented on the facility inspection report and discussed with facility management following the inspection. Deficiencies may result in probationary approval. Deficiencies must be addressed as soon as possible. Seed Department management will follow up with the facility manager during the summer to review the status of repairs.

Prior to the new year's facility inspections, inspectors review the previous year's report for each facility. If deficiencies have not been addressed, the inspection will immediately cease and the facility will not be approved to handle, condition, label or distribute certified seed until the deficiencies have been corrected, the inspection has been completed and the facility approved.

Re-inspection fees, which may include travel expenses (mileage) and inspector's time at the current rate, may be charged to the facility.

Permits

Seed conditioner's permits will be mailed in December of each year. Permits should be posted in the facility.

Conditioning Plant Inspection – Fixed Facilities

The following areas will be inspected.

1. Scale unloading area
2. Leg cleanout areas
3. Vacuum or air available
4. Work areas
5. Bin site condition

6. Only approved bins used for seed
7. Bin chart in place with labeled bins
8. Bin lids are numbered and in place (headhouse)
9. Bins labeled and variety identified
10. Distributor and pipe condition
11. Headhouse condition
12. Cleanable loading equipment
13. Reversible augers
14. Length grader capable of removing both long and short fractions (*small grains*)
15. Seed samples are available (*two pounds for one year minimum*, *for labeler)*
16. Orderly seed sample storage area
17. Properly labeled seed samples (*kind*, *lot #, variety, class*)
18. Orderly records (*three years required*)
19. Bag warehouse condition
20. Bags have printed lot numbers
21. Tags are attached
22. Bulk certificate copies are available
23. Bulk certificate(s) log sheet and any unused certificates sent back to NDSSD
24. On-line log sheets for each lot printed and available.

Mobile Seed Conditioner Inspection

The following are areas will be inspected:

1. Vacuum or air available
2. Leg cleanout areas
3. Pipe condition
4. Work areas
5. Reversible augers
6. Cleanable loading equipment
7. Seed samples available (*one year minimum, for labeler)*
8. Seed sample storage (*two pounds per lot*)
9. Seed sample labeling *(kind*, *lot #, variety, class*)
10. Seed analysis records present (*three-year minimum*)
11. Bulk certificate copies available
12. Bulk certificate(s) log sheet and any unused certificates sent back to NDSSD

Following inspection, the conditioning plant inspection form will be marked as approved, conditionally approved, or rejected.

Section 7 – Sourcing Seed

How to Find the Seed You Want

The most reliable source of information seed conditioners can utilize for finding eligible seed is Bulletin 92, *The North Dakota Field Inspected Seed Directory*. Published annually in November, the *Seed Directory* contains a listing of all the fields that passed field inspection that growing season. A copy is distributed to every approved conditioner, bulk retailer and seed grower each year. A list of field-inspected seed is also available on the department website.

The Seed Directory serves multiple purposes including:

1. Conditioners can identify certified seed growers who have seed of the variety they want
2. Seed growers can identify a seed conditioner approved to handle certified seed
3. Bulk retailers can identify conditioners or growers who may have a variety they want to sell or produce
4. Source of information for field numbers
5. Identification of the PVP status of varieties
6. Identification of varieties that have research fees
7. Listing of current seed testing fees
8. Informing growers about seed certification
9. List of approved conditioners
10. List of approved bulk retailers
11. List of certified seed growers
12. List of carryover seed eligible for certification

Variety Selection

Select a variety that has the genetic potential to perform well in your area. Utilize reliable data to help determine which variety to select. Pay close attention to stability over years of testing and don't rely too heavily on single year data. Learn what trial statistics mean and how they can help you interpret the data. Previous experience with a variety, past sales activity and local demand are also important to consider.

Growers should check the listing of recommended varieties for their particular area, which is available in NDSU Extension and North Dakota Agricultural Experiment Station publications.

North Dakota Field Inspected Seed Directory, Bulletin 92 includes a list of fields that were inspected and passed by the State Seed Department in the prior year. Approved Seed Conditioners and Bulk Retailers are also listed. To be eligible for final certification, seed

produced from these fields must be conditioned, sampled and tested to ensure that the seed lot meets certification standards.

Field-inspected seed is not certified seed until final certification has been completed and the seed has been properly labeled with an official certification tag, or bulk certificate issued by the State Seed Department. Prospective buyers of seed from fields listed in Bulletin 92 should contact the producer for price quotations and the quantity of seed available or desired.

Many of the varieties listed in the *Seed Directory* are protected by a certificate of Plant Variety Protection. Varieties for which protection is shown as "pending" are also considered protected.

Many varieties are protected with the Title V option which requires the variety to be sold as a class of certified seed.

Classes of seed

There are four classes of certified seed recognized by the Federal Seed Act. Generally, there are two generations allowed after the Foundation class, i.e., Registered and Certified. This limitation of generations helps ensure the genetic identity and purity of the variety by ensuring that seed products are never more than two generations removed from Foundation seed. Variety owners have the right to determine the number of generations for each class, but it is usually one. Some variety owners do not allow a saleable Registered class. Consult with the Seed Department.

Foundation seed shall be so handled as to most nearly maintain specific genetic identity and purity. It shall be the source of Registered and/or Certified seed classes.

Registered seed is the progeny of Foundation seed and so handled that it meets the standard for Registered Seed. Seed is eligible for one generation in this class.

Certified Seed shall be the progeny of Foundation, Registered seed or in some cases, Certified seed that is so handled that it will meet certification standards. The Certified class is not eligible for re-certification except in special cases where Foundation seed is not being maintained.

Common seed has the same labeling requirements as certified seed.

Section 8 – Intellectual Property Rights

General Information

The majority of crop cultivars available to consumers today are protected by some form of Intellectual Property Rights laws (IPR). There are several types of IPR laws available to developers/owners of varieties and consumers should understand the laws to ensure they are in compliance with the owner's legal rights. It is the responsibility of the buyer and seller to confirm the type of IPR protection for a crop variety before buying or selling a specific variety.

Regardless of the method by which crop varieties are protected, they have the same purpose; to protect the Intellectual Property Rights of the variety owner. The end result is that the variety owners recover some of their costs in the development of a variety, which are substantial, and reinvest revenues into research and development of new varieties for the benefit of the public.

Types of Variety Protection

Plant Variety Protected (PVP)

Most of the varieties grown today are protected by Plant Variety Protection certificates (PVP) issued by the U.S. Plant Variety Protection Office (PVPO). Varieties for which protection is shown as "pending" and those for which an application has been submitted to the PVPO are considered protected varieties.

Under PVP laws, the owner of the variety has the exclusive right to control the production and marketing of their varieties. Seed of these varieties can only be sold with authorization from the owner. Producers who acquire seed of these varieties legally through authorization from the owner, have the right to save seed for use on their own farm indefinitely, but cannot sell their production for planting purposes. It is illegal for anyone to purchase "grain" of a protected variety and utilize it for planting purposes.

Plant Variety Protected, Title V Option

Seed of these varieties must be sold as a class of certified seed if the owner elects the certification option on the PVP application. The certification option is governed by Title V of the Federal Seed Act. Certification permits a person in possession of the variety to sell it as a seed product after completing the certification process. There can be no common or "brown bag" seed sales of these varieties.

If a variety is not protected with the Title V option, the owner of the variety still has the exclusive right to determine who can produce and market the variety as a seed product. Varieties that require certification are identified in the variety listing of the *Seed Directory*.

Utility Patents
A patent is a type of property right that gives the patent holder the right to exclude others from making, using, offering to sell, selling, or importing into the United States the subject matter that is in the scope of protection granted by the patent. Utility patents are issued by the U.S. Patent Office. The owner of the variety has the exclusive right to control the production and marketing of their varieties. Unlike PVP varieties, grain produced from legally acquired seed protected by a utility patent cannot be saved for planting on your own farm.

Contractual Agreements
Contracts and licenses are used by some genetics suppliers to manage IP rights and provide more control over their authorized seed producers and users. Limited use license agreements usually specify the rights and obligations under which the purchaser may use the variety. Ordinarily, these specify that the seed is to be planted for a single use, i.e., to produce a commercial crop, and prohibit the farmer from saving grain for replanting or sale. Consumers need to be aware of the terminology used by variety owners. Some companies, and even a few universities, offer products as Certifed Seed Only or CSO. With some companies, a formal agreement between buyer and seller is not required, and merely purchasing and accepting delivery means you accept the terms of sale. It is important to understand the requirements when purchasing seed of these varieties.

Basic Requirements for PVP Title V Varieties

1. Final certification must be completed before seed can be advertised or offered for sale.
2. Any seed sold must be accompanied by a proper certified seed label at delivery.
3. Protection extends to crops produced from illegally acquired seed.
4. Conditioners can be held liable for conditioning seed that is intended to be sold illegally. Conditioner waiver forms are available from the Seed Department and should be used and signed by the grower to protect the conditioner.
5. Producers who initially acquire seed of protected varieties with authorization from the owner, have the right to save seed for use on their own farm for an indefinite period, but cannot sell any of this production as seed for planting purposes.

Conditioning Protected Varieties
Conditioners may be held liable for cleaning seed of PVP varieties that is intended to be sold for seeding purposes. Conditioning should be limited to the amount of seed needed to plant a farmer’s own holdings. If a conditioner cleans seed that was not legally purchased with authorization from the owner, the conditioner can be held liable for damages by the owner of the variety. Conditioner’s should get a written document from the grower stating that the seed will not be sold to others for planting purposes and will be only used on their own holdings.

Saving, selling, and conditioning protected varieties

	PVP	PVP Title V	Patent	LULA/CSO[1]
Save seed for planting?	**Yes[2]**	**Yes[3]**	**No**	**No[5]**
Sell seed?	**No**	**No**	**No**	**No**
Condition seed?	**Yes[4]**	**Yes[4]**	**No**	**No**

1. Limited Use License Agreement/Certified Seed Only
2. If the seed was acquired legally through authorization from the owner
3. If the seed was purchased as a class of certified seed
4. Limited to the amount of seed needed to plant the farmer's own holdings
5. Check terms of contract or purchase agreement

Penalties for Violations

Under state seed law, violations of PVP laws can result in fines up to $10,000 per violation or seed sale. Additionally, there can be numerous violations of the North Dakota State Seed Law, which can carry fines of $5,000 per violation. Variety owners may also seek compensation for up to three times the damages plus court costs and attorney fees on seed sold and from the crop produced from the illegal seed planted. Conditioners will also be held liable for conditioning a PVP variety that was subsequently sold as seed to other producers.

Section 9 – Conditioning

All field-inspected seed that is to be labeled, must be conditioned and must meet the minimum seed certification standards for the crop and class. Field-inspected seed may be conditioned by the grower, an approved seed conditioning facility or an approved mobile cleaner.

Testing Seed Prior to Conditioning

North Dakota certification regulations allow testing of pre-conditioned seed in order to determine whether a seed lot is suitable for conditioning and to hasten labeling after conditioning. Seed samples should be cleaned with a hand sieve or mini-mill to approximate the quality after conditioning.

Only certain tests are permitted on pre-conditioned samples. These include germination testing and disease tests that are required for final certification. The results of the pre-germ and disease tests may be used for final certification or labelers may request new tests following conditioning for labeling purposes.

Due to their susceptibility to damage from handling, pre-germ tests cannot be used for final certification on fragile crops such as soybeans, edible beans and field peas. Germination tests on these crops must be done following conditioning.

Seed samples submitted for pre-conditioned testing must include the field application number with the sample. If seed from more than one field is commingled in one bin, list all fields associated with that sample. This will allow the department to match the germination result with the proper conditioned sample when it is submitted for purity analysis and ensure final certification is completed in a timely manner. If a seed is tested in the fall and carried over until spring, we recommend checking the germ in the spring to ensure the seed meets label claims. A new Sampler's Report is not required.

Sale of Unconditioned Field-Inspected Seed

A grower that does not want to condition, label and sell the seed themselves may only sell their field-inspected seed "in the dirt" to approved conditioners or approved bulk retailers. The conditioner or retailer will assume the responsibility for conditioning the seed, completing final certification and marketing. The grower must complete a Grower's Declaration when ownership of the seed is transferred.

The transfer of unconditioned seed from one grower to another grower is prohibited.

Conditioning at an Approved Plant

Growers must complete a Grower's Declaration if ownership of the seed lot is transferred to a different individual or entity. Transfer of ownership of field-inspected seed is limited to an approved conditioner or bulk retailer unless the transfer has been approved by the commissioner.

Grower's Declaration

The Grower's Declaration shall be completed and signed when ownership of the seed lot changes and the seed is delivered for conditioning. Complete the Declaration when the seed is to be labeled in a name other than the conditioner's.

Field Inspection Reports

Conditioners must review the grower's Field Inspection Report prior to conditioning or purchasing the seed. The Field Inspection Report will indicate what weed seeds or other crop seeds may be present in the seed that would present challenges to conditioning. **If the field was passed conditionally for any reason, the conditioner must submit a representative five-pound sample for testing**. If an insufficient sample is submitted, the authorized sampler will be required to send another sample to the department.

Lot Sizes and Numbering

Bulk Seed Lots - Bulk seed lots may not exceed the size of the bin in which the seed is stored. Each bin of certified seed is a separate lot. Each bulk seed lot requires a sample and Sampler's Report.

Bagged Seed Lots - For most crops the maximum lot size for bagged seed is 5,000 bushels. For small seeded legumes and grasses the maximum lot size is 22,500 pounds.

Lot numbers are designated by the labeler. The lot number used to plant the seed increase field the previous year shall not be used as the new lot number.

Section 10 – Sampling

Sampling Seed for Final Certification

Sampling is an extremely important part of seed testing that is often overlooked. Seed producers and conditioners must pay attention to how samples are taken before submitting them for testing. The most important factor in sampling is obtaining a sample that is representative of the seed lot. A seed test is only as good as the quality of the sample that is submitted. In fact, the accuracy of some seed health tests is highly dependent upon the sample submitted.

All seed lots should be sampled during conditioning by taking representative samples at periodic intervals throughout the conditioning process. Once the lot has been completely conditioned, the sub-samples should be thoroughly commingled and a single sample submitted to the Seed Department for analysis. Growers and conditioners are encouraged to keep a reference sample on hand as a backup sample.

Available Tests & Sample Size Requirements

The minimum weights of samples submitted to the State Seed Department for tests shall be as follows. If multiple tests are requested, the sampler must submit enough seed for all tests requested.

Seed Health Tests

Anthracnose (Edible Bean; 2 lb. seed)
Ascochyta, 500 seed test (Field Pea, Chickpea; 1lb; Lentils; ½ lb. Seed)
Bacterial Blight (Soybean; 5 lb. seed)
Barley Stripe Mosaic Virus (½ lb. seed)
Blackleg (Canola; ½ lb. seed)
Dome Test (Edible Bean; 2 lb. seed
Loose Smut (Barley, Wheat; ½ lb. seed)
Other virus tests (soybean mosaic, bean pod mottle; call)

Herbicide Trait/Transgenic Tests

Roundup® Herbicide Bioassay Test (Soybean; ½ lb. seed)
Liberty®, Roundup®, or Clearfield® Herbicide Bioassay Test (Canola; ½ lb. seed)
Clearfield® Herbicide Bioassay Test (Wheat, Sunflower, Lentils; ½ lb. seed)
Lateral Flow Strip GMO presence (Soybean; 1 lb. seed)

Genetic Purity/Variety Identification

Seed Protein Electrophoresis Test (wheat, oats; ½ lb. seed)
PCR Variety Identification (Barley, Field Peas; 1 lb. seed)

Germination Tests

800 seed minimum

Seed Purity Tests

Small-seeded grasses, white or alsike clover or seeds of similar size (4 oz.)
Sweet clover, red clover, alfalfa, grasses, millet, rape, flax or similar size seed (8 oz.)
Cereals, soybeans or seed of similar size (1 ½ lb.)

Sampler's Reports

Once the lot is conditioned and the sample prepared, the Sampler's Report ***(Appendix C)*** should be completed. Instructions for completing the Sampler's Report can be found on the reverse side of the report form and in ***Appendix D***. It is essential that all the information on the Sampler's Report be completed to ensure that the sample is entered into the department's computer system and all of the necessary tests are completed in a timely manner. Fold the Sampler's Report so that the department's mailing address is shown and place the report in the mailing pouch on the side of the official sample bag prior to filling with seed. As soon as the sample has been placed in the sample bag, it should be securely sealed. Do not allow anyone to tamper with the seed in this sample bag.

Samples may be mailed to the Seed Department or dropped off at the office. After office hours, samples may be left inside the back door.

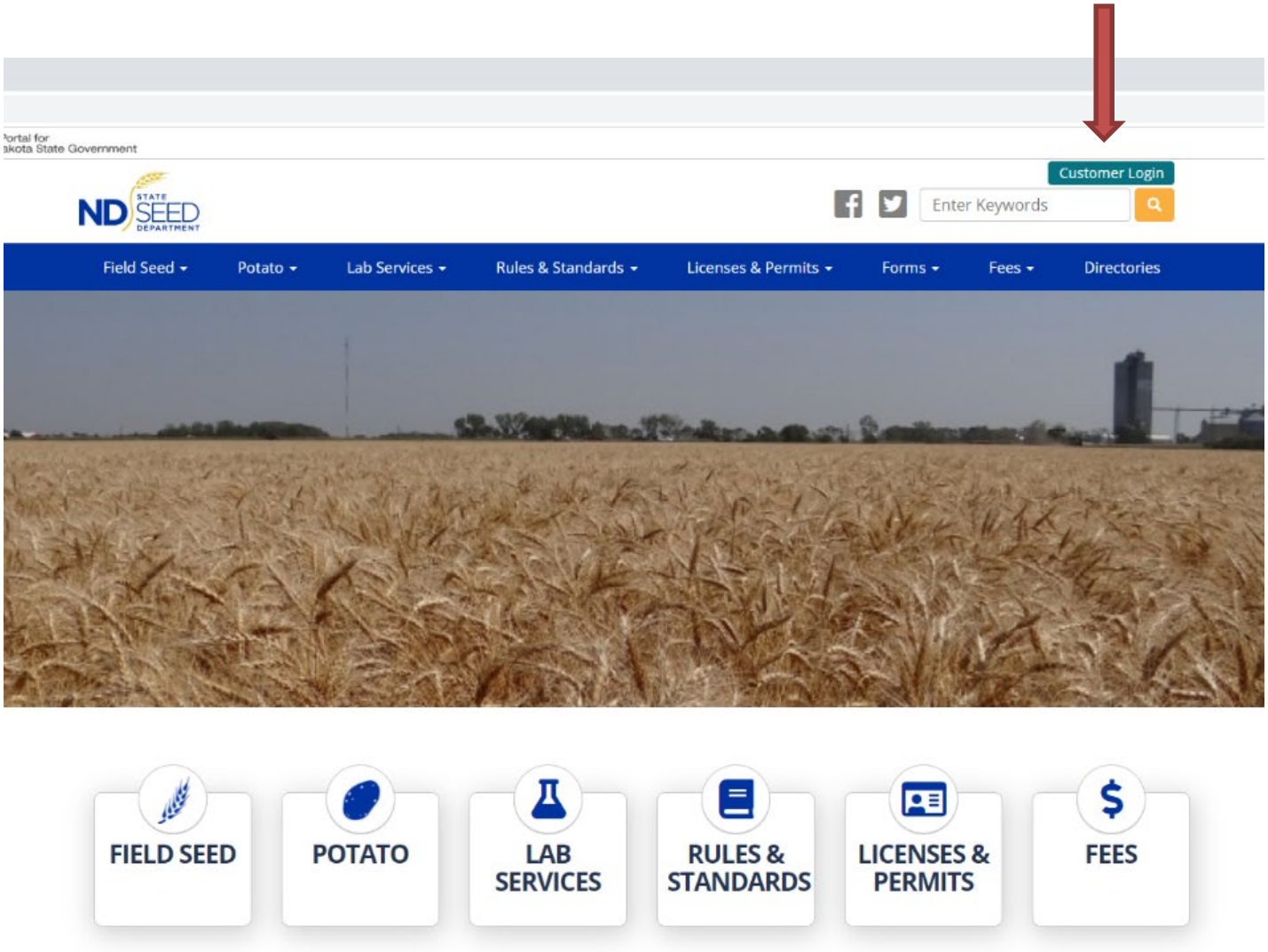
Samples are processed in the order in which they arrive at the office. "Rush samples" will move to the front of the queue, however, at certain times of the year, a "rush" is not justified. Call the office first. A "rush" order does not reduce the time it takes to perform the required tests.

Official Samples

On occasion, it may be necessary for an "Official Sample" to be drawn and tested. An official sample is drawn by a Seed Department representative. Test results on official samples supersede all other test results from any sample submitted. If an official sample is requested for a bulk seed lot approximately 5% of the lot must be drawn from the bin to ensure a representative sample.

Obtaining Test Results Online

Results from seed tests are available online on the department's website. Go to **www.ndseed.com** and click on **CUSTOMER LOGIN.** You will need a Login ID and Password. Customers should call the department to set up the secure account enabling retrieval of results. All information on the department's computer system is secure, provided you do not give anyone else your Login ID and Password. Lab results are posted twice a day so retrieval is quicker than the mail. There is no cost for this service.



Section 11 – Final Certification

Passing the field inspection alone does not mean the end of the certification process. Field inspection is just the first step in producing a quality certified seed product. In order to be labeled as certified seed, all field-inspected seed must be cleaned to remove impurities and then tested at the department's Seed Lab to determine whether the seed meets the minimum seed standards for the crop and class. Once the seed lot passes, it may then be labeled as certified seed.

Conditioning

All field inspected seed that is to be labeled must be conditioned and must meet minimum seed standards for the crop and class. Seed growers have several options for conditioning and marketing their field-inspected seed. Seed that is not conditioned by the grower must be conditioned by an approved certified seed conditioner.

An approved conditioner is one that has been inspected by the State Seed Department, possesses the proper equipment and has demonstrated the ability to clean and handle certified seed properly. Only conditioners that are approved by the Seed Department may condition field-inspected seed for certification. Use of a non-approved conditioner will result in the seed being ineligible for final certification.

Following conditioning, the conditioner will submit a representative sample along with the Sampler's Report to the Seed Lab for analysis. Providing the sample meets the minimum requirements for the crop and class, bulk certificates will be issued in labeler's name as indicated on the Sampler's Report. The seed may then be sold legally.

Testing

Testing requirements vary by crop, but in general, all crops must be tested for germination and purity. For some crops, additional tests such as variety ID, seed count or disease tests to check for seed-borne pathogens may be required for certification or labeling. See *ND Seed Certification Standards* for specific requirements for each crop. All tests are conducted by accredited lab technicians according to the rules of the Association of Official Seed Analysts (AOSA).

Seed Tests Required for Labeling Certified Seed

Seed laws and certification requirements specify that certain information is provided on the label. Seed lots lacking proper labels will be issued a "Stop Sale Order" by regulatory inspectors. It is a violation of state and federal seed laws to improperly label seed. The information provided

below will give the labeler/conditioner a list of tests that are required to be completed on certified seed samples. See Section 13 for more detailed information.
For All Seed – Purity and Germination are required for all seed.

For Specific Crops – In addition to purity and germination, the following tests are **required** for certain crops.

Edible Beans
Bacterial Blight - Dome Test; not labeled
Anthracnose; not labeled
Seed Count

Chickpeas & Lentils
Ascochyta test - results must be on label; not a criterion for pass/fail
Seed Count

Soybeans
Seed Count

Wheat
Variety ID test required – for hard red spring varieties
KOH test required - for white wheat samples
Seed count - required for all wheat including durum

Barley
Variety ID test required
Loose smut - test results must be on label
Seed Count
Barley Stripe Mosaic Virus test - required for all Foundation class seed

Field Peas
Variety ID test required
Seed count

Oats
Seed count

Re-Testing Samples

Under certain circumstances, re-sampling and/or re-testing of a seed lot is permitted. Only approved samplers are permitted to collect and submit new samples for retesting.

If the seed lot has not undergone additional conditioning, final test results shall be determined as follows:

1. Purity test results will be averaged
2. The most recent germination result will be used
3. The most recent disease test result will be used

If the seed lot has been reconditioned to remove impurities a new sample must be submitted along with a new Sampler's Report. A new purity analysis is required on all crops. A new germination and seed count may be required for that crop.

Labeling

Labeling is the final step in the certification process. See **Section 12** for labeling requirements.

Research Fees

Research fees are an important source of funding for plant breeding programs. The revenues generated from research fees help fund variety development and testing programs that benefit the region's agricultural industry. The fees for specific varieties will not change and are effective for the life of the variety. Research fees apply to Registered and Certified classes sold for seed.

The North Dakota State Seed Department is responsible for the collection of research fees on varieties released by NDSU, SDSU, Montana State University, the University of Minnesota and Busch Agricultural Resources. **To ensure proper credit to your account, fees should be paid only to the Seed Department.** Do not send payment to the North Dakota Crop Improvement and Seed Association, your county agent or your county crop improvement association or agricultural association.

Who must pay the fee?

The initial labeler is responsible for payment of fees on all Registered and Certified classes of fee-bearing varieties sold for seed. In cases where Registered or Certified seed is sold to an approved facility and re-labeled, the initial labeler is still responsible for the fee.

Reporting procedure

A Research Fee Report form ***(Appendix E)*** will be mailed to labelers of fee-bearing varieties each July. The report will indicate the number of bushels certified by variety and lot according to department data. Labelers are required to reconcile the number of bushels sold for planting, planted on their own farm, sold as commodity, carried over or not conditioned. Labelers only need to pay the research fee on the number of Registered or Certified bushels SOLD AS SEED.

Due Date

Fees are due September 1st for sales that year.

Section 12 – Seed Sales Permit & Fees

North Dakota Seed Laws

Any person or company (resident or non-resident) labeling and selling agricultural, vegetable, flower, or tree and shrub seed in North Dakota is required to obtain a Seed Sales Permit and annually report any sales based on quantity sold. There is no cost for the permit. Non-Resident seed dealers are required to report if sales are made directly to the consumer or through an authorized agent.

Agricultural seed means the seed of grass, forage, cereal, fiber, oil crops, Irish potato seed tubers, and any other kind of seeds commonly recognized within North Dakota as agricultural seed, lawn seed, and mixture of these seeds.

Vegetable seed means the seed of a crop that is grown in a garden or on a truck farm, and which is generally known and sold under the name of vegetable seed within North Dakota.

Application for Seed Sales Permit

The Seed Commissioner is authorized to issue a permit to any person to label agricultural, vegetable, flower, or tree and shrub seed in North Dakota. The applicant agrees to comply with all of the requirements of the North Dakota State Seed Laws and Regulations, submit an annual report of seed sold, and pay the appropriate fees. ***(Appendix F)***

Annual Report of Seed Sales

Any person labeling agricultural, vegetable, or flower seed in North Dakota is required to submit an annual report and pay a fee on quantity sold or the wholesale value of the seed. The reporting period is July 1 through June 30 of each year. ***(Appendix G)***

Instructions

1. Report only seed that is sold with your name as labeler.
2. If you wholesale seed as the labeler, include those sales on this report.
3. If you retail or sell seed from other labelers, do not include on this report.

Fees

The labeler shall remit fees by the date specified by the State Seed Department.

Cereal grains & flax (bulk or bagged) …$0.012/bu.
Soybeans, field beans, field peas (bulk or bagged) …$ 0.0004/lb.
Other agricultural seed sold in bulk…$0.0006/lb.

Other agricultural seed sold in containers up to 160 pounds:
$0.06/Container

Vegetable and flower seed…$0.50 for each $25 wholesale value

Inspection

The Seed Commissioner or his authorized agent has the right at all reasonable times to examine the records of permit holders and seed vendors to verify the accuracy of reports.

More Labeling Information

For complete information about North Dakota Seed Laws and certification regulations refer to the Seed Department website www.ndseed.com

Section 13 – Labeling Requirements for Agricultural Seed

North Dakota seed labeling laws require each container of agricultural seed which is sold, offered for sale, exposed for sale, transported for sale, or held in storage with the intent to sell for planting purposes to have a complete and accurate label attached to the container. If the seed is sold in bulk, a bulk certificate must be properly delivered with every load of seed.

North Dakota Seed Labeling Requirements

A plainly written or printed label or tag, written in English must provide the following information.

In seed of wheat, durum, or barley, oats, rye, soybeans, field peas, dry beans, and flax

1. The label must contain the commonly accepted name of the kind and variety of each agricultural seed component in excess of five percent of the whole and the percentage by weight of each.
2. Variety identification is not required for seeds labeled "for vegetable cover only".
3. Seed listed in this subsection may be sold by brand if the true variety name or number is clearly stated on the label in a type size equal to or greater than the brand.

In seed of canola

1. The label must contain a statement that the seed is certified by the commissioner as meeting the standards of this chapter or,
2. Certified by another state or province having certification standards for canola which meet or exceed standards adopted by this chapter.

In all other seed not named in subsections 1 and 2

1. The label must contain the commonly accepted name of the kind or the kind and variety of each agricultural seed component in excess of five percent of the whole and the percentage by weight of each.

When more than ten percent of the whole consists of an aggregate of agricultural seed components, each present in an amount not exceeding five percent of the whole, the label must contain each component in excess of one percent of the whole named together with the percentage by weight of each; each component must be listed in the order of its predominance.

When more than one component is named, the word "mix" "mixed", "mixture", or "blend" must be appropriately stated with the name of the mixture or blend.

For each container of agricultural seed, the label must contain:

1. Lot number or other lot identification.
2. The origin (state or foreign country) where the seed was grown. If the origin is unknown, that fact must be stated on the label.
3. The percentage by weight of all weed seeds.
4. The name and rate of occurrence per pound of each kind of restricted noxious weed seed present. In seeds of grasses and small seeded legumes, if the restricted noxious weed seed is present singly or collectively in amounts in excess of thirteen seeds per pound or in other agricultural seeds, including cereals, oil seed crops, millets, and seeds of similar size, if the restricted noxious weed seed is present singly or collectively in amounts in excess of five seeds per pound.
5. The percentage by weight of agricultural seed that may be designated as crop seed, other than those required to be named on the label.
6. The percentage by weight of inert matter.
7. The percentage of germination for each agricultural seed, exclusive of hard seed; if desired, the total germination and hard seed for each agricultural seed; and the calendar month and year the test was completed to determine these percentages.
8. The full name and address of the labeler who sells, offers for sale, or exposes the seed for sale within the state.
9. If the seed is treated, a word or statement indicating that the seed has been treated; the commonly accepted coined, chemical, or abbreviated chemical name of the applied substance. If the substance in the amount present with the seed is harmful to human or other vertebrate animals, a caution statement prohibiting use for food, feed or oil purposes must be on the label. A poison statement or symbol must be included for mercurials and similar toxic substances. If the seed is treated with an inoculant, the label must contain the date beyond which the inoculant is not considered effective. A separate label may be used for treatments.
10. The seed container is hermetically sealed.
11. A disease test result for seed-borne diseases required for certification.

Section 14 – Seed Sales

Bulk Seed

Foundation and Registered class seed may be sold in bulk. However, for that seed to be eligible for recertification, it must be sold by the seed producer or an approved conditioner, directly to the consumer. A bulk seed certificate must be issued for each sale (load) of certified seed delivered or loaded into a buyer's truck. The buyer must receive the bulk certificate at the time of delivery.

C # Certificate

Bulk seed lots that pass final certification will be issued bulk certificates with a C#. The certificates will be issued to the labeler as shown on the Seed Sampler's Report. Once bulk certificates are issued to the labeler, the seed may be offered for sale to a producer or it may be sold to an approved bulk retailer, and then sold to a producer. Since the initial labeler is responsible for certain fees such as labeling fees and research fees, it is important that the Sampler's Report be filled out correctly ***(Appendix H)***.

Retail Only Certificate

When the initial labeler sells certified seed to an approved conditioner or bulk retailer, the seed lot must be re-labeled with a Retail Only certificate. Retail Only bulk certificates restrict the sale to the end customer, the farmer, since there may only be two physical transfers of the seed. The conditioner or retailer that purchased the seed should fax or mail in a copy of the certificate received with the seed to the Seed Department and indicate the number of new bulk certificates needed. For on-line bulk certificates, log into your account, find the appropriate bin and lot number. Fill out the appropriate customer bulk certificate. New relabeled bulk certificates will be issued for retail sale only ***(Appendix I)***.

Down-grading Seed Lots

Seed lots may be downgraded to the next lower class if the lot does not meet field or seed standards or to facilitate a sale. If bulk certificates have already been issued for the higher class, simply cross out the class designation and write the statement *"Sold as Certified – Not to be used for recertification"* on the bulk certificate.

Combined Lots

Different lots of certified seed of the same variety may be commingled in a bin. The Seed Department will issue new bulk certificates for the combined seed lot. Fax or mail in the bulk certificates you received from all of the lots that were combined, specify a new lot number and indicate the number of new bulk certificates desired. For on-line bulk certificates, log into your account, find the appropriate bin and lot number. Fill out the appropriate customer bulk certificate. The lowest germ and the lowest purity will be used for the new certificates.

Completing the Log Sheet

The log sheet provides a simple, consolidated record-keeping system and replaces the need to retain all the yellow copies of the old bulk certificates. Each serial number associated with a specific seed lot is shown on the form. When a sale is made, simply record the transaction on the log sheet. When you have used all of the paper bulk certificates for that seed lot or you have sold all the seed, return the completed log sheet to the department. Log sheets, along with any unused bulk certificates are due Sept 1, but we recommend returning them to the department as soon as possible so they are not misplaced. For on-line bulk certificates, log into your account, find the appropriate bin and lot number. Fill out the appropriate customer bulk certificate. ***(Example page 85)***

Additional Bulk Certificates

If additional bulk certificates are needed for a seed lot contact the department. Include the variety, class, lot number along with the C or R number from the original certificates and the number of additional bulk certificates needed.

Seed Transfers – Legal Movement of Certified Seed

After final certification has been completed on a seed lot, a maximum of two physical transfers of seed are permitted.

The sale of certified seed from the original labeler to the farmer/customer is considered a single move.

The sale of certified seed from the original labeler to an approved conditioner or bulk retailer and then to the farmer/customer is considered two physical transfers.

Rejected Lots

If a seed lot does not meet the certified seed standards for a particular class of seed, there are several options.

1. Re-sample and re-test the lot. The average of the two test results will be used. If the average meets the standards for the class, the seed lot will then pass.

2. Re-condition the lot and submit a new sample for testing. Any time a lot changes a new sample must be tested. The test results from the new sample will be used to determine certification eligibility.
3. Registered class seed that does not meet seed standards but meets Certified class standards, may be downgraded to Certified class.

Substandard Lots

Seed lots that fail to meet seed standards for reasons other than seed-borne diseases or genetic purity (germination, purity, inert) may be labeled as "Substandard". Seed tags or bulk certificates will indicate that the lot is "Substandard" and the reason.

Common Seed

Labeling requirements for common seed are the same as certified seed; a two-pound sample of conditioned seed must be submitted to Seed Department for purity and germination testing. The information on the analysis report should be used to complete the label for the seed lot ***(Appendix J)***.

North Dakota seed laws require the following information:

1. Kind and variety
2. Pure seed %
3. Weed seed %
4. Other crop %
5. Inert %
6. Number of noxious weed seed per pound
7. Lot number
8. Germ %
9. Germination test date
10. Origin
11. Complete name and address of labeler

Germination Tests

By law, germination tests are only valid for a specific period of time. All information on a seed label must be truthful or the seed lot will be out of tolerance. Federal Seed Act tolerances are applied. Tests are valid as follows:

Cereal grains, soybeans and edible beans……...9 months excluding the month of test
Vegetable, flower, grass, and forb seed…….12 months excluding the month of test

Cool season lawn and turf grasses……..... 15 months excluding the month of test
Interstate seed transactions……..5 months excluding the month of test

Section 15 – Carryover Seed

Conditioned Seed

Carryover conditioned seed that has been final certified previously needs only to be retested for germination to ensure that the seed has not gone out of condition and that the test date on the label is current. Labelers must complete the Re-Labeling Request for Carryover Certified Seed form **(Appendix N)** and return it to the Seed Department to obtain new bulk certificates or tags. If new germination tests have been completed on the carryover seed, simply submit a copy of the Analysis Report with the Request form. If the germination test has not yet been completed, submit a representative sample along with the completed form.

Carryover Bagged Seed

New certification tags will be furnished for carryover, bagged seed. All carryover seed must be retested for germination before new certified tags will be issued. Follow proper procedures for obtaining a new sample. For lots of one to six bags, sample each bag taking at least five core samples. For lots greater than six bags, sample five bags plus ten percent of the total number of bags in the lot. It is not necessary to sample more than 30 bags, regardless of lot size. In other words, for lots of 300 bags or greater, no more than 30 bags need to be sampled. (See AASCO Handbook on Seed Sampling, Appendix 5).

Carryover Bulk Seed

All carryover bulk seed must be retested for germination before new bulk certificates will be issued. Carryover bulk seed cannot be recertified in bags unless new samples are submitted for purity analysis. To obtain a proper sample from a bulk lot, collect as many sub-samples as if the lot were in bags.

Commingling Carryover Seed

Decisions to commingle carryover seed lots must be based on the quality of each lot. Before commingling carryover seed, a new germination test should be performed on each lot to ensure the lots have not gone out of condition. Complete the Re-Labeling Request for Carryover Certified Seed form and include a copy of the Analysis Reports for each lot of seed**.** If the carryover lots were commingled *before* testing, a new sample representing the new commingled lot is required with the Re-Labeling Request for Carryover Certified Seed form

Commingling Carryover and Newly Conditioned Seed

Before combining a lot of carryover seed and newly conditioned seed into a bin, a new germination test must be completed on the carryover seed to ensure it has not gone out of

condition. To obtain new bulk certificates for the combined lot, submit the following to the Seed Department:

- For the carryover seed: submit the Re-Labeling Request for Carryover Certified Seed form and the Analysis Report showing the new germination.
- For newly conditioned seed that has completed final certification already: submit the bulk certificate.
- For newly conditioned seed that has **not** yet completed final certification: the official sampler must submit a Sampler's Report along with a representative sample. Be sure to include the C# and the number of bushels from the carryover lot. Include the Analysis Report for the carryover seed. **Important**: the **TOTAL** number of bushels representing the combined lot must be listed on the Sampler's Report.

Unconditioned Seed

Unconditioned carryover seed must be reported to the Seed Department each year in order to maintain eligibility for final certification. Growers must report all field-inspected seed that was not submitted for final certification. Failure to report carryover seed disqualifies the seed for certification.

Carryover Reports

For unconditioned and certified seed, reports must be returned to the State Seed Department by September 1 to be included in the *Seed Directory*. A Carryover Seed Report ***(Appendix K)*** is sent to growers and labelers every year in July.

Section 16 – Seed Laws and Regulations

The North Dakota State Seed Department follows state and federal seed laws governing the production, handling, labeling, sale and distribution of seed products.
Specific information can be found at the following sources.

Federal Seed Laws

Federal Seed Act Regulations Part 201
Plant Variety Protection Act

North Dakota Seed Laws

North Dakota Seed Laws, North Dakota Century Code 4.1-53
North Dakota Field Seed Certification Standards Chapter 74-03

Section 17 – Interagency Certification

Upon the request of an officially recognized certification agency of another state, the State Seed Department will act as agent in making inspections, drawing samples, or labeling of seed to be certified.

Interagency certification tags shall show the certification agencies involved, the lot number, variety, kind, and class of seed.

Interagency seed lots not meeting North Dakota labeling standards may require re-sampling or retesting to ensure compliance with North Dakota labeling laws.

For Seed Certified by another State

For certified seed carrying the certification tag or label of an official certifying agency, no official request from a recognized agency of another state is required to recondition, re-label, or re-bag certified seed under interagency certification.

Application for interagency certification shall be made directly to the State Seed Department and the following documentation shall be required:

1. Kind and Variety
2. Class of certified seed.
3. Number of bags or bulk bushels.
4. Weight of each bag (if applicable)
5. Complete original label including purity analysis, germination, and other required tests.
6. Name and address of grower or the inspection or lot number traceable to the records of the agency making the field inspections.

For Field-Inspected Seed from another State

A lot of seed that has passed field inspection in another state may be sold or moved into North Dakota for further conditioning or completion of certification provided:

1. Prior arrangements for moving the seed is made with and approved by the other state's certification agency and the State Seed Department.
2. A grower's transfer certificate from the state of origin of the seed is filed by the original applicant for certification of such seed ***(Appendix L).***

Section 18 – Canadian Seed

Before acquiring seed from Canada, be sure to determine whether the variety is eligible to be exported. Many varieties produced in Canada may be exported only by a Canadian licensee of the owner. In turn, these companies may have a contract with a licensee in North Dakota who will be the sole distributor of these varieties. In order for Canadian seed to be eligible for recertification, certain steps must be followed to obtain proper labeling for resale, since the Canadian system does not require complete analysis for labeling.

Purchasing Canadian Seed for Resale

Only approved conditioners or bulk retailers are eligible to resell the seed. When seed is delivered to your facility, obtain representative samples from all shipments that will become one lot of seed. Mix these samples together and submit a two-pound sample to the NDSSD for testing. The sample should be accompanied by the Canadian bulk pedigreed seed certificate from each load, the new lot number you assign and the number of bulk certificates you will need. The pedigreed seed certificate is a 4½ inch by 8½ inch form that includes the kind and variety, number of bushels, crop certificate and lot numbers, class, name of vendor and name and address of the purchaser.

The following tests are required for new North Dakota Bulk Certificates

1. Wheat - purity, germ, seed count
2. Field peas - purity, germ
3. Barley - purity, germ, seed count, loose smut
4. Chickpea and lentils - purity, germ, Ascochyta
5. Canola – purity, germ

Purchasing Canadian Seed for Seed Production

A grower planning to purchase Foundation or Registered seed to produce certified seed only needs the pedigreed seed certificate. That certificate will be required for proof of seed source when the application for field inspection is submitted. The grower's name must be on the certificate as the buyer in order to apply for field inspection.

Selling Seed into Canada

If you intend to sell seed into Canada, you must first check the Plant Variety Protection (PVP) status of the variety. Any variety protected under the PVP Act in the United States cannot be sold into Canada without permission from the owner of the variety. Additionally, some varieties are

licensed to seed companies in Canada and only those licensees can access seed of these varieties from the United States.

Seed Tests and Documents Required to Export Seed to Canada

1. Purity analysis
2. Germination
3. Canadian noxious weed check
4. Loose smut for barley
5. Phytosanitary certificate (required for some crops). Phytosanitary certificates are issued by the North Dakota Department of Agriculture.

Guidelines for NDSU Varieties Licensed in Canada

The North Dakota State University Research Foundation, the North Dakota Crop Improvement and Seed Association (as licensee) and the University of Minnesota may have licensing agreements with Canadian companies that outline the parameters under which sales and movement of seed can take place. **The Canadian licensee is the only company allowed to sell the seed in Canada.**

The *Seed Directory* lists Canadian licensees under the variety name when known. This list is current as of the date of publication. Conditioners should check with the Research Foundation for the most current updates.

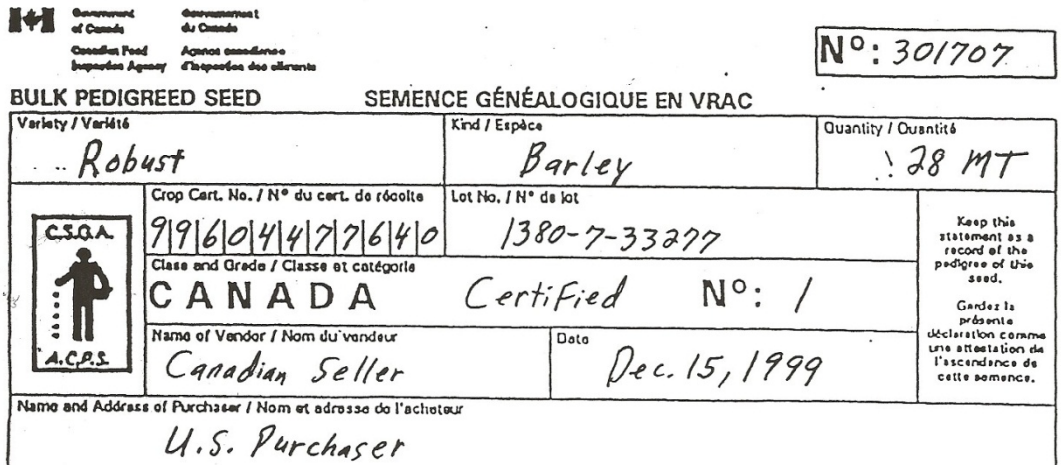
The following guidelines generally describe the limitations that exist:

1. All Breeders seed will remain with the US owner (NDSU).
2. No Foundation seed may be sold into Canada.
3. All Registered seed must be produced in the US.
4. US producers of Registered and Certified class seed can sell into Canada only to the Canadian licensee.
5. The Canadian licensee can sell only Certified class of seed to Canadian producers.
6. Seed of any class (certified or common) of a licensed variety produced in Canada cannot be marketed back into the US. US producers are prohibited from going into Canada and purchasing seed of licensed varieties for planting purposes.
7. No variety with Plant Variety Protection may be sold into Canada without authorization from variety owner.

Detailed information may be obtained by contacting either the NDSU Research Foundation at 701-231-8931 for varieties owned by NDSU; or the Minnesota Crop Improvement Association at 1-800-510-6242 for varieties owned by the University of Minnesota.

Canadian Bulk Pedigreed Seed Certificate

The Canadian bulk pedigreed certificate is similar to the North Dakota bulk certificate. Any person purchasing certified seed from Canada should receive one certificate with each load of certified Canadian seed purchased and delivered to your location.



Government of Canada / Gouvernement du Canada
Canadian Food Inspection Agency / Agence canadienne d'inspection des aliments

N°: 301707

BULK PEDIGREED SEED — **SEMENCE GÉNÉALOGIQUE EN VRAC**

Variety / Variété	Kind / Espèce	Quantity / Quantité
Robust	Barley	28 MT

C.S.G.A. A.C.P.S.

Crop Cert. No. / N° du cert. de récolte	Lot No. / N° de lot
9 9 6 0 4 4 7 7 6 4 0	1380-7-33277

Class and Grade / Classe et catégorie: CANADA Certified N°: 1

Name of Vendor / Nom du vendeur	Date
Canadian Seller	Dec. 15, 1999

Keep this statement as a record of the pedigree of this seed.

Gardez la présente déclaration comme une attestation de l'ascendance de cette semence.

Name and Address of Purchaser / Nom et adresse de l'acheteur: U.S. Purchaser

Section 19 – Seed Regulatory Program

Purpose of the Regulatory Program

The Seed Regulatory Program provides for the regulation of the seed industry through enforcement of state seed laws through century code and federal laws specified by the Federal Seed Act (FSA). The FSA regulates the interstate shipment of agricultural and vegetable seeds and requires that seed shipped in interstate commerce be labeled with information that allows seed buyers to make informed choices. The department has authority for regulatory activities under a cooperative agreement with the USDA-AMS, Seed Regulatory & Testing Branch. Through monitoring, sampling and testing, the regulatory program ensures that seed meets state and federal labeling requirements, contributing to the utilization of high quality seed. The regulatory program also serves as the department authority in enforcing Plant Variety Protection or other intellectual property rights issues.

Services Provided

1. Enforcement of state and federal seed laws
2. Inspection and audit of retail seed facilities
3. Sampling and testing of seed lots to verify label accuracy
4. Investigation of complaints
5. Cooperate with public institutions and private companies on enforcement of intellectual property rights issues
6. Administration of the state seed sales permit system
7. Cooperate with USDA Seed Regulatory and Testing Branch in varietal purity evaluation
8. Provide public education on regulatory and certification issues

The Seed Regulatory Program is funded by the fees generated from Seed Labeling Fees.

Section 20 – Fee Schedules

The State Seed Department operates on a fee for service basis. See ***Appendix M*** for current fees. Fees are subject to change at any time but require approval from the State Seed Commission.

Licensing and permit fees

Field inspection and final certification fees

Lab fees

Variety research fees

Custom programs

Section 21 – Seed Department Deadlines

May 1……Field inspection applications due for grass

June 1……Field inspection applications due for hemp and hybrid wheat

June 15……Field inspection applications due for all crops except buckwheat and millet and soybeans requiring only one inspection

July 15…… Field inspection applications due for buckwheat and millet

Aug 1……...Field inspection applications due for soybeans requiring one inspection

Sept 1…….. Unused bulk certificates and log sheets due

Sept 1……...Labeling fee report due

Sept 1……..Research fees due

Sept 1…...…Carry-over seed report due

Sept 1……..License applications due for approved conditioners

Sept 1..…....License applications due for bulk retail facilities

Dec 31…….License applications due for non-resident seed dealers

Section 22 – Reporting Requirements

The following reports are required on a periodic basis by the Seed Department.

Report Title	Program Responsibility	Date Due
Labeling Fee Report	Regulatory	September1
Research Fee Report	Field Seed	September 1
Carryover Seed Report	Field Seed	September1

Section 23 – Glossary of Terms

Air-screen cleaner - The basic seed cleaner in most seed conditioning plants. Separates seed based on size, shape, and density. Uses multiple screens to first scalp the seed and finally grade it. Contains fans to remove light, chaffy material.

Authorized sampler - A sampler that has been trained and has the authority to collect samples for the North Dakota State Seed Department.

Belt conveyor - Continuous moving belt used to transport material horizontally and at a slight incline. Results in little or no seed damage, but contamination is possible when operated in an open trough.

Blend - Means seed consisting of more than one variety of a kind, each in excess of five percent by weight of the whole.

Bulk seed - Means seed stored in bins and may mean seed stored in containers larger than one hundred sixty pounds.

Certified - Means the agricultural seed was randomly inspected and found to meet the rules of the department at the time of inspection.

Certified seed - Seed that has been produced, inspected and labeled in accordance with the procedures and in compliance with the rules of an officially recognized seed certifying agency.

Color separator - Seed color is an important quality factor in some seeds. Color sorters can scan individual seeds using lights and filters to determine whether they match preset criteria.

Conditioning - Includes all activities performed on seed to improve the quality of the product between harvest and marketing. Other terms associated with conditioning could include cleaning, processing, sizing, grading, storing, and seed treating.

Department - Means the North Dakota State Seed Department.

Field inspection - Means the physical examination or observation of a field by an authorized State Seed employee.

Glossary

Germination - The percentage of seed capable of producing normal seedlings under favorable conditions as determined by methods prescribed under the rules established by the association of official seed analysts (AOSA).

Grower - Any person that is complying with all the certification rules and regulations in the production of field-inspected seed.

Hard seed - A seed that remains hard at the end of the prescribed test period because the seed has not absorbed water due to an impermeable seed coat.

Header - Top circular, metal cover of leg.

Inert Matter - All matter not seed and includes the broken seed, a sterile floret, chaff, a fungus body, and a stone.

Length separator - Used to separate seed based on length. Uses a metal disc and or cylinders with shallow pockets or indentations to lift shorter material in the indentations from longer material.

Kind - One or more related species or subspecies, which singly or collectively is known by one common name, such as corn, oats, alfalfa, or timothy.

Label - A tag or device attached to a seed container, stamped or printed information on a seed container, or written information accompanying a lot of bulk seed.

Labeler - The person whose name appears on the label

Lot - Means an identified quantity of seed that is uniform, within permitted tolerances, for the factors that appear on the label.

Mixture - Means seed consisting of more than one kind, each in excess of five percent by weight of the whole.

None - Means none found during the normal inspection process (both field and seed standards). None is not a guarantee that the lot inspected or analyzed is free of the factor.

Glossary

Official seed sampler -A sampler who is trained, evaluated and certified or recognized as being competent in seed sampling by their respective agency.

Other varieties and off-types - Plants or seeds that do not conform to the characteristics of a variety as described by the breeder. They do not include variants, which are part of the variety.

Pneumatic system - Transports seed through an enclosed tube using either forced air or vacuum. Normally used to remove by-products from a plant, because of its potential for seed damage.

Pure seed - Means agricultural and vegetable seed, exclusive of inert matter, and all other seed not of the kind or variety being considered.

Records - Means all information relating to lot identification, source, origin, variety, amount, processing, testing, labeling, distribution, and file sample of seed.

Seed conditioning - Refers to the operations of cleaning, sorting and grading that remove foreign matter from the seed lot and make it more uniform in size and shape.

Specific gravity separator -Used to separate material according to density or specific gravity. Typically used to separate seed of the same size but different density, or seed with varying particle size with the same density. Uses air flow to stratify seed according to density.

Spiral separator - A simple and effective cleaning machine used to remove flat or irregularly shaped materials from spherical seeds. For example, it can remove broken seeds from soybeans.

Transfers - The physical movement of seed after final certification.

Variant - Means any seed or plant is distinct but occurs naturally within a variety; is stable and predictable with a degree of reliability comparable to other varieties of the same kind, and was originally a part of the variety as released. A variant is not an off-type.

Variety - Means a subdivision of a kind characterized by growth, yield, plant, fruit, seed, or other characteristic by which it can be differentiated from other plants of the same kind and a subdivision of a kind that is distinct, uniform, and stable.

Section 24 - Appendices

A. Agreement to Operate as a North Dakota Approved Plant to Condition Seed

AGREEMENT TO OPERATE AS A NORTH DAKOTA APPROVED FACILITY TO CONDITION SEED FOR FINAL CERTIFICATION
NORTH DAKOTA STATE SEED DEPARTMENT
SFN 51115 (4-2018)

PO Box 5257
Fargo, ND 58105-5257
Phone: 701-231-5400
Fax: 701-231-5401
www.ndseed.com

Note: The contact information provided below will appear in the Seed Directory. Be complete

Company Name			
Address	City	State	ZIP Code
Telephone Number	Fax Number	Cell Phone Number	

Print cell phone number in directory ☐ Yes ☐ No

Email Address		
Facility Manager		
Person in Charge of Certified Seed	Signature	Date

Permission to operate as an Approved Conditioning Facility is granted and renewed on an annual basis only if the Seed Commissioner is satisfied the facility meets the requirements of this agreement and follows all other rules pertaining to seed certification and state and federal seed laws and regulations.

This agreement may be revoked by the Seed Commissioner at any time without notice if the conditions are not met, certification rules are not followed, or the facility is found guilty of violations of North Dakota seed laws, the Federal Seed Act, or the Plant Variety Protection Act.

The management and staff of the seed conditioning facility agree to the following terms and conditions:

1. Receive, condition, label, distribute, and in any other manner handle eligible field inspected and certified seed according to North Dakota field seed certification standards and regulations.
2. Maintain a clean facility at all times, including headhouse, conditioning area, pit, scale area, bins, basement area and all bulk bins located outside the facility.
3. Thoroughly clean all handling equipment, conveying equipment and bins before any lot of certified seed is handled and stored in the facility. Augers must be reversible. Hopper bins must have bottom access ports or inside ladders for access.
4. Label all bins and maintain an up-to-date bin chart where all certified seed is stored. Bins must be labeled with Kind, Variety, Class & Lot Number.
5. All seed lots eligible for final certification shall be sampled by an authorized sampler according to procedures prescribed by current AOSA Rules for Testing Seeds. The untampered representative sample shall be placed into an official seed sample bag.
6. Submit a completed Seed Sampler's Report, and Grower's Declaration, if required, and the representative sample to the North Dakota State Seed Department for testing.
7. Properly label all bagged seed. All unused certification tags must be destroyed or returned to the Seed Department as soon as the lot has been tagged.
8. Ensure any container receiving bulk certified seed is clean. If it is not clean, note on the bill of sale or bulk certificate stating that it was not clean.
9. Bulk certified seed shall only be physically moved twice after final certification is completed.
10. Issue a completed bulk certificate for each load of bulk certified seed at the time of delivery. Return Bulk Certificate Log Sheet and all unused certificates to the North Dakota State Seed Department by September 1.
11. Maintain complete and accurate records for three years for all seed conditioned or sold. Retain a representative two-pound sample of each seed lot labeled by the conditioner for one year from the date of final disposition of the lot. Identify samples by Kind, Variety, Class and Lot Number.
12. Labeler is responsible for payment of all applicable certification, testing, labeling and research fees.

Facility Manager Signature	Date
Authorized Sampler Signature(s)	Date

B. Plant clean down checklist

Plant Clean Down Checklist

Seed Plant: _____

Date Begun: _____ **Previous Crop & Variety:** _____ **Date Completed:** _____

Job Description:	Performed By:	Comments and repairs:
Clean out all empty overhead surge bins-use extension broom and air		
Pull screens on sieve mill clean machine-ball trays or brushes-use vacuum and air		
Clean precision graders-dump troughs and or pull drums-use vacuum and air		
Clean gravity, color sorter and destoner-pull decks and filters -use vacuum and air		
Clean all bagging equipment-use vacuum and air		
Clean top of legs and floor in headhouse-use broom, vacuum and air		
Clean distributor and floor (2nd floor)-use broom, vacuum and air		
Clean all applicable bins for conditioned seed-use extension broom, vacuum and air		
Completely blow down main work floor-top of all cleaners, walls and floor		
clean main driveway-under scale seal, walls and floor- use broom and air		
Clean receiving pit-blow off all I beams, walls ,floor and make sure slides close		
Clean all back pits-use vacuum and air		
Check leg cups for any seed stuck and for loose bolts-use vacuum		
Pull bottom slides on all legs-vacuum and blow with air		
Clean bottom of leg area (boot, basement or main floor)-use vacuum		
Clean all conveyors and vibrator trays in basement-use vacuum		
Clean all basement ledges and floor-use broom and vacuum		
Make sure all applicable covers and slides are closed and reinstalled		
Flush entire system and purge product into cleanout bin only		
Testing room-dockage tester clean scalper, sieves and all pans		
Testing room -clean all barley plump pans, etc		
Scale room-update bin chart		
Outside hopper bins-sweep and blow off walls, blow off slides, reverse auger and vacuum or blow out auger boot		
Outside flat storage-sweep and blow ceiling, walls and floor. Pull horizontal unload auger and vacuum tube		
Warehouse and sample storage areas-sweep and watch for rodent activity		
Exterior grounds-pick up garbage and clean up all grain spills		

C. Seed Sampler's Report

SEED SAMPLER'S REPORT
NORTH DAKOTA STATE SEED DEPARTMENT
SFN 50307 (7-2020)

PO Box 5257
Fargo, ND 58105-5257
Phone: 701-231-5400
Fax: 701-231-5401

Labeler Name			Conditioner Name		
Address			Address		
City	State	ZIP Code	City	State	ZIP Code

Charge Test Fees to:	Send Labels to:
☐ Labeler ☐ Conditioner ☐ Other _____	☐ Labeler ☐ Conditioner ☐ Other _____
Copy to:	

Sample Information

Variety	Lot Number	Class
Field Inspection Number(s)		
Date Conditioned	Number of Unconditioned Bushels	

Bulk Seed

Conditioned Bushels	Storage Bin Number	Bulk Certificates Requested	Number of Mini-Bulk Containers	Online Option ☐ Print Own Certificates

Bagged Seed

Conditioned Bushels	Number of Bags in Lot	Weight in Each Bag	Number of Tags	☐ Single ☐ Double	Pre-Issued Serial Numbers (on tags) From: To:

Tests Requested (check all that apply)

☐ Germination ☐ Purity ☐ Seed Count ☐ Canadian Noxious ☐ OECD Purity ☐ Other _____

Tests to Rush

List the Lab Sample Number (for test results using pre-conditioned samples)

Pre-Germ Lab Number	Barley Loose Smut Lab Number	Ascochyta Lab Number
Bean Bacterial Blight (Dome) Lab Number	Bean Anthracnose Lab Number	

List Certification or Relabel Number (if any apply to this seed lot)

Retest Seed	Reconditioned Seed	Carryover Seed

Other Instructions or Remarks

Sampler's Declaration
This seed lot was conditioned and sampled according to North Dakota seed certification requirements and the sample submitted is representative of the entire seed lot and was not tampered with in any manner by anyone before or after it was placed in the sample bag and sealed.

Authorized Sampler's Signature	Date

Grower's Declaration
The seed below was delivered/transferred to the labeler or conditioner above for conditioning.

Type of Seed Delivered/Transferred	Amount	Measured as ☐ Bushels ☐ Pounds	Field Inspection Number(s)
Grower's Signature			Date

D. Instructions for Completing the Sampler's Report

SEED SAMPLER'S REPORT
NORTH DAKOTA STATE SEED DEPARTMENT
SFN 50307 (7-2020)

PO Box 5257
Fargo, ND 58105-5257
Phone: 701-231-5400
Fax: 701-231-5401

Labeler Name 1			Conditioner Name 2		
Address			Address		
City	State	ZIP Code	City	State	ZIP Code

Charge Test Fees to: 3 ☐ Labeler ☐ Conditioner ☐ Other _____	Send Labels to: 4 ☐ Labeler ☐ Conditioner ☐ Other _____
Copy to: 5	

Sample Information

Variety 6	Lot Number 7	Class 8
Field Inspection Number(s) 9		
Date Conditioned 10	Number of Unconditioned Bushels 11	

Bulk Seed

Conditioned Bushels 12	Storage Bin Number 13	Bulk Certificates Requested 14	Number of Mini-Bulk Containers 15	Online Option 16 ☐ Print Own Certificates

Bagged Seed 21

Conditioned Bushels 17	Number of Bags in Lot 18	Weight in Each Bag 19	Number of Tags 20	☐ Single ☐ Double	Pre-Issued Serial Numbers (on tags) From: To:

22 **Tests Requested** (check all that apply)

☐ Germination ☐ Purity ☐ Seed Count ☐ Canadian Noxious ☐ OECD Purity ☐ Other _____

23 **Tests to Rush**

24 **List the Lab Sample Number** (for test results using pre-conditioned samples)

Pre-Germ Lab Number	Barley Loose Smut Lab Number	Ascochyta Lab Number
Bean Bacterial Blight (Dome) Lab Number	Bean Anthracnose Lab Number	

25 **List Certification or Relabel Number** (if any apply to this seed lot)

Retest Seed	Reconditioned Seed	Carryover Seed

26 **Other Instructions or Remarks**

27 **Sampler's Declaration**
This seed lot was conditioned and sampled according to North Dakota seed certification requirements and the sample submitted is representative of the entire seed lot and was not tampered with in any manner by anyone before or after it was placed in the sample bag and sealed.

Authorized Sampler's Signature	Date

28 **Grower's Declaration**
The seed below was delivered/transferred to the labeler or conditioner above for conditioning.

Type of Seed Delivered/Transferred	Amount	Measured as ☐ Bushels ☐ Pounds	Field Inspection Number(s)
Grower's Signature			Date

D. Instructions for Completing the Sampler's Report

1. Correct name and address of the labeler of the seed
2. Name and address of the conditioner
3. If fees are to be charged to someone other than the labeler or conditioner write their name and address
4. If the labels are to be sent to someone other than the labeler or conditioner write their name and address
5. If copies are to be sent to someone other than the labeler or conditioner write their name and address. If an email should be sent to someone other than the labeler, include their email address.
6. Variety to be certified
7. Lot number of your choice: Bin number should be included
8. List class of seed. If downgrading to a lower class, write the class you are requesting and in remarks on the bottom write "Downgrade to certified class"
9. List all field number's included in this lot of seed
10. Date or dates the seed was conditioned
11. List all unconditioned bushels received even if they are split into sub-lots
12. Cleaned bushels for this lot: limited to bin size
13. Bin number where the seed is stored for sale: can only be one bin, if seed is stored in more than one bin, a separate sample, samplers report and lot number is required for the additional bins
14. One certificate is required for each load or sale of seed: additional certificates can be requested by calling the dept. with the certification number and amount needed
15. Each mini bulk must be labeled with variety and lot number: if a customer purchases multiple mini bulks, one certificate can be used for the total bushels purchased
16. Check for printing certificates online
17. Maximum number of bushels in a bagged lot is 5000
18. Total bags in lot
19. May be included but not required for certification
20. Number of tags requested for bagged or mini bulk seed
21. Single tags are printed by the dept. (most common). Double tags are for companies that use their own analysis label and a certification tag is printed with kind, variety and lot number. Pre-issued tags are used by companies that are allowed to print their own tags.
22. Germination, purity and seed count required for most crops. Two lbs of seed should be submitted for proper testing. Canadian noxious and OECD purity are used by companies that ship seed out of the US: minimum1000 grams required
23. If you would like the sample to be put in the front of the line for testing, list the tests to Rush here. The fee is double the cost of the test.
24. If desired list the sample number of the preliminary test you received prior to conditioning to use for labeling purposes: (test must include all fields related to this lot or a new test is required) New germination is required after conditioning for fragile crops (soybeans, field peas and field beans)
25. List the previous certification number if the seed was retested, reconditioned or was carryover
26. Could include: downgrade to certified, place on hold etc.
27. Must be signed and dated by approved sampler of the facility
28. To be used for ND field inspected seed only and when the labeler of the seed will be someone other than the applicant for field inspection. If seed was field inspected in another state, list the grower of the seed: an approved interagency transfer from the certifying state must also be included with the sampler's report

E. Research Fee Report Form

VARIETY DEVELOPMENT RESEARCH FEE
SEED USE REPORT FORM
NORTH DAKOTA STATE SEED DEPARTMENT
SFN

PO Box 5257
Fargo, ND 58105-5257
Phone: 701-231-5400
Fax: 701-231-5401
www.ndseed.com

Production Year:	
Period:	

Reference Number
CUSTOMER NAME
CUSTOMER ADDRESS

CITY STATE, ZIP

VARIETY

KIND

Acres passing field inspection according to NDSSD Records:	

Part 1: Registered and Certified bushels/units labeled in your name:

Certification Number	Lot Number	Bushels/Units	Research Fee	Amount Due
Total Amount Due:				

Credits. Subtract from the amount above. You are not required to pay research fees on the following:

You are not required to pay research fees on the following:	Bushels/Units	Research Fee	Credit Due
Carryover bushels/units			
Bushels/Units sold as commodity (grain)			
Bushels/Units planted on your own farm			
Total Credits			

Net Amount Due (total amount due minus total credits) Make checks payable to North Dakota State Seed			

Part 2: Disposition of bushels/units from above fields if not Certified

Bushels/Units sold as commodity (grain)	
Unconditioned carryover bushels/units	
Unconditioned bushels/units sold as seed. List buyers and bushels/units below	

Buyers of unconditioned bushels/units

Buyer Name	Bushels/Units

Form must be returned even if there are no sales for the reporting period

F. Application for Seed Sales Permit

APPLICATION FOR NORTH DAKOTA SEED SALES PERMIT
NORTH DAKOTA STATE SEED DEPARTMENT
SFN 62006

PO Box 5257
Fargo, ND 58105
Phone: 701-231-5400
Fax: 701-231-5401

Name/Company Name			
Address	City	State	ZIP Code
Telephone Number	Fax Number	Cell Phone Number	
Email Address			

A permit is required to sell agricultural, vegetable, flower or tree and shrub seeds in North Dakota in accordance with Chapter 4.1-53.38 of the North Dakota -Century Code. The applicant hereby agrees to comply with all of the requirements of the North Dakota State Seed Laws and Regulations, pay the required fee at the end of each reporting period, imprint on the analysis labels the information required by law and regulations, and to permit the Seed Commissioner or his authorized agents to examine records upon which such reports are based in order to verify the accuracy of the report.

Signature
Title

Office Use Only:

Approval: ☐ Approved ☐ Rejected	Permit Number
Authorized Department Signature	Date
Name	Title

Return to: ND State Seed Department
PO Box 5257
Fargo, ND 58105-5257

G. Annual Report of Agricultural Vegetable and Flower Seed Sold in ND

ND State Seed Department
PO Box 5257
Fargo, ND 58105-5257
Phone: (701) 231-5400 Fax: (701) 231-5401

ANNUAL REPORT OF AGRICULTURAL, VEGETABLE AND FLOWER SEED SOLD IN NORTH DAKOTA

Due 1/6/2021

Customer Name
Customer Address

Permit #:
Reporting Period:
Phone:

Only the initial labeler is responsible for fees. This form must be returned by the deadline in accordance with ND State law.

Check the appropriate box, sign, date and return to the State Seed Department

_____ No sales were made during the reporting period
_____ I no longer sell seed and wish to cancel my permit
_____ Sales for the reporting period are listed below.
_____ Fees are paid under permit #_____
_____ I only sell seed labeled under another labeler

A. For the following Agricultural seed.

Kind of Seed	**Bushels** Sold	Fee Rate	Fee
Cereal Crops		$0.0120/bu	

Kind of Seed	**Pounds** Sold	Fee Rate	Fee
Pulse Crops		$0.0004/lb	

B. For other Agricultural Seed (not specified in Section A) sold in bulk or mini-bulk containers

Kind of Seed	Pounds Sold	Fee Rate	Fee
		$0.0006/lb	
		$0.0006/lb	

C. For other Agricultural Seed (Not specified in Section A) in containers up to 160lbs in net weight

Container Size	Containers Sold	Fee Rate	Fee
0-160 pounds		$0.0600/container	

D. For Vegetable or Flower Seed in small containers or in bulk

	Dollar Value Sold	Fee Rate	Fee
Vegetable & Flower Seed		$0.50 for each $25 wholesale value	

Total all lines (if less than $5.00, do not send payment) _____

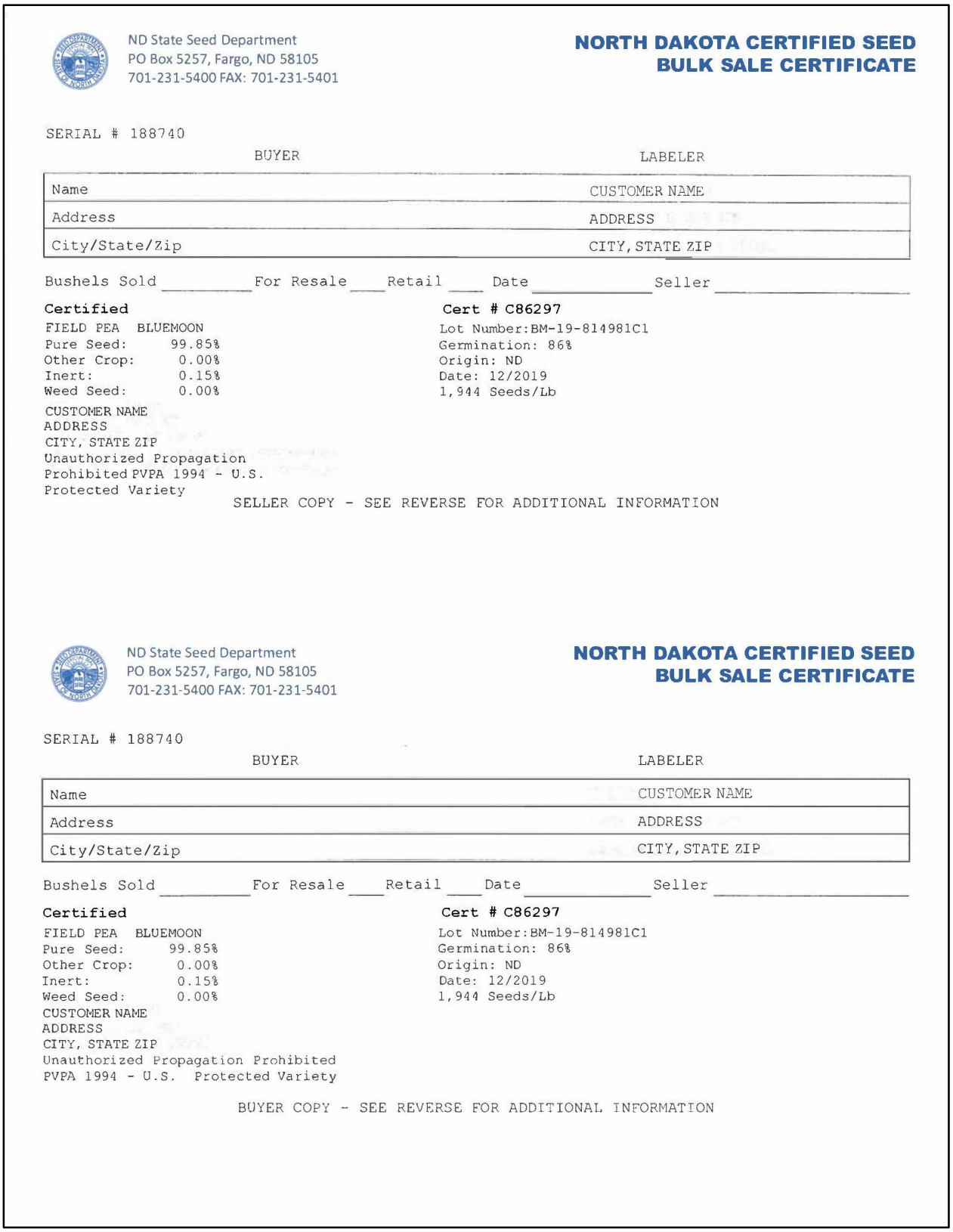
Total remitted _____

I declare under the penalties of criminal liability for willfully making a false return, that this report is to the best of my knowledge correct and complete.

Name (please print) _____

Signature _____ Date _____

H. Example of Certified Seed C# Certificate



ND State Seed Department
PO Box 5257, Fargo, ND 58105
701-231-5400 FAX: 701-231-5401

NORTH DAKOTA CERTIFIED SEED BULK SALE CERTIFICATE

SERIAL # 188740

	BUYER	LABELER
Name		CUSTOMER NAME
Address		ADDRESS
City/State/Zip		CITY, STATE ZIP

Bushels Sold _____ For Resale ___ Retail ___ Date _____ Seller _____

Certified
FIELD PEA BLUEMOON
Pure Seed: 99.85%
Other Crop: 0.00%
Inert: 0.15%
Weed Seed: 0.00%

Cert # C86297
Lot Number: BM-19-814981C1
Germination: 86%
Origin: ND
Date: 12/2019
1,944 Seeds/Lb

CUSTOMER NAME
ADDRESS
CITY, STATE ZIP
Unauthorized Propagation Prohibited PVPA 1994 - U.S. Protected Variety

SELLER COPY - SEE REVERSE FOR ADDITIONAL INFORMATION

ND State Seed Department
PO Box 5257, Fargo, ND 58105
701-231-5400 FAX: 701-231-5401

NORTH DAKOTA CERTIFIED SEED BULK SALE CERTIFICATE

SERIAL # 188740

	BUYER	LABELER
Name		CUSTOMER NAME
Address		ADDRESS
City/State/Zip		CITY, STATE ZIP

Bushels Sold _____ For Resale ___ Retail ___ Date _____ Seller _____

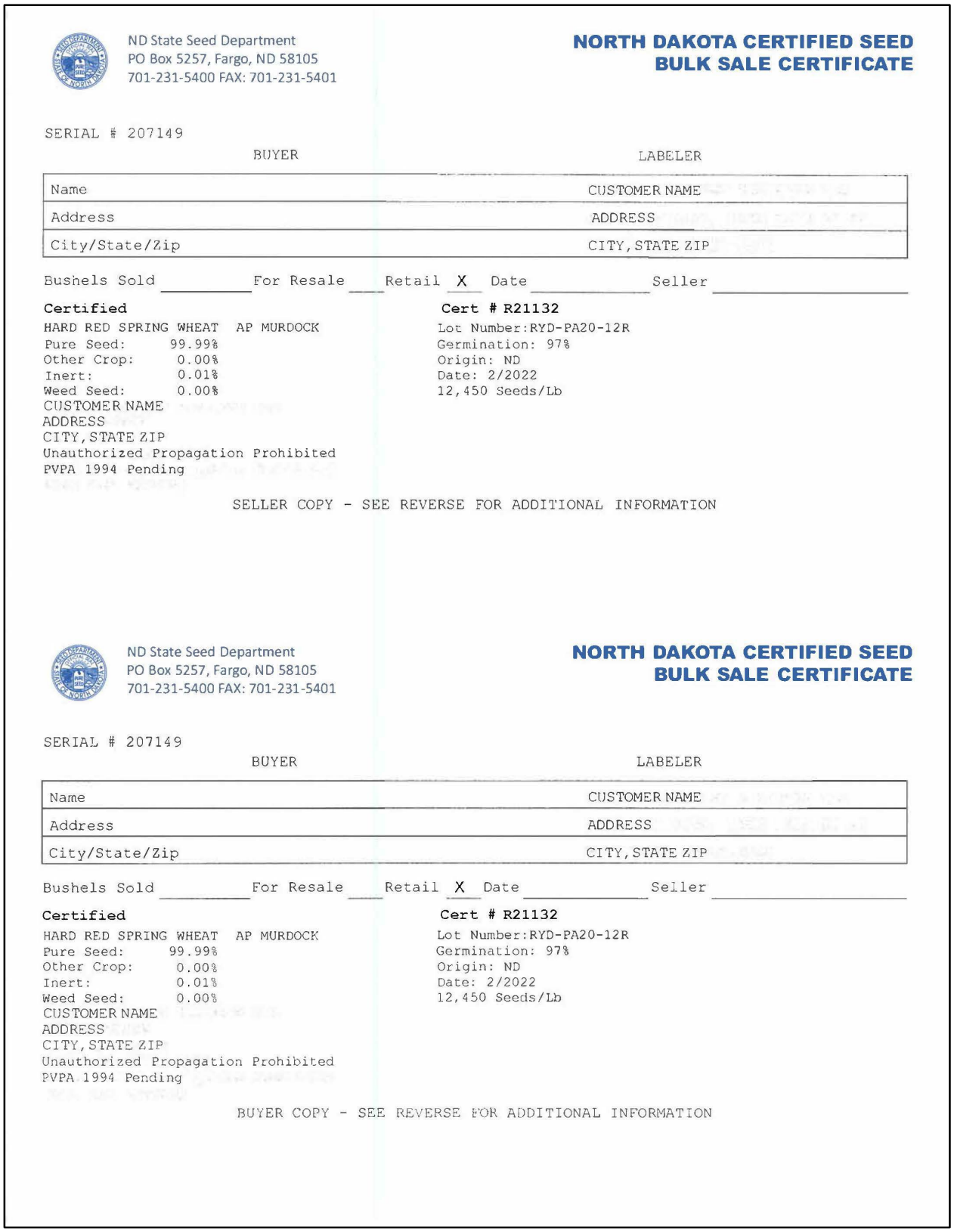
Certified
FIELD PEA BLUEMOON
Pure Seed: 99.85%
Other Crop: 0.00%
Inert: 0.15%
Weed Seed: 0.00%

Cert # C86297
Lot Number: BM-19-814981C1
Germination: 86%
Origin: ND
Date: 12/2019
1,944 Seeds/Lb

CUSTOMER NAME
ADDRESS
CITY, STATE ZIP
Unauthorized Propagation Prohibited PVPA 1994 - U.S. Protected Variety

BUYER COPY - SEE REVERSE FOR ADDITIONAL INFORMATION

I. Example of Retail Only R# Certificate



ND State Seed Department
PO Box 5257, Fargo, ND 58105
701-231-5400 FAX: 701-231-5401

NORTH DAKOTA CERTIFIED SEED BULK SALE CERTIFICATE

SERIAL # 207149

BUYER	LABELER
Name	CUSTOMER NAME
Address	ADDRESS
City/State/Zip	CITY, STATE ZIP

Bushels Sold _____ For Resale ___ Retail X Date _____ Seller _____

Certified
HARD RED SPRING WHEAT AP MURDOCK
Pure Seed: 99.99%
Other Crop: 0.00%
Inert: 0.01%
Weed Seed: 0.00%
CUSTOMER NAME
ADDRESS
CITY, STATE ZIP
Unauthorized Propagation Prohibited
PVPA 1994 Pending

Cert # R21132
Lot Number:RYD-PA20-12R
Germination: 97%
Origin: ND
Date: 2/2022
12,450 Seeds/Lb

SELLER COPY - SEE REVERSE FOR ADDITIONAL INFORMATION

ND State Seed Department
PO Box 5257, Fargo, ND 58105
701-231-5400 FAX: 701-231-5401

NORTH DAKOTA CERTIFIED SEED BULK SALE CERTIFICATE

SERIAL # 207149

BUYER LABELER

Name CUSTOMER NAME
Address ADDRESS
City/State/Zip CITY, STATE ZIP

Bushels Sold _____ For Resale ___ Retail X Date _____ Seller _____

Certified
HARD RED SPRING WHEAT AP MURDOCK
Pure Seed: 99.99%
Other Crop: 0.00%
Inert: 0.01%
Weed Seed: 0.00%
CUSTOMER NAME
ADDRESS
CITY, STATE ZIP
Unauthorized Propagation Prohibited
PVPA 1994 Pending

Cert # R21132
Lot Number:RYD-PA20-12R
Germination: 97%
Origin: ND
Date: 2/2022
12,450 Seeds/Lb

BUYER COPY - SEE REVERSE FOR ADDITIONAL INFORMATION

Bulk Certificate Log Sheet

North Dakota Certified Seed
Bulk Certificate Log Sheet

Instructions: For each bulk certificate issued, record the buyer's name, city and the quantity of seed sold on this form. Return the completed log sheet and any unused bulk certificates no later than July 1 of the year issued.

Return to:

ND State Seed Department
PO Box 5257

Fargo, ND 58105-5257
Phone: (701) 231-5400
Fax: (701) 231-5401

Certification # C86297
Certified
FIELD PEA BLUEMOON
Lot # BM-19-814981C1

CUSTOMER NUMBER
CUSTOMER NAME

Bushels 1500.00
Date Printed 12/3/2019

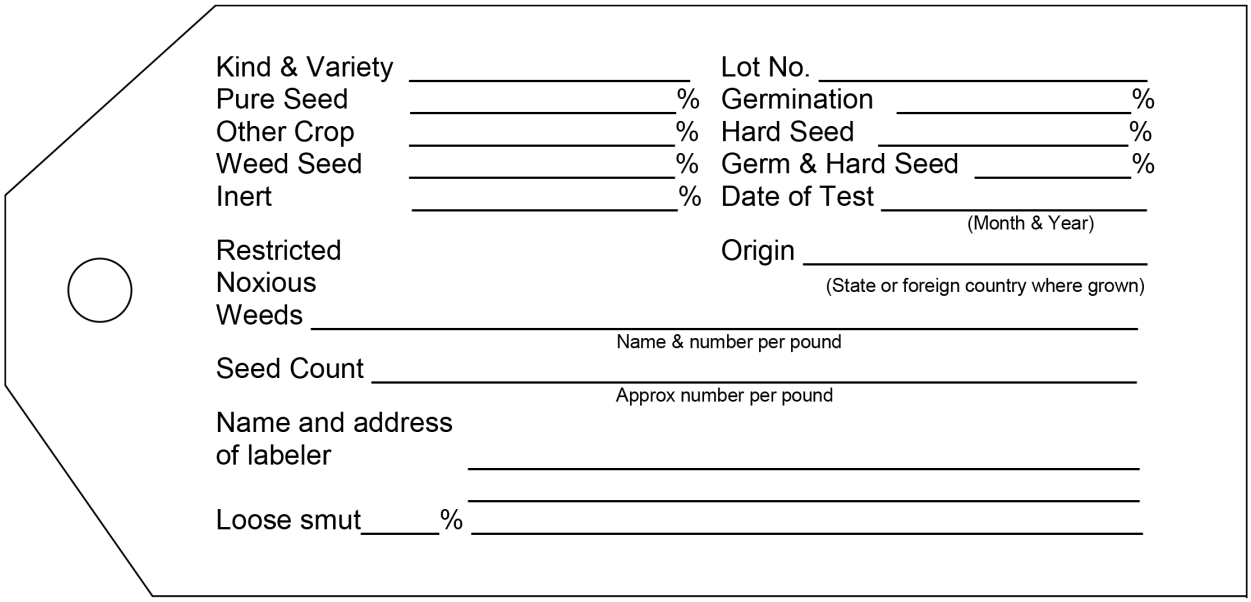
Serial Number	Buyer Name	City	Bushels Sold
188740			
188741			
188742			
188743			

Office Use Only

Reviewed by: _____

Entered by: _____

J. Example of a Common Seed Label



K. Declaration of Carryover Seed Report

DECLARATION OF CARRYOVER SEED
NORTH DAKOTA STATE SEED DEPARTMENT
SFN 12093 (7-2020)

PO Box 5257
Fargo ND 58105
Phone: 701-231-5400
Fax: 701-231-5401

This report must be returned to the North Dakota State Seed Department by September 1, in order for us to include your carryover seed in our directory.

Applicant		Date	
Address	City	State	ZIP Code
Telephone Number	Cell Phone Number	Fax Number	

In Part A, report only seed that was grown and field inspected prior to July of the current crop year and has **not** been issued bulk certificates or certified tags.

In Part B, report seed lots that have been issued bulk sales certificates or certified tags prior to July of the current year. All seed lots previously certified must have an updated germination test and new bulk sales certificates or certified tags issued before seed is eligible for sale. (see reverse)

Part A. Unconditioned seed – Eligible for final certification.

Variety	Class	Field Application Number	Bushels	Year Produced	Bin Storage Number

See reverse

Part B. Carryover certified seed - Lots that have already been certified.

Variety	Class	Certification Number	Bushels	Year Produced	Bin Storage Number

L. Certificate of Transfer

CERTIFICATE OF TRANSFER FOR SEED PENDING CERTIFICATION

NORTH DAKOTA STATE SEED DEPARTMENT
SFN 61445 (3-2018)

PO Box 5257
Fargo ND 58105
Phone: 701-231-5400
Fax: 701-231-5401

Producer/Seller			Conditioner/Purchaser		
Name			Name		
Address			Address		
City	State	ZIP Code	City	State	ZIP Code
Telephone Number			Telephone Number		
E-mail Address			E-mail Address		

Variety	Kind	Lot Identification	
Seed Class (Registered, Certified, Other)	Stage of Conditioning ☐ Unconditioned ☐ Conditioned		Field Number
Year Grown	Quantity Transferred (Bushels/Pounds)	Date of Transfer	

Seller's Declaration

I hereby declare that the seed described on this transfer was produced under my name as the applicant for field inspection and the field (s) met the minimum requirements for certification of the North Dakota State Seed Department

Signature	Date

Purchaser's Transfer Limitation

Eligibility for certification of the above described seed will be maintained only if the seed is transferred directly from producer to conditioner.

North Dakota State Seed Department Declaration

The North Dakota State Seed Department makes no guarantee of the seed documented above, and assumes no responsibility in connection therewith. The original applicant for field inspection is responsible for maintaining varietal identity and purity of seed until it leaves the applicant's possession.

Transfer approved

☐ Yes ☐ No

Signature of Authorized North Dakota State Seed Employee	Date

Producer/Seller: Submit completed form to the North Dakota State Seed Department.
Copies will be distributed by North Dakota State Seed.

M. Fees

Licenses & Permits

License or Permit	Charge
Approved Conditioner Permit	$100.00
Approved Bulk Retail Facility Permit	$100.00
Wholesale Potato Dealer's License	$200.00
Seed Sales Permit	No Charge

Field Seeds Certification

Note: Fees listed below do not include fees for laboratory testing.

Field Inspection	Cost
Single Inspection	$2.50 per acre
Two Inspections	$3.50 per acre
Three Inspections	$4.50 per acre

Final Certification	Cost
Bushel Fee	$0.07 per bushel
Lot Fee	$10.00 per lot
Tag Fee	$0.06 per tag
Bulk Certificates	$0.25 per certificate
Minimum Fee	$10.00 per lot

Plain White Tags	Cost
Lot Fee	$10.00 per lot
Tag Fee	$0.10 per tag

Labeling Fees	Cost
Small Grains & Flax	$0.012 per bushel
Beans & Peas	$0.0004 per pound
Other Agricultural Seed - Bulk or Totes	$0.0006 per pound
Other Agricultural Seed - Containers up to 160 pounds	$0.0006 per container

1313 18th St N
PO Box 5257
Fargo, ND 58105-5257
Phone: (701) 231-5400
Fax: (701) 231-5401
www.ndseed.com

Revised: 10/01/2021

Seed Lab Testing Services

Group 1	Group 2	Group 3	Group 4	Group 5	Group 6	Group 7	Group 8
Alfalfa	Chickpea	Canola	Blanketflower	Bluestems	Wheatgrasses	Switchgrass	Green Needlegrass
Buckwheat	Corn	Crambe	Bluegrass	Gramas	Wildryes		Needle & Thread
Cereals	Field Bean	Mustard	Bromegrasses	Indiangrass			
Clovers	Field Pea	Sugarbeet	Coneflower				
Flax	Lentil	Turnip	Crested Wheatgrass				
Hemp	Safflower		Crownvetch				
Millet	Soybean		False/Maximillian Sunflower				
Radish	Sunflower		Fescues				
Sorghum			Orchardgrass				
Sudangrass			Prairie Dropseed				
Trefoil			Prairie Junegrass				
Vetch			Ryegrass				
			Sand Dropseed				
			Timothy				

Cost by Group

Group	Germination	Purity
1	$22.00	$22.00
2	$30.00	$22.00
3	$25.00	$28.00
4	$30.00	$28.00
5	$40.00	$80.00
6	$25.00	$60.00
7	$35.00	$25.00
8	$50.00	$25.00

Miscellaneous Testing Charges

Accelerated Aging (Soybeans, Field Beans & Peas)	$25.00
Herbicide Trait Bioassay- Clearfield Wheat & Lentil	$90.00
Herbicide Trait Bioassay- Roundup Ready Soybean	$40.00
Seed Treatment (Lab Treated) for Germination	$5.00
Tetrazolium (TZ) Test (Group 1)	$35.00
Tetrazolium (TZ) Test (All other crops)	$45.00
Canadian Noxious (Group 1 & Group 2)	$25.00
Canadian Noxious (All other crops)	$40.00
Other Crop Check (500 grams)	$18.00
Seed Count[f]	$6.00
Test Weight	$6.00
USA/All States Noxious (All crops)	$30.00
Weed Check (500 grams)	$18.00
Crop Grading (Mustard only)	$35.00
Potassium Hydroxide (KOH) Test for White Wheat	$11.00

OECD Purity same charge as regular purity for kind being tested

[f] Seed Count added to all purity samples of: Barley, Durum, Wheat, Oat, Rye, Triticale, Chickpea, Field Bean, Field Pea, Lentil, Safflower, and Soybean

Treated Sample: Additional **$2.00** added to fee.

Mixture Fees: Sum of individual cost of each component charged for germination and purity tests. Additional separation fee of **$4.00/component** added.

Rush Fee: Double the test fee for the kind tested.

Hourly Fee: $50.00/hour added to samples that are time consuming, dirty, and/or have excessively high inert matter.

Document Fee: $10.00

Sample Size for Testing:*

Germination
The minimum size of a submitted sample shall be at least 800 seeds.

Purity
Four ounces: small-seeded grasses, white or alsike clover or seeds of similar size.

Eight ounces: sweet clover, red clover, alfalfa, grasses, millet, rape, flax or seeds of similar size.

Two pounds: cereals, soybeans or seeds of similar size.

* If sending in a sample for multiple tests, please be sure to include a large enough seed sample to complete all requested tests.

1313 18th St N
PO Box 5257
Fargo, ND 58105-5257
Phone: (701) 231-5400
Fax: (701) 231-5401
www.ndseed.com

Revised: 10/01/2021

Diagnostic Lab Testing Services

Seed Health Tests

Crop	Test	Charge	Amount of Seed to Submit per Test
Barley	Barley Stripe Mosaic Virus	$150.00	1/2 pound
Barley, Wheat	Fusarium	$145.00	1/2 pound
Barley, Wheat	Loose Smut	$70.00	1/2 pound
Canola	Blackleg	$150.00	1/2 pound
Edible Bean	Bacterial Blight (Dome Test)	$120.00	2 pounds
Edible Bean	Bean Anthracnose	$140.00	2 pounds
Field Pea	Pea Seed Borne Mosaic Virus	$220.00	1 pound
Lentil	Fungal Scan (Botrytis, Ascochyta, Anthracnose, Sclerotinia)	$180.00	1/2 pound
Pulse Crops (Field Pea, Chickpea, Lentil)	Ascochyta (500 seed)	$160.00	Lentil 1/2 pound, All other Pulse Crops 1 pound
Wheat	Vomitoxin	$75.00	1/2 pound

GMO Tests on Soybeans (submit 1 pound per sample)	
Test	**Charge**
Flow Strip Test for Glyphosate, Glufosinate, Dicamba, 2,4-D	$130.00

Variety Identification Tests		
Test	**Crop**	**Charge**
Protein Electrophoresis[1]	Wheat and Oat	$150.00
PCR[2]	Barley and Field Pea	$250.00

[1]Submit 1/2 pound per sample
[2]Submit 1 pound per sample

* If sending in a sample for multiple tests, please be sure to include a large enough seed sample to complete all requested tests.

N. Relabeling Request for Carryover Certified Seed

RELABELING REQUEST FOR CARRYOVER CERTIFIED SEED

NORTH DAKOTA STATE SEED DEPARTMENT

SFN 61450 (3-2018)

PO Box 5257
Fargo ND 58105-5257
Phone: 701-231-5400
Fax: 701-231-5401

Instructions: Submit completed form to obtain new Certified Seed Bulk Certificates or tags for carryover certified seed. A new seed sample may be required. See Manual Section 15.

Labeler Name			
Address	City	State	ZIP Code

Lot Information

Variety	Class
Lot Number	Bushels

List C# or R# (If lots have been combined, list all C# and R# making up this lot and provide new lot number below	
New Lot Number	
Number of Bulk Certs Requested	Number of Certified Tags Requested

Test Information

- Purity test is required if seed has been reconditioned or moved from bulk to bags.
- If germination test previously conducted, provide copy of Seed Analysis Report.

Tests requested ☐ Germination ☐ Purity ☐ Other	Specify Tests

Send to Name			
Address	City	State	ZIP Code

Bill To Name			
Address	City	State	ZIP Code

Signature	Date

RELABELING REQUEST FOR CARRYOVER CERTIFIED SEED

NORTH DAKOTA STATE SEED DEPARTMENT

SFN 61450 (3-2018)

PO Box 5257
Fargo ND 58105-5257
Phone: 701-231-5400
Fax: 701-231-5401

Instructions: Submit completed form to obtain new Certified Seed Bulk Certificates or tags for carryover certified seed. A new seed sample may be required. See Manual Section 15.

Labeler Name 1			
Address	City	State	ZIP Code

Lot Information

Variety 2	Class 3
Lot Number 4	Bushels 5

List C# or R# (If lots have been combined, list all C# and R# making up this lot and provide new lot number below 6	
New Lot Number 7	
Number of Bulk Certs Requested 8	Number of Certified Tags Requested 9

Test Information

- Purity test is required if seed has been reconditioned or moved from bulk to bags.
- If germination test previously conducted, provide copy of Seed Analysis Report.

10 Tests requested ☐ Germination ☐ Purity ☐ Other	Specify Tests

11 **Send to Name**			
Address	City	State	ZIP Code

12 **Bill To Name**			
Address	City	State	ZIP Code

13 Signature	Date

O. Instructions for completing the Relabeling Request for Carryover

1. Correct name and address of labeler of seed.
2. Variety
3. List the class of seed
4. Original lot number of carryover seed
5. Remaining bushels
6. Previous certification (C#) or relabel (R#) number. If combining seed lots, we recommend you have a germination test done on each lot prior to combining. The lowest germination will be used for labeling. If lots were combined prior to testing, list each certification number and the bushels associated with each.
7. Create a new lot number if seed was combined or moved to a different bin, which should include the new bin number.
8. Number of updated certificates needed or state online
9. Number of updated tags needed
10. An updated germination is needed. If seed has been reconditioned, a new purity and seed count is also required.
11. If labels are to be sent to someone other than the labeler, write their name and address.
12. If someone other than the labeler should be billed, write their name and address.
13. Sign and date

An updated germination is needed to sell carryover seed in the current season. To update your germination, send two cups of seed to NDSSD for testing. Each sample of carryover seed should be accompanied by a "Relabeling Request for Carryover Certified Seed" form which can be found on our website under Forms / Field Seed.

Acknowledgements

The North Dakota State Seed Department acknowledges the contributions of the following for the hours spent researching, writing, compiling and editing this Seed Conditioner's Manual. Without their contributions, this manual would not have been completed in such a manner.

Ordean Jacobson…Field, Facility and Regulatory Inspector

Kyle Bednar…….. Field, Seed Inspector II

Bottineau Farmers Elevator Seed Plant, Bottineau

Custom Grain Cleaning, Langdon

Gartner Seed Farm, Mandan

Hamre Seed Cleaning, Inc, Starkweather

Harlow Coop Elevator and Seed Company, Leeds

Howe Seed Farm, Casselton

Miller Grain and Cleaning Service, Donnybrook

Missouri West Seed Conditioning, Dickinson

NDSU Agronomy Seed Farm, Casselton

NDSU Carrington Research Extension Center, Carrington

Northern Tier Seed Company, LLC, Thompson

O'Toole Farm Seed Company, Crystal

Peltz Grain Cleaning, Bismarck

Souris River Coop Seed Plant, Newburg

Sunprairie Grain – Main Plant, Minot

Birdsall Grain and Seed, LLC, Berthold

Jim Swanson, Fargo