

Grass and Legume Advisory Committee

Minutes of the Meeting December 10th, 2014 1:00 PMLa Sells Stewart Center, OSU Corvallis, OR

Members in attendance: MaryBeth Menard, Doug Pickles, Jim Parsons, Bruce McKee, Kevin Loe, Roger Ruckert, Gary Crossan, Larry Dean, Brian Parker, Joe McAlhany Jr., Dustin Withee, Reed Barker, Nicole Anderson, Randy Black, Jay Noller, Dan Curry, Dennis Lundeen, Adriel Garay, Andy Altishin.

Others in attendance: Sandy Smith, Russ Karow, Rachel Hankins, Barry Schrupf, Jeff McMorran, Sabry Elias, Dan Hemshorn, Roeland Kapsenberg, Nik Nilson, Kate Hartnell, Charley Wolff, Doug King, Bryan Ostlund, Mike Coon, Phillip Herb.

1. Call to Order, Introduction.

MaryBeth M. called meeting to order at 1:05 pm. Introductions proceeded

2. Changes/additions to agenda. Switch items 5-6 for presentation.

3. Approval of minutes from the 2013 meeting.

A motion was passed (Dean, Loe) to accept the minutes as presented from the 2013 meeting.

4. **Item 1 – Sunflower Isolation Increase from 1 mile to 1.25 miles (Fig. GLAC 1)**

Andy A. presented to the group that an agronomist for one of the sunflower seed companies had requested that the GLAC review and increase the isolation distance for Certified hybrid sunflower production from 1 mile, the current standard, to 1.25 miles, primarily to be in sync with Washington and California standards for this production. Andy A. then introduced Nic Nilson, an agronomist from Pioneer, to further discuss with the group any concerns and the reasons for this increase. A discussion occurred about sunflower production, standards from the other states and what areas of the states would feel the effects of the isolation increase and how the growers of the areas would be impacted. Nik N. from Pioneer explained that this was already company policy, thus many of the growers were already operating under these guidelines. Nik N. also answered other questions relating to the discussion. **A motion passed (Loe, Parker) to increase the isolation distance from other fields of sunflower from 1 to 1.25 miles.**

5. Item 2 – Hemp Standards (Fig. GLAC 2)

Sandy S. presented that industrial hemp standards for Certified seed production in Oregon had been requested and explained about the sources he used to create the proposed standards. Russ K. provided more background about the need to pass an industrial hemp production standard at the state level and how Oregon is viewing the differences between industrial hemp and marijuana. Randy B. gave more information about the legalities of production and what products are allowed and how the processes will work. He advised that more information is posted on the ODA website. Nicole A. asked questions about footnote 4 for Orobanchae. Sandy S. gave information about why this has been included and how potential inspections would be conducted. Mike C. asked about what the potential cross pollinators are and how would volunteers be handled. Sandy S. gave more information about hemp production, its pollination habits, planting processes and some crop physiology. Russ K. provided more information about previous experience in other areas, primarily Canada, where industrial hemp production is occurring. He explained that experience in Oregon is limited to literary reviews. Russ K. noted that there was a limited chance of this being produced in Oregon. After some discussion and more concerns being raised about how to appropriately handle this production, MaryBeth asked if there was an interest for a motion for this item. More discussion occurred and Dennis L. asked Russ K. if the state was going to require certification for action. Russ K. was unsure if the state would eventually require certification to have standards. MaryBeth M. asked for a motion. **A motion (Ruckert, Loe) to table this item for the year and to revisit the issue at the 2015 GLAC meeting was passed.**

6. Item 3 – Radish Standards (Fig. GLAC 3)

Sandy S. gave the background for the standard correction for the isolation requirement. The current standard lists isolation requirements for “Fields of self pollinated varieties.” Sandy explained that the indications are that there are no fields of self-pollinating varieties and such this portion of the isolation requirements needs to be removed. **A motion passed (Dean, Parker) to accept the standard changes as proposed.**

7. **Item 4 – Buckwheat Standards** (Fig. GLAC 4)

Dennis L. provided background information for this standard proposal. There are some redundancies in the current standard that need to be cleaned up. Also, there is some uncertainty in the standard if a seedling inspection is needed; other states have no seedling requirement. After some discussion, it was decided that the current standard was copied from an older small grains standard that contained the same statement. Also, with such limited production, it was decided that a seedling would not be necessary to determine off types. If production increases in future years and rotations back into previous buckwheat fields begin to occur, the group felt that a seedling inspection could be reviewed again at that time and added to the current standards. Roger R. asked for confirmation of the crop growth time. Adriel G. asked about how you would confirm off types. Dennis L. gave information about how the inspection process works and how off types in buckwheat would be quantified. Adriel G. further explained that in the seed standards, “other varieties maximum” and “total other crop including other varieties, maximum” would be difficult if not impossible to visibly tell a difference in the seed lab without a grow out test or other type of test. **A motion passed (Parker, Barker) to approve the proposed standards as written.**

Brian P. asked about why the “other varieties” sections would be included in the seed standards. It was believed that this was a carry over from the standard that this was adopted from. **A motion passed (Parker, Dean) to amend the standards to remove “other crop maximum” and “total other crop including other varieties, maximum.”**

8. **Item 5 – Land History Requirements for Festulolium**

Dan Hemshorn provided a handout included below (Fig. GLAC 5). It is background information about festulolium in general. Dennis L. introduced Roeland K. to present information to the group. Roeland K. then proceeded with a PowerPoint presentation about Festulolium and how the breeding traditionally bred for obvious tall fescue types and obvious annual ryegrass types. Terry B. asked about the breeding process and the potential for these to cross. Barry S. asked if there should be a change in the tall fescue types names to differentiate from one another.

Reed B. gave information about the taxonomy of the crops and the genetics to how this crop crosses. He also commented that 2x/4x within the same species will freely cross. There is some potential for 4x and 6x to cross.

Roeland K. asked for ploidy to be described in the variety description and have the description of ploidy be used to determine the crop history and

isolation requirements. A discussion continued afterwards with the main concerns focused on the likelihood of cross-pollination. Brian P. asked Reed B. if there would be a problem with the 6x cross with the 2x/4x, such as like a tall fescue would be an issue on PR in in seed stock. Reed B. commented that it would be possible though unlikely especially at current isolation requirements.

Dennis L. commented on the urgency due to crops already in the ground. Dennis L. provided an option for a sub-committee to further look into adequate solutions. **A motion was passed (Parker, Crossan) to set up a sub-committee to further examine this situation.**

Brian P. and Joe M. volunteered to serve on the sub committee. Adriel G. asked for OSU Seed Lab representation. Dennis L. volunteered some representatives from OSCS to assist the sub committee. Jerome Magnussen was volunteered by Larry D. This sub committee will review the proposed options in greater detail, create the appropriate standards and present these proposed standards to the GLAC in follow up meeting, date to be determined, prior to the Certification Board Meeting in February.

At this point, due to needing to leave early, Jay Noller introduced himself as the new department head and gave an oversight of programs and referenced the yellow sheet included below (Fig. GLAC 9) along with other information about programs and budgets relating to the department.

9. Item 6 – Festulolium Standards (Fig. GLAC 6)

Andy A. presented the proposed changes, adding Festulolium to the history requirements and isolation requirements and spelling out the differences in the changes.

The question was raised if the sub-committee could handle this, but comments were made that this would rectify some of history requirements prior to the sub-committee review.

A motion was passed (Dean, McAlhany) to amend the standards as presented.

***SUB NOTE* These changes are reflected in the proposed standards that came out from the Supplemental GLAC Meeting included below.**

10. Item 7 - Early Tagging Program Update

Jeff M. presented the information on the early tagging program. He referenced a handout that was provided to group (Fig. GLAC 7). Initial problems were explained and more current results were described. He

described that over the 3-year period some lots are having problems with ploidy. Dennis L. gave more information about the problems with the results and how that impacts the industry. Phillip H. gave results from some of his experiences with this program. Larry D. gave an industry view of markets, especially for foreign markets and how to meet industry standards.

Reed B. suggested that DNA testing could be used to speed up the process and provide results. Further discussions continued and more questions were raised about the program. Phillip H. and Jeff M. gave information about how the program works.

A motion was passed (Parker, McAlhany) to continue the Early Tagging Program as it is currently operating.

11. Item 8 - OECD Ploidy Update

Rachel H. presented an update/summary from OECD ploidy since 2011. Some discussion followed. Concerns were raised about the ploidy levels being sent out as well as the consistency of the ploidy of the seed stock coming in. No action taken.

12. Item 9 - Option for Ploidy Test for Final Determination When Planting Diploid Annual Ryegrass After Tetraploid Perennial Ryegrass

MaryBeth M. needed to leave and vice-chair Brian P. took over duties of chair for remainder of the meeting.

Dennis L. explained that he had talked with a grower who had raised this question. Brian P. declared that he would not attempt this but asked if a grower should be allowed to attempt this? Jim P. presented some situations where this might occur.

Discussions continued and it was determined by the group that Oregon Seed Certification Service will observe results from the field production that is attempting this. The GLAC would need to see more conclusive evidence that this can successfully be managed prior to voting on a rule change.

13. Item 10 – Potential for Establishing Crop History for Annual Ryegrass

Bryan Ostlund, representing the ryegrass commission, came to discuss the options to create a program, similar to the Establishing Crop History

Program for perennial ryegrass, but in this case for annual ryegrass. He explained that the ryegrass commission is seeking ways to increase the ability to market Certified annual ryegrass seed to some of the EU countries. There is a need in market place for industry and growers to produce more AR. Due to the current land history requirements and areas of the state where AR is produced, they are seeking an alternative management program to reduce the time period for rotating previously uncertified fields of AR into Certified fields of production AR.

Brian O. wanted to clarify that a request is being made to explore another program for reducing field history while still being able to produce high quality seeds.

Jeff M. handed out a paper explaining the guidelines to which this program could exist (Fig. GLAC 8).

Bryan O. emphasized the point that some of this market may shift out of Oregon if the production does not increase. He would like a proposal to be voted on for the 2015 Certification Board Meeting. It was decided that a sub committee would review these options. An email will be sent to notify those about the meeting on Dec. 19th. Resolutions from that meeting will be presented to the GLAC group and options will be further reviewed prior to the Certification Board Meeting.

14. Item 11 – ODA official weed lists and proposed changes

Barry S. provided information to the group about the update to the weed program. Information only. No action needed. The documents for this topic can be found in the 2014 Cereals Advisory Committee Minutes in the Certification Board Notebook or on the web at:

<http://seedcert.oregonstate.edu/sites/default/files/advcom/cereal/cerealadvminutes14.pdf>

15. Other business:

No other business to report.

16. Reports:

- College of Agriculture/Crop and Soil Science Department (Jay Noller)

See above between items 8 and 9.

- OSU Seed Services

Dan C. presented handout (Fig. GLAC 10) for the group to read. He mentioned a rule proposal that the seed lab is looking into to expedite the testing process while maintaining the quality standard. This involves counting the double florets with the singles rather than separate them but continue with breaking up the multiple florets. The net effect is that doubles would be considered pure seed and counted as such. Adriel G. provided additional information as to how this would be handled.

- Oregon Seed Certification Service

Dennis L. provided information sheet about certification statistics (Fig. GLAC 11).

- Oregon Department of Agriculture

Randy B. gave a quick update on industry problems and provided information about education opportunities that OSA is working on.

17. Elect 2015 Vice-chairman from OSA representatives who would then become committee chair in 2016

MaryBeth Menard volunteered to be the Vice-chairman for 2015 that would then become the Chair in 2016. Bruce M. motioned Mary Beth for this position. Roger R. 2nd the motion. All were in favor.

18. Appoint GLAC representative to attend upcoming Certification Board meeting and present GLAC recommendations

Brian Parker volunteered. Gary C. 2nd the nomination. All were in favor of Brian representing the GLAC at the Certification Board meeting in February and presenting the action items from the GLAC to the board.

19. Select date and time of next annual meeting

The same time of day and the Thursday after Oregon Seed Growers League in 2015 was suggested for the 2015 GLAC meeting. Kevin L. motioned to adjourn. Roger R. 2nd the motion. All were in favor and thus the meeting adjourned.

Fig. GLAC 1



CERTIFICATION STANDARDS
HYBRID SUNFLOWER
(Helianthus annuus)
Proposed February 10, 2015

Certification Standards: The general standards for seed certification found in the Oregon Seed Certification Service Handbook (OSCS) are basic to all crops, and together with the following specific regulations constitute the certified Sunflower standards.

Definitions:

- a. A line: line or population which is male sterile.
- b. B line: male fertile line or population capable of maintaining male sterility.
- c. Restorer line: line or population used as male parent that has the capability of restoring fertility to male sterile lines/populations when crossed to them.
- d. Self-incompatible line: male fertile line or population incapable of self-pollination due to self-incompatibility.
- e. Self-compatible line: male fertile line or population that is capable of self-pollination.

Seed Requirements: Breeder or Foundation seed must be used to establish all fields of hybrid Sunflower for certification. The direction of the cross must remain unchanged throughout the certification program unless adequate data is provided to the certification agency to show that no change in variety performance results from the reversal of parentage.

Varieties Certified: Varieties and classes eligible for planting may be found in the OSCS Handbook.

Field History: Land must not have grown or been seeded to sunflowers during the previous year. Hybrid sunflowers must be planted in distinct rows. ~~Exceptions must be approved by the Seed Certification Office prior to planting.~~

Field Inspections: Includes all parent lines. At least two field inspections shall be made, one during the very early bloom stage and the second during full bloom. At least 50% of the male parent plants must be flowering and producing pollen when the female parent is in full bloom. All off-type plants should be removed before any pollination has taken place. Volunteer contaminating plants may be cause for rejection of the seed field. The field application must be submitted by March 15th, or within 30 days of planting if planted on or after March 1st.

Isolation¹: Fields must be isolated from other sunflower fields by a minimum of 1.25 miles. Isolation between fields of different classes but of the same variety must be adequate to prevent mixtures. Flowering plants of other varieties, hybrids, strains, volunteer sunflowers, non-certified crops of the same variety, hybrid or wild annual *Helianthus* species within that isolation distance must not exceed 1:5000 plants based on the size of the production field.

Weeds: Fields for certification should be free of Prohibited noxious weeds and ~~Restricted~~ noxious weeds that are not easily separated during conditioning.

Field Standards: Varieties cannot always be differentiated at field inspection. When differences can be distinguished, the maximum mixture of other varieties permitted in the crop inspected is shown in the table below.

Category of Impurity	Maximum Plants Permitted in Female Seed Parent		Maximum Plants Permitted in Pollinating Parent
	Foundation	Certified	
Off-types ²	1:2000	1:2000	1:2000
Pollen shedding female plants	1:1000	4:1000	-----
Total (including above)	1:1000	4:1000	1:2000

Hybridity:

- a. Percent hybrid seed shall not be less than 75%.
- b. Percent hybrid seed shall be determined by a method of acceptable accuracy that can be reproduced by OSCS.
- c. A declaration stating the minimum percent hybrid seed and the method of determining the hybridity must be submitted by the applicant to OSCS prior to final certification.

(continued)

¹ A normal plant population in a production field is 20,000 plants per acre. A 1:5000 tolerance would be 4 plants per acre. Therefore a 50-acre field would have a maximum tolerance of 200 flowering other sunflower plants within the isolation distance of 1.25 miles.

² Includes all off-types other than A-line pollen shedders.

Fig. GLAC 2



Oregon Seed Certification Service

<http://seedcert.oregonstate.edu>

Extension Service

CERTIFICATION STANDARDS
INDUSTRIAL HEMP
(Cannabis sativa L.)
 GLAC Proposal - December 2014

Certification Standards: The general standards for seed certification found in the Oregon Seed Certification Service (OSCS) Handbook are basic to all crops and, together with the following specific regulations, constitute the certified Industrial Hemp standards.

Varieties Certified: Only varieties approved for production by Federal or local regulatory authorities may be eligible for seed certification. Varieties may represent the following types¹: Monoecious, with male and female flowers on the same plant; Dioecious, with male and female flowers on separate plants; and (unisexual female) Hybrids, with sterile male and fertile female flowers on the same plant.

Field History: To produce Foundation and Registered seed, land must not have grown or been seeded to Hemp during the previous five years, for Certified seed three years, unless the previous crop was of the same variety and certified. Hemp must be planted in distinct rows. OSCS must approve exceptions prior to planting.

Field Inspections: Three inspections may be required depending on the variety type and production generation; at least two inspections are required prior to seed harvest. The first inspection occurs before female (pistillate) flowers of the crop are receptive and after the formation of male (staminate) flowers, preferably before pollen is shed; the second inspection occurs during the receptive stage of female plants, normally within 3 weeks after first inspection; the third inspection occurs when off-type female flowers can be identified. The field application must be submitted within 60 days of planting, and a seed crop application must be submitted by April 15 of each year in which seed is produced.

Field Standards:

Class of Seed Produced	Variety Type	Maximum Number Of "Too Male" Monoecious Plants ²	Maximum Number Of Dioecious Male Plants Shedding Pollen ^{2,3}	Maximum Number Of Other Impurities ²	Number Of Inspections	Isolation Distance Required	
						From Different Varieties Or Types	From Lower Certified Class Of Same Variety
Foundation ⁴	Monoecious	500	1	3	3	3 miles	2 miles
	Dioecious	--	--	3	3		
Registered ⁴	Monoecious	1000 (10%)	2	10	3	3 miles	1 mile
	Dioecious	--	--	10	2		
Certified ⁴	Monoecious	--	100	10	2	1 mile	--
	Dioecious	--	--	10	2		
	Hybrid	--	100	10	2		

Seed Standards: (Minimum Sample Size – 1 Pound)

Factor	Foundation (White tag)	Registered (Purple tag)	Certified (Blue tag)
Pure seed, minimum	98.00%	98.00%	98.00%
Other crops, maximum	0.10%	0.25%	0.50%
Inert matter, maximum	2.00%	2.00%	2.00%
Weed seed ⁵ , maximum	0.10%	0.10%	0.25%
Germination	85%	85%	85%

Special note: Growers may be required by Federal or local regulations to obtain THC test results from a recognized laboratory verifying that the THC content of their Industrial Hemp crop complies with applicable regulations. Growers may be required to submit these results to OSCS to complete seed certification.

¹ Although traditionally a crop with a Dioecious plant type, many Monoecious varieties of hemp have been developed. Hemp is sexually polymorphic and often produces many different ratios of intersexual plant types that can increase roguing requirements. Variety descriptions normally define these ratios.

² Maximum impurities allowed per 10,000 plants; applied as an average of six counts involving at least 10,000 plants each. Includes off-types or other varieties.

³ If Dioecious male plants start flowering before removal from field, all plants around them should be destroyed for a radius of 10 feet for Foundation and 7 feet for Registered seed crops.

⁴ An OSU Seed Lab Orobanche exam is required if Small broomrape is found in a certification field inspection. Two samples are to be submitted in separate containers: one for the Orobanche exam, the other for standard purity and viability testing.

⁵ None of the prohibited weeds listed in section V in the OSCS Handbook, nor any docks, sheep sorrel or St. Johnswort allowed in any class of seed.

Fig. GLAC 3



CERTIFICATION STANDARDS
RADISH
(Raphanus sativus)
 GLAC Proposal – December 2014

Certification Standards: The general standards for seed certification found in the Oregon Seed Certification Service Handbook (OSCS) are basic to all crops, and together with the following specific regulations constitute the certified Radish standards.

Varieties Certified: Varieties and classes eligible for planting may be found in the OSCS Handbook.

Field History: Land must not have grown or been seeded to any cruciferous crops during the previous five years. Exception: the same variety and generation may be planted with a three-year time interval from previous harvest. Radish must be planted in distinct rows. Exceptions must be approved by the Seed Certification Office prior to planting.

Field Inspections: Include two inspections, a seedling and seed crop inspection. The seedling and crop application must be submitted by April 15. If planted after April 15 applications must be submitted within 30 days after planting. Crop inspection will be made during the early flowering stage.

Field Standards:

Class of seed produced	Maximum other varieties permitted ¹
Foundation	None
Registered	1:1000
Certified	1:500

Isolation Requirements²

Class	Field of cross-pollinated varieties	Fields of self-pollinated varieties
Foundation	1,320 feet	660 feet
Registered	1,320 feet	660 feet
Certified	660 feet	330 feet

Seed Standards: (Minimum Sample Size – 1/2 Pound)

Factor	Foundation (White tag)	Registered (Purple tag)	Certified (Blue tag)
Pure seed, minimum	99.00%	99.00%	99.00%
Other crop, maximum	0.01%	0.10%	0.25%
Inert matter, maximum	1.00%	1.00%	1.00%
Weed seed ³ maximum	0.01%	0.01%	0.25%
Restricted weeds ^{4,5}	one	one	two
Germination, minimum	85%	85%	85%

¹ Other varieties shall be considered to include off-type plants and plants that can be differentiated from the variety being inspected. Volunteer plants may be cause for rejection or reclassification of a seed field.

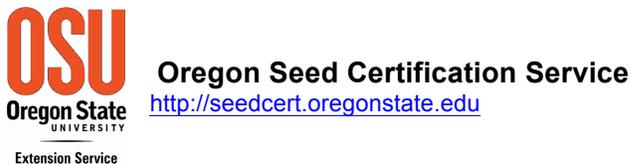
² These isolation distances are minimum and must be met in all cases.

³ None of the prohibited noxious weeds listed in Section V, General Standards in the OSCS Handbook, nor any Bedstraw, Docks, Sheep sorrel, or St. Johnswort.

⁴ Restricted weeds are defined as Brassica nigra, Brassica juncea, Raphanus raphanistrum, and Sinapis arvensis.

⁵ Number of seeds allowed in a noxious weed exam.

Fig. GLAC 4



CERTIFICATION STANDARDS
BUCKWHEAT
(*Fagopyrum esculentum*)
Proposed February 10, 2015

Certification Standards: The general standards for seed certification found in the Oregon Seed Certification Service Handbook (OSCS) are basic to all crops, and together with the following specific regulations constitute the certified Buckwheat standards.

Varieties Certified: Varieties and classes eligible for planting may be found in the OSCS Handbook.

Field History: Land must not have grown or been seeded to Buckwheat during the previous year, unless of the same variety and certified. Buckwheat must be planted in distinct rows. Exceptions must be approved by the Seed Certification Office prior to planting.

Field Inspection: One inspection will be made at the time the crop is in full bloom stage. Applications for certification must be submitted by June 15 or within 15 days of planting.

Field Standards:

Class of seed produced	Maximum other varieties permitted ¹	Isolation Requirements ² (Any size field)
Foundation	0.01%	1320 ft.
Registered	0.02%	660 ft.
Certified	0.05%	660 ft.

Seed Standards: (Minimum Sample Size – 2 Pounds)

Factor	Foundation (White tag)	Registered (Purple tag)	Certified (Blue Tag)
Pure seed, minimum	99.00%	99.00%	99.00%
Other crop, maximum	0.05%	0.15%	0.30%
Inert matter, maximum	1.00%	1.00%	1.00%
Weed seed ³ , maximum	0.10%	0.25%	0.50%
Weed seed, GROUP A ⁴ , singly or combined	None	4/lb.	4/lb.
Germination, minimum	85%	85%	85%

¹Includes off-type plants.

² See section IV D, General Standards in the OSCS Handbook.

³None of the prohibited weeds listed in Section V, General Standards in the OSCS Handbook nor any St. Johnswort allowed in any class of seed.

⁴GROUP A – Buckhorn plantain, Docks, Sheep sorrel and Bedstraw.

Fig. GLAC 5

- DLF Forage Seeds White Paper -

Festulolium

Hybrid Grass

Festulolium is the name for a hybrid forage grass developed by crossing Meadow Fescue (*Festuca pratense*) or Tall Fescue (*Festuca arundinacea*) with perennial ryegrass (*Lolium perenne*) or Italian ryegrass (*Lolium multiflorum*). This enables combining the best properties of the two types of grass. The resulting hybrids have been classified as:

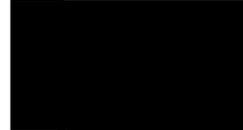
Maternal parent	Paternal parent	Hybrid progeny
<i>Festuca arundinacea</i>	<i>Lolium multiflorum</i>	<i>Festulolium pabulare</i>
<i>Festuca arundinacea</i>	<i>Lolium perenne</i>	<i>Festulolium holmbergii</i>
<i>Festuca pratensis</i>	<i>Lolium multiflorum</i>	<i>Festulolium braunii</i>
<i>Festuca pratensis</i>	<i>Lolium perenne</i>	<i>Festulolium loliaeum</i>

The fescues contribute qualities such as high dry matter yield, resistance to cold, drought tolerance and persistence, while ryegrass is characterized by rapid establishment, good spring growth, good digestibility, sugar content and palatability. The individual festulolium varieties contain various combinations of these qualities, but all are substantially higher yielding than their parent lines. While festuloliums have been around for many years, the true potential had never been pursued in earnest. DLF has developed a substantial breeding program in hybrid festulolium that has produced a unique range of hybrid festulolium varieties. After initial hybridization and subsequent selection on the hybrid

progeny or back crossing the hybrid progeny to its parental lines, a wide range of varieties with varying characteristics and phenotypes has been created. They are classified according to their degree of phenotypical similarity to the original parents, not to their genotype heritage. One can regard them as high yielding fescues with improved forage quality or as high yielding, more persistent ryegrasses.

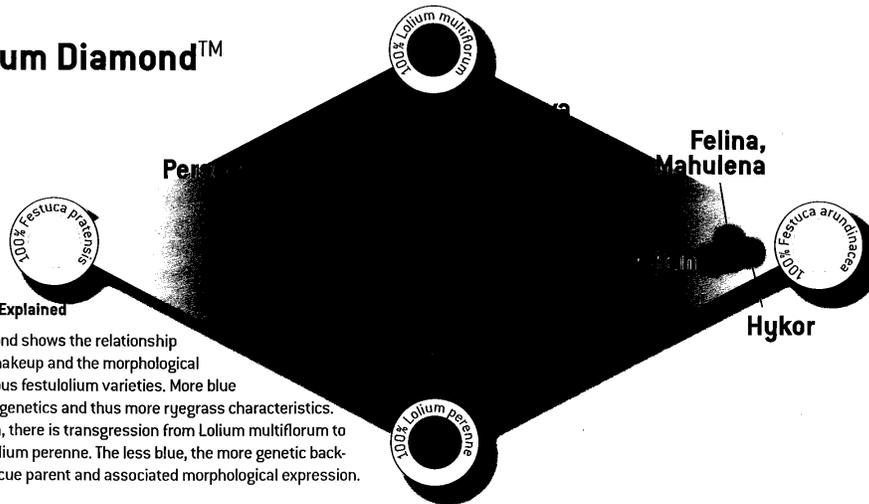
This genotype make-up of festuloliums can be made visual. The chromosomes of festulolium can be isolated and then colored to show the parental origin of chromosome sections. It provides a very visual effect of the hybridization between the two species.

Photo right: Chromosomes of a festulolium, colored to show the parental DNA in the hybrid. Green = Ryegrass DNA Red = Fescue DNA



Via a newly developed marker analysis, Diversity Array Technology (DArT), the actual percentage of parental DNA can be determined and the characteristics of a newly made hybrid can be fairly well predicted. This makes the selection process after initial hybridization more efficient and much shorter.

Festulolium Diamond™



Festulolium Diamond Explained

The Festulolium Diamond shows the relationship between the genetic makeup and the morphological expression of the various festulolium varieties. More blue means more ryegrass genetics and thus more ryegrass characteristics. Within the blue section, there is transgression from *Lolium multiflorum* to *Lolium perenne* hybrid to *Lolium perenne*. The less blue, the more genetic background from either fescue parent and associated morphological expression.

DLF International Seeds . PO Box 229 Halsey . OR 97348 USA
tel: 541.369.2251 . toll free: 800.445.2251 . e-mail: : info@dlfis.com

Fig. GLAC 6



CERTIFICATION STANDARDS
FESTULOLIUM
(Festulolium spp.)
 GLAC proposed Dec. 10, 2014

Certification Standards: The general standards for seed certification found in the Oregon Seed Certification Service Handbook (OSCS) are basic to all crops, and together with the following specific regulations constitute the certified Festulolium standards.

Varieties Certified: Varieties and classes eligible for planting may be found in the OSCS Handbook.

Field History: To produce Foundation seed, land must not have grown or been seeded to Festulolium during the previous five years. To produce Registered and Certified seed, land must not have been grown or seeded to Festulolium during the previous crop year, unless the previous crop was of the same variety, class and certified.

In addition, for Foundation production, land must not have grown or been seeded to any ryegrass, Tall fescue or Meadow fescue during the previous five years. For the production of Registered or Certified seed, land must not have grown or been seeded to Annual or Intermediate ryegrass for five years; or Perennial ryegrass, Tall fescue and Meadow fescue for two years. A Modified Land History option may apply (see section IV.C.2). Festulolium must be planted in distinct rows. OSCS must approve exceptions prior to planting.

Inspection: A seedling and a seed crop inspection. The seedling application must be submitted within 60 days of planting, and a seed crop application must be submitted by April 15 of each year in which seed is produced.

Field Standards:

Class of seed produced	Maximum other varieties permitted	Isolation Requirements ¹	
		Less than 5 acres	More than 5 acres
Foundation	None	1320 ft.	900 ft.
Registered	0.5%	660 ft.	300 ft.
Certified	1.0%	330 ft.	165 ft.

Seed Standards: (Minimum Sample Size – 1/2 pound)

Factor	Foundation (White Tag)	Registered (Purple Tag)	Certified (Blue Tag)
Pure seed, minimum	98.00%	98.00%	98.00%
Other crops, maximum	0.10%	0.10%	0.50%
Inert matter, maximum	2.00%	2.00%	2.00%
Weed seed ² , maximum	0.15%	0.15%	0.50%
Weed seed, Group A ³ , singly or combined	None	45/lb.	45/lb.
Germination	75%	75%	75%

¹This distance must be maintained from all Festulolium, Tall fescue, Meadow fescue and ryegrass of the same ploidy level. Isolation between diploid and tetraploid Festuloliums shall be no less than 15 feet. See section IV, D in the OSCS Handbook. See Section IV D, General Standards in the OSCS Handbook.

²None of the prohibited weeds listed in Section V, General Standards in the OSCS Handbook, nor any St. Johnswort allowed in any class of seed.

³GROUP A -- Buckhorn plantain, Docks, Sheep sorrel, and Bedstraw

Fig. GLAC 7

OECD-ARG ETA Program Yearly Summary

Fluorescence Data 2014

Count=
 Number OOC *1
 lots = 100%
 lots =99%
 lots =98%
 range
 Number of **fields** involved:
 No. fields with OOC lots:

Ploidy Data 2014

Count=
 Number OOC *2
 range *3
 Number of **fields** involved:
 No. fields with OOC lots:

	2014	2013	2012	2011
lots	356	482	541	
(by lot)	12 3.4%	11 2.3%	14 2.6%	0.0%
lots	56	118	64	
lots	175	216	210	
lots	113	93	253	
%	100 - 96	100-96	100-96	
range				
Number of fields involved:	30	47	50	26
No. fields with OOC lots:	7	7	7	0

	2014	2013	2012	2011
lots	200	355	264	423
(by lot)	2 1.0%	17 4.8%	10 3.8%	18 5.8%
%	100 - 97	100-60	100-91	
range *3				
Number of fields involved:	19	29	32	26
No. fields with OOC lots:	2 *4	6	10 *5	4

- *1 - out of compliance (<98%)
- *2 - out of compliance (<95%)
- *3 - Excluding Diploid varieties
- *4 - these were both diploid fields that had been tested for ploidy. All tetraploid fields passed
- *5 - Based on 95% criteria of today; an additional 10 fields had OOC lots based on 98% criteria used in 2012

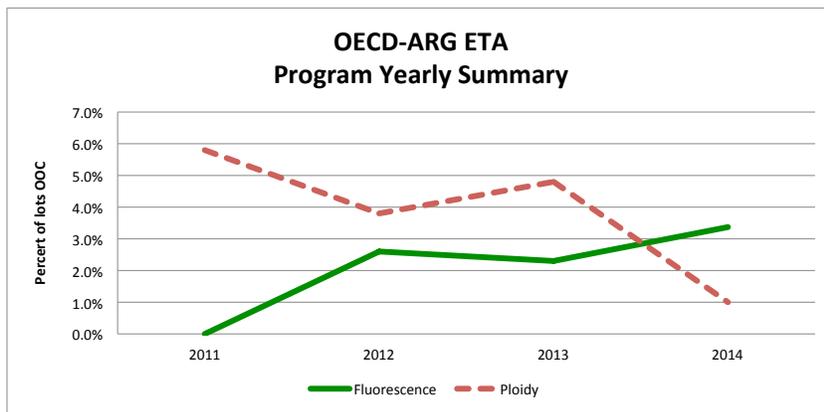


Fig. GLAC 7 continued

OECD-ARG ETA: Florescence 2014 - Lot variability

Each block = one field, each cell = florescence results of one lot from the field

100-99 =passing
 98 =border line
 97 or less = not passing

98	99	99	99	100	99	98	98	100
99	99	99	99	100	98	98	98	99
99	100	99	99	100	99	100	99	99
98			98	100	98	99		99
99			99	99	98	98		99
98						99		98
98						99		98
97		99	99	99		98		100
99		98	100	100		99		
						98		

99	100	99	99	98	99	100	98	98
99	99	98	99	99	99	99	98	99
99	99	98	99	99	100	98	99	98
99	98	98	99	98	98	99	98	96
100	100	98	99	99	98	98	98	99
99	100		99	98	100	98	99	98
99	100		99	98	98	99	98	99
99	99		99	97	98	98	98	99
99	98		98	99	99	98	99	98
99	99		98		98	100	98	98
100					98	99	97	99
99						98	99	99

						98		
99	98	99	99	99	98	100	100	99
98	100	98	98	98	100	99	99	98
100	99	100	100	100	99	99	99	99
99	99	99	99	99	99	98	98	98
99	98	99	99	99	98	98	98	99
99	99	99	99	99	99	98	98	99
99	98	99	99	99	98	96	96	97
99	96	99	99	99	99	96	97	97
100	97	100	100	100	97	98	98	98
100	98	100	100	100	98	99	99	99
99	99	99	99	99	99	98	98	99
99	98	99	99	99	98	99	99	99
100	99	100	100	100	99	99	99	99
100	99	100	100	100	99	98	98	98
100	98	100	100	100	98	98	98	98
99	98	99	99	99	98	98	98	98
99	98	99	99	99	98	98	98	98
99	98	99	99	99	98	98	98	98
99	98	99	99	99	98	99	99	99
99	99	99	99	99	99	99	99	99
100	99	100	100	100	99	99	99	99
98	99	98	98	98	99	99	99	99
100	99	100	100	100	99	98		

Fig. GLAC 8

OREGON SEED CERTIFICATION SERVICE
ESTABLISHING CROP HISTORY (ECH) FOR ANNUAL RYEGRASS FIELDS
CERTIFIED GENERATION ONLY

Allows for the continuous production of a single variety of ARG from uncertified to certified production without the required break from ARG.

Background: There has been a large increased demand for acres of land eligible for certified ARG in recent years. One potential source of these acres would be land that is currently producing uncertified ARG of the desired variety, however there are no options for continuous ARG production from uncertified to certified without a break in ARG production using the current rules.

Currently the accepted options are as follows:

1. 5 years out ARG (no restrictions); or
2. 3 years out of ARG with a Modified Land History (i.e. using a proven method to reduce the seed bank of ARG from the previous crop); or
3. 2 years out an ARG if intervening crops are no-tilled.

The Federal field history rule (for all grass seed crops) require a minimum of 1 year out, however for Perennial Ryegrass a program has been in place that allows for continuous production of PRG from one variety to another with a single 2 year intervening crop of un-certified (but inspected) PRG. A similar type of program should work to go from uncertified to certified production of ARG of the same variety.

Proposed ECH Program:

1. **Pre-certified production inspections:** The production of inspected, but uncertified, ARG for a period of 2 years, in which the planting could have a maximum of 8.0% volunteer (between-row) ARG. The source of seed stock planted each year, would have to be documented as 'eligible' for certified production. The field would have to be signed up as ECH each of the two years.
2. **Certified Production Criteria:** After passing each year of the 2-year ECH period of monitored, uncertified production, the field would then be eligible for normal certified production. The tolerated volunteer % of this field during the first seedling inspection year could be a maximum of 8%. Subsequent years of certified production would have the standard 25% volunteer allowance.
3. **Fees:** The standard field inspection (aka "seedling") would be applied though an additional fee may be assessed if additional inspections are needed. There is no crop inspection on ECH fields.

This program would have to be approved by the Grass and Legume Advisory Committee, and the Seed Certification Board before going into effect. It would be considered "experimental" at this point, requiring review of the program in 2018.

(12-1-14)

**CSS Update
December 5, 2014**

The following are highlights of activities over the past months in Crop and Soil Science (CSS) and the College of Agricultural Sciences (CAS) as they affect clientele groups affiliated with CSS.

1. College of Ag Sciences

The OSU Statewide Programs submitted a \$123M request for 2015-17 legislative funding. The Governor released his budget the first of the month and we are looking at what effect that has on the request. Clientele groups that support Statewide programs will, as in the past, play a significant role in determining final budget outcomes for 2015-17.

2. **Federal budgets** remain an unknown for federal fiscal year 2015. We await specific budgets, without which agencies like ARS can not make specific decisions on the fate of individual research labs. There is still thought that some labs could be closed or see reductions in research staff.
3. **OSU** – OSU Provost Sabah Randhawa and group recently toured the OSU Seed Lab. OSU’s Board of Trustees continue to work on refining their specific responsibilities and authority. The OSU Trustees were recently taken on a tour of our Barley Breeding program and the OSU fermentation facility.
4. **Contributions** – One of the ideas in CSS that is moving ahead is the development of a scaled malting facility, to be jointly operated with faculty in the Department of Food Science and Technology. This facility is part of the iFerm (<http://agsci.oregonstate.edu/cas-sections/iferm>) concept of fermentation-related facilities and activities being developed, including beer, wine and cheese. Donors to the proposed malting facility have a significant contributions to its construction.
5. **Positions**
 - a. Umatilla and Morrow Counties and Hermiston Agricultural Research and Extension Center (HAREC)
 - i. We are looking to refill the position held by the recently passed Don Horneck during the coming year.
 - b. Pendleton Experiment Station (CBARC)
 - i. CBARC Director – Dr. Valtcho (Valt) Jeliaskov started December 1.
 - ii. CBARC Weeds position – Dr. Judit (Judi) Barroso began October 30.
 - c. Head of CSS - Dr. Jay Noller became CSS head on October 1. Jay has been a soil scientist with CSS for 14 years and knows department faculty and missions well. He will actively engage with departmental clientele groups to introduce himself and find out more about your missions and goals. Russ Karow will serve in a support role until December 31, 2014. Search for Jay’s replacement in the Soil Science faculty is just underway.
 - d. Extension soil fertility specialist position – Search failed. We are looking to restart the process for filling the position and have the incumbent starting during the summer of 2015.
 - e. CSS agronomy instructor - this person will teach several core CSS classes and do active student recruiting and coordinate internships and internship ideas for CSS. Dr. Andrew Hunt started on Oct 15.

Fig. GLAC 9 continued

- f. Plant nutrition and soil management position at Central Oregon Ag Research Center – Dr. Tracy Wilson will begin January 19, 2015.
- g. Plant pathologist at Hermiston Experiment Station – Dr. Ken Frost from the University of Wisconsin-Madison will be assuming this position at the end of the year. This position has an academic home in Botany and Plant Pathology.

For more information about happenings in the College of Agricultural Sciences subscribe to the College's news magazine "Oregon's Agricultural Progress" (<http://oregonprogress.oregonstate.edu/index.php>) and to the College's monthly newsletter "The Source" (<http://agsci.oregonstate.edu/news/newsletters>). The latter also provides links to the newsletters of a number of departments in the College including CSS.

Prepared by Jay Noller Jay.Noller@oregonstate.edu; 541-737-2821

Seed Services Update

December 10, 2014

Acres

The 2014 OSU Certification acres were at a seven year high of 251,093 acres.

Turn-around-time

The OSU seed lab had a very busy harvest season again this year. The turnaround time for the lab averaged four days through most of the harvest season. It peaked at six days for only a day or two in September.

Research

Seed Services is collaborating with a computer scientist to explore using computers to identify seeds during the purity testing process. The seed lab is working with a genetic testing lab in Wisconsin to determine if a PCR test can determine the percent of annual ryegrass within perennial ryegrass. Seed Certification is a cooperator in a grant application that would research long term rotation of crops in an organic cropping system.

Certification is interested in connecting with a new OSU group called Autonomous Systems Research Group. This group will organize and expand its work and collaboration with unmanned aerial vehicles, or UAVs, as well as marine and terrestrial technologies, sensing and imaging systems. We would like to see if any of the new technologies can be useful in the Certification program.

Fig. GLAC 11



Oregon Seed Certification Service
Oregon State University, 31 Crop Science Bldg., Corvallis, Oregon 97331
T 541-737-4513 | F 541-737-2624
<http://seedcert.oregonstate.edu>

2014 Summary of the Oregon Seed Certification Service

- Staffing
 - 4 Administrative staff
 - 2 Information Technology staff
 - 1 Systems Manager
 - 1 Software Engineer
 - 8 Seed Certification Specialists
 - 10 Part-time/seasonal Seed Certification Inspectors
 - 4 Fulltime and 4 part-time Seed Certification Samplers
 - 1 Manager & Seed Certification Specialist
- Types of Crops Certified by acreage
 - Grasses 82%
 - Tall fescue 47.5%, Perennial ryegrass 28.5%, Annual ryegrass 7%
 - Cereals 10%
 - Wheat 85%, Barley 7%, Triticale 2.5%
 - Legumes 6%
 - Crimson Clover 29%, Red Clover 24%, White & Ladino Clover 26%
 - Corn
 - Potatoes
 - Mint Rootstock
 - Other Misc. Crops
- Programs Administered
 - Oregon Certified Seed
 - Part of the Association of Official Seed Certifying Agencies (AOSCA)
 - OECD Certified Seed
 - Administered in Oregon for USDA-SRTD
- Stats for 2014
 - 251,093 acres and 5,799 fields
 - Largest acreage of any AOSCA agency in 2013
 - 27 Oregon counties with certified crops
 - 85 different crop types certified, and 727 different varieties.
 - Growers: 718 active (742 total)
 - Warehouses: 222 active (358 total)
 - Contractors: 115 active (402 total)

Agriculture, Family and Community Development, 4-H Youth, Forestry, Energy and Extension Sea Grant Programs, Oregon State University, United States Department of Agriculture and Oregon Counties cooperating. The Extension Service offers its programs and materials equally to all people.

Grass and Legume Advisory Committee Supplemental Meeting

Minutes from January 23rd, 2015 1:00 PM Crop and Soil Science Building, Room 119, OSU Corvallis, OR

Members present: Jim Parsons, Brian Parker, Mary Beth Menard, Reed Barker, Larry Dean, Colin Scott, Roger Ruckert, Dennis Lundeen, Dan Curry and Andy Altishin.
Others present: Barry Schrupf, Steve Ried, Roeland K, Terry Burr, and Sandy Smith

1. Call to Order

MaryBeth M. called the meeting to order at 1:12PM.

2. Changes/additions to agenda

3. Item 1 – Revised Utah Sweetvetch Standards

Barry S. presented the adjustment to the Utah Sweetvetch standards and the reason for the proposed change. The proposal is to remove creeping red fescue from the Group A weed seeds. The reason is that seed of the various fine fescues cannot be distinguished from one another in a Purity or Noxious weed exam, and the potential contaminant must be addressed in the field rather than in the seed test. The new standards are included below as Figure GLAC SM 1. **A motion was passed (Parker, Barker) to amend the standard as presented.**

4. Item 2 – GLAC Sub committee Proposals

- **Certified Annual Ryegrass Transition Program**

Dan C. presented the history of this proposal. A sub committee was organized to create a program to present to the CLAC for review and vote. He described the program that was created from a meeting with representation from OSCS and several annual ryegrass growers. The purpose of this program was to look at creating an option similar to Establishing Crop History for perennial ryegrass but in this case for annual ryegrass. Included below in fig. GLAC SM 2, pg. 25, is the proposed program.

Brian brought up a question about the 8% tolerance and how to accurately calculate the amount of volunteer in the row. Brian and Colin both believed that this could

cause too much of a degradation to the quality and variety of the crops to be certified. They both referenced the no till system and felt growers should examine those options. More discussions occurred debating the ability to successfully achieve the goals within the confines of the proposed program. Larry D. commented that this could degrade the integrity of Oregon seed and in a short time could cause market losses to the Oregon seed industry that could be difficult to recover from.

Many concerns were raised to verify the accuracy of the volunteers. The primary concerns were: how to accurately calculate percentage of volunteers versus seed stock planted in the rows, the acceptable width of planted rows, how to control the multiple flushes of volunteer seedlings that can occur after planting in the fall and how to differentiate (especially in the case of planting back to same ploidy type) off types at the seedling stage.

Reed B. moved that this program does not move forward but would suggest that the annual ryegrass growers, organize a research project possibly with the assistance of the extension agent and OSCS, to monitor the effectiveness of this type of field management system and verify that these results are achievable on a consistent basis. Once this information is acquired, the GLAC would then review this option or a similar option. Brian P. 2nd the motion. A discussion occurred about the requirements that the group would like to review. Roger R. recommended to not just give them a “no” but to correspond with them about providing further evidence. **A unanimous vote in favor to table the program until further evidence could be provided was achieved.** The chairperson will take the responsibility to correspond the needs of the group to the annual ryegrass growers.

- **Revision of Festulolium and Related Crop Standards**

Barry S. presented the history of the proposal and it’s creation of a sub committee of the GLAC to further examine the request and to present standards to the GLAC at a supplementary committee meeting. The current standards represent festulolium only as a single crop. Current breeding practices have now produced festuloliums of different ploidy levels, 2x (diploid), 4x(tetraploid) and 6x (hexaploid). These have different phenotypic characteristic that can be identified in the field and have limited ability to cross with festulolium of differing ploidy with respect to 2x/4x not being able to cross with 6x. He further described the proposal to explain the purpose is to create standards that mimic the tall fescue standards for the most parts for the 6x festulolium. The proposed 6x standard is outlined below (Fig. GLAC SM 3). The proposed 2x/4x standards (Fig. GLAC SM 4) are to mimic parts of the ryegrass standards as these act as similar crops. He also presented a reduction in the isolation requirement for festulolium less than 5 acres from 1320’to 900’ in the Foundation class. No other grass crop has 1320’ in the standard. This is believed to be an oversight when the original standard was adopted.

The standard would also be presented in a table manner rather than the standard text description due to the complexity of the field history requirements. Reed suggested a change in statement in describing the genera.

Barry brought up the isolation difference requirement and Reed gave a discussion

and brought some questions up about isolation distances, what some are concerned to be aware of and what are reasonable distances to require. Some more questions and pollen distance discussions occurred.

A question was brought up about the accuracy of the seed standards. Barry noted that seed standards have been adopted from previous standards and there are some issues that need to be addressed. At this time, the sub committee did not look into resolving these issues. If the GLAC chooses to review these standards it will be at a later date, after the current issues are resolved. More information would be needed from seed testing officials prior to making the appropriate changes..

Barry S. proceeded to present the other standards and the appropriate changes that need to be represented in the tall fescue, perennial, intermediate and annual ryegrass and meadow fescue (included below Figures GLAC SM 5,6,7,8,9)

Reed B. commented that meadow fescue crosses readily with annual ryegrass and should have the 5-year requirement. Others asked if this should not be the same in perennial ryegrass. A discussion about making the changes to the field history to protect the integrity is needed to these adjustments.

A motion was passed (Barker, Parker) to table the standards of meadow fescue/ryegrass adjustment to field history until GLAC 2015 meeting.

Barry S. resumed his presentation of the proposed standards by describing the remaining standard corrections. **A motion was passed (Barker, Dean) to accept the Fesulolium standards and all related standards as discussed.**

Roeland K. took a moment to thank the GLAC and the sub committee for addressing the issue in a timely and professional manner.

5. Other business

No other business was discussed.

6. Adjourn

A motion to adjourn (Barker, Parker) was passed at 3:10PM.

Fig. GLAC SM 1.



CERTIFICATION STANDARDS
UTAH SWEETVETCH
(Hedysarum boreale)
Approved February 14, 2012.
Proposed 1/23/15

Certification Standards: The general standards for seed certification found in the Oregon Seed Certification Service (OSCS) Handbook are basic to all crops, and together with the following specific regulations constitute the certified Utah sweetvetch standards.

Varieties Certified: Varieties and classes eligible for planting may be found in the OSCS Handbook.

Field History: Land must not have grown nor been seeded to Utah sweetvetch during the previous five years to be eligible to produce Foundation seed, three years for Registered seed, or two years for Certified seed. If the previous crop was of the same variety and passed certification field standards for varietal purity at the same or higher class, then the above time intervals are not necessary. Utah sweetvetch must be planted in distinct rows. Exceptions must be approved by the Seed Certification office prior to planting.

Sign-up Deadlines and Field Inspections: Include a seedling and a seed crop inspection. The seedling application must be submitted within 15 days of spring planting, or 60 days of fall planting; a seed crop application in the first year must be submitted within 30 days of spring planting, and by April 15 of each successive year in which the seed crop is to be inspected for certification.

Field Standards:^{1, 2, 3}

Class of seed produced	Maximum permitted		Isolation Requirements ⁴	
	Other varieties ⁵	Sweet clover	Less than 5 acres	More than 5 acres
Foundation	None ⁶	None	1320 ft.	1320 ft.
Registered	0.2%	5 plants/acre	660 ft.	330 ft.
Certified	0.5%	10 plants/acre	330 ft.	165 ft.
Between classes of same variety			10 feet	

Seed Standards: (Minimum Sample Size - 1 Pound)

Factor	Foundation (White Tag)	Registered (Purple Tag)	Certified (Blue Tag)
Pure seed, minimum	90.00%	90.00%	90.00%
Other crops, maximum	None	0.10%	0.10%
Sweet clover, maximum	None	4/lb.	8/lb.
Inert matter, maximum	10.00%	10.00%	10.00%
Weed seed ⁷ , maximum	None	0.10%	0.20%
Weed Seed, Group A ⁸ , singly or combined	None	None	16/lb.
Germination, minimum	20%	20%	20%
Germination and Hard Seed, minimum	60%	60%	60%

¹ Length of stand is specified by variety, providing 75% of the initial stand persists and is producing seed.
² Volunteer plants constituting 50% or more of the seed-producing stand may be cause for rejection or reclassification of a seed field.
³ Prohibited Noxious Weeds flowering or forming seed: lack of evidence of control may be cause for rejection.
⁴ See Section IV D, General Standards in the OSCS Handbook.
⁵ Includes off-type plants.
⁶ See Section IX C, General Standards in the OSCS Handbook.
⁷ None of the prohibited weeds listed in Section V, General Standards in the OSCS Handbook, nor any Buckhorn plantain, Docks, Sheep sorrel, Bedstraw or St. Johnswort allowed in any class of seed.
⁸ Group A – Colonial bentgrass, Canada bluegrass, Kentucky bluegrass, **Creeping red fescue**, Wild carrot and Brassica spp.

**CERTIFIED ANNUAL RYEGRASS CROP TRANSITIONAL
PROGRAM(CARTP)
Adapted from the GLAC Annual Subcommittee meeting
12/19/2014
Certified Generation Only (*Proposal 1-7-15*)**

Allows for production of ARG from uncertified to certified production without the required 3-5 year break from ARG. Program originally intended for continuous production of a single variety of ARG from uncertified to certified production.

Background: There has been a large increased demand for acres of land eligible for certified ARG in recent years. One potential source of these acres would be land that is currently producing uncertified ARG of the desired variety, however there are no options for continuous ARG production from uncertified to certified without a break in ARG production using the current rules.

Currently the accepted field history options for ARG are as follows:

1. 5 years out ARG (no restrictions); or
2. 3 years out of ARG with a Modified Land History (i.e. using a proven method to reduce the seed bank of ARG from the pervious crop); or
3. 2 years out an ARG if intervening crops are no-tilled.

Proposed CARTP Program:

1. **Pre-certified production inspections:** One year out of ryegrass production with a pre-harvest inspection of the crop or pre-till inspection of a fallow field for the presence of ARG. The production of inspected, but uncertified, ARG in year 2 in which the planting would have less than 8.0% volunteer (between-row ARG) with a maximum of 2-inch seeded row width. The source of seed stock planted each year would have to be documented as 'eligible' for certified production. The field would have to be signed up for program prior to harvest of the 'year-out' crop (or cultivation of a fallow field).
2. **Certified Production Criteria:** After passing the 2-year CARTP period, the field would be eligible for certified production. The tolerated volunteer % of this field during the first seedling inspection year could be a maximum of 8% with a minimum 2-inch seeded width. Subsequent years of certified production would have the standard 25% volunteer allowance however a field could not be 'volunteered' until the third year of certified production. At least three tarped (or unsprayed) areas should be included in each field to help evaluate effectiveness of program.

3. **Fees:** The standard field inspection (aka “MLH” and “Seedling”) fees would be applied though an additional fee may be assessed if additional inspections are needed. There is no crop inspection on ARTP fields.

This program would have to be approved by the Grass and Legume Advisory Committee, and the Seed Certification Board before going into effect. It would be considered “experimental” and will end in 2018. It will need to be reinstated by the Board after review to be in effect for following years.

(1-07-15)

Fig. GLAC SM 2 continued

Certified Annual Ryegrass Transition Program (CARTP)

Year 0 - Uncertified ARG (*1)

Year 1 - Not planted to ARG

- ◆ Sign-up for MLH inspection - prior to harvest of 'year-out' crop or working ground if fallow used. Apply during summer months, earlier is better!
- ◆ Non-grass crop (however, it could be small grain or fallow)
- ◆ If "fallow" no volunteer Ryegrass is allowed to seed.
- ◆ MLH inspection - completed during year 1. Volunteer ARG must be controlled.

Year 2 - 1 year uncertified ARG

- ◆ Sign-up for ARTP within 60 days of planting ARG crop
- ◆ No-till planting recommended but not required
- ◆ Use certified eligible seedstock
- ◆ Seedling inspection - 8% between-row volunteer allowed, planted row width limited to 2 inches (*2)
- ◆ No crop inspection, Not eligible to produce "certified" seed
- ◆ At least three tarped (or unsprayed) areas should be included in each field to help evaluate effectiveness of program.

Year 3 - 1 year certified ARG with restrictions

- ◆ Sign-up as Certified ARG
- ◆ No-till planting recommended but not required
- ◆ Use certified eligible seedstock (no 'volunteer' fields allowed)
- ◆ Seedling inspection - 8% between-row volunteer allowed, planted row width limited to 2 inches (*2)
- ◆ Eligible for crop inspection and certification
- ◆ At least three tarped (or unsprayed) areas should be included in each field to help evaluate effectiveness of program.

Year 4 - Enters regular certification program

- ◆ 25% volunteers allowed on plant-back
- ◆ Eligible for certified class only
- ◆ May not be a 'volunteer field' this year, subsequent years there are no restrictions.

NOTES:

*1 - Program originally intended for continuous production of a single variety of ARG from uncertified to certified production and this would be the recommended use, however a change in varieties is allowed.

*2 - OSCS feels that a 1-inch planted-row width is preferable and should be required if changing varieties.

Fig. GLAC SM 3



CERTIFICATION STANDARDS
FESTULOLIUM 6x
*(hexaploid hybrids of Lolium spp. and Festuca arundinacea *)*
 Proposed by GLAC to Board 2/10/15

Certification Standards: The general standards for seed certification found in the Oregon Seed Certification Service Handbook (OSCS) are basic to all crops, and together with the following specific regulations constitute the certified Festulolium 6x standards.

Varieties Certified: Varieties and classes eligible for planting may be found in the OSCS Handbook.

Field History: Land must not have grown nor been seeded to these listed species and for the periods of time, as follows:

Previous crop	Time out required		
	Foundation	Registered	Certified
Annual ryegrass	0	0	0
Perennial ryegrass	0	0	0
Intermediate ryegrass	0	0	0
Festulolium 2x/4x	0	0	0
Festulolium 6x	5 yrs.	18 mos.	18 mos.
Tall fescue	5 yrs.	18 mos.	18 mos.
Meadow fescue	5 yrs.	18 mos.	18 mos.

For Registered and Certified classes, these requirements are waived if the previous crop was of the same variety, same or higher class and certified. Festulolium 6x must be planted in distinct rows. Exceptions must be approved by the Seed Certification Office prior to planting.

Field Inspection: A seedling and seed crop inspection(s) are required. The seedling application must be submitted within 60 days of planting, and a seed crop application must be submitted by April 15 of each year in which seed is produced.

Field Standards:

Class of seed produced	Maximum other varieties permitted	Isolation Requirements ¹	
		Less than 5 acres	More than 5 acres
Foundation	None	1320 ft. 900 ft.	900 ft.
Registered	0.5%	660 ft.	300 ft.
Certified	1.0%	330 ft.	165 ft.

Seed Standards: (Minimum Sample Size – 1/2 pound)

Factor	Foundation (White Tag)	Registered (Purple Tag)	Certified (Blue Tag)
Pure seed, minimum	98.00%	98.00%	98.00%
Other crops, maximum	0.10%	0.10%	0.50%
Inert matter, maximum	2.00%	2.00%	2.00%
Weed seed ² , maximum	0.15%	0.15%	0.50%
Weed seed, Group A ³ , singly or combined	None	45/lb.	45/lb.
Germination	75%	75%	75%

*Taxonomists place Tall fescue in one of three genera: as *Festuca arundinacea* (see USDA Germplasm Resource Information Network – GRIN); as *Schedonorus arundinaceus* (see Flora of North America, Vol. 24, pgs. 446-448; USDA, NRCS Plants Database; and Integrated Taxonomic Information System – ITIS); and as *Lolium arundinaceum* (see USDA, NRCS Plant Guide and Plant Fact Sheet for Tall fescue).

¹This distance must be maintained from Festulolium 6x and Tall fescue, and for Foundation and Registered classes from Meadow fescue. A mechanical separation must be maintained from all ryegrass. See Section IV D, General Standards in the OSCS Handbook.

²None of the prohibited weeds listed in Section V, General Standards in the OSCS Handbook, nor any St. Johnswort allowed in any class of seed.

³GROUP A -- Buckhorn plantain, Docks, Sheep sorrel, and Bedstraw

Fig. GLAC SM 4



Oregon Seed Certification Service
<http://seedcert.oregonstate.edu>

CERTIFICATION STANDARDS
FESTULOLIUM 2x/4x
 (diploid & tetraploid hybrids of *Lolium* spp. and
Festuca arundinacea or *F. pratensis*)
 Proposed by GLAC to Board 2/10/15

Certification Standards: The general standards for seed certification found in the Oregon Seed Certification Service Handbook (OSCS) are basic to all crops, and together with the following specific regulations constitute the certified Festulolium 2x/4x standards.

Varieties Certified: Varieties and classes eligible for planting may be found in the OSCS Handbook.

Field History: Land must not have grown nor been seeded to these listed species and for the periods of time, as follows:

Previous crop	Time out required		
	Foundation	Registered	Certified
Annual ryegrass	5 yrs.	5 yrs.	5 yrs.
Perennial ryegrass	5 yrs.	5 yrs.	2 yrs.
Intermediate ryegrass	5 yrs.	5 yrs.	5 yrs.
Festulolium 2x/4x	5 yrs.	5 yrs.	5 yrs.
Festulolium 6x	0	0	0
Tall fescue	0	0	0
Meadow fescue	5 yrs.	5 yrs.	2 yrs.

For Registered and Certified classes, these requirements are waived if the previous crop was of the same variety, same or higher class and certified. Festulolium 2x/4x must be planted in distinct rows. Exceptions must be approved by the Seed Certification Office prior to planting.

Field Inspection: A seedling and seed crop inspection(s) are required. The seedling application must be submitted within 60 days of planting, and a seed crop application must be submitted by April 15 of each year in which seed is produced.

Field Standards:

Class of seed produced	Maximum other varieties permitted	Isolation Requirements ¹	
		Less than 5 acres	More than 5 acres
Foundation	None	1320 ft. 900 ft.	900 ft.
Registered	0.5%	660 ft.	300 ft.
Certified	1.0%	330 ft.	165 ft.

Seed Standards: (Minimum Sample Size – 1/2 pound)

Factor	Foundation (White Tag)	Registered (Purple Tag)	Certified (Blue Tag)
Pure seed, minimum	98.00%	98.00%	98.00%
Other crops, maximum	0.10%	0.10%	0.50%
Inert matter, maximum	2.00%	2.00%	2.00%
Weed seed ² , maximum	0.15%	0.15%	0.50%
Weed seed, Group A ³ , singly or combined	None	45/lb.	45/lb.
Germination	75%	75%	75%

¹Taxonomists place Tall and Meadow fescue in one of three genera: as *Festuca arundinacea* and *F. pratensis* (see USDA Germplasm Resource Information Network – GRIN); as *Schedonorus arundinaceus* and *S. pratensis* (see Flora of North America, Vol. 24, pgs. 446-448; Integrated Taxonomic Information System – ITIS; and USDA, NRCS Plants Database); and as *Lolium arundinaceum* (see USDA, NRCS Plant Guide and Plant Fact Sheet for Tall fescue and as *Lolium pratense* (see Integrated Taxonomic Information System – ITIS).

²This distance must be maintained from Festulolium, Meadow fescue and all Ryegrass of the same ploidy; no less than 15' isolation is required between diploids and tetraploids. A mechanical separation must be maintained from Tall fescue. See Section IV D, General Standards in the OSCS Handbook.

³None of the prohibited weeds listed in Section V, General Standards in the OSCS Handbook, nor any St. Johnswort allowed in any class of seed.

³GROUP A -- Buckhorn plantain, Docks, Sheep sorrel, and Bedstraw

Fig. GLAC SCM 5



CERTIFICATION STANDARDS
TALL FESCUE
 (*Festuca arundinacea**)
 Revised February 8, 2011;
 Proposed by GLAC to Board 2/10/15

Certification Standards: The general standards for seed certification found in the Oregon Seed Certification Service (OSCS) Handbook are basic to all crops, and together with the following specific regulations constitute the certified Tall Fescue standards.

Varieties Certified: Varieties and classes eligible for planting may be found in the OSCS Handbook.

Field History: Land must not have grown nor been seeded to these listed species and for the periods of time, as follows:

Previous crop	Time out required		
	Foundation	Registered	Certified
Annual ryegrass	0	0	0
Perennial ryegrass	0	0	0
Intermediate ryegrass	0	0	0
Festulolium 2x/4x	0	0	0
Festulolium 6x	5 yrs.	18 mos.	18 mos.
Tall fescue	5 yrs.	18 mos.	18 mos.
Meadow fescue	5 yrs.	18 mos.	18 mos.

For Registered and Certified classes, these requirements are waived if the previous crop was of the same variety, same or higher class and certified. Tall fescue must be planted in distinct rows. Exceptions must be approved by the Seed Certification Office prior to planting.

Field Inspections: Include a seedling and a seed crop inspection. The seedling application must be submitted within 60 days of planting, and a seed crop application must be submitted by April 15 of each year in which seed is produced.

Field Standards:

Class of seed produced	Maximum permitted Other Varieties ¹	Isolation Requirements ²	
		Less than 5 acres	More than 5 acres
Foundation	None	900 ft.	900 ft.
Registered	0.5%	660 ft.	300 ft.
Certified	1.0%	330 ft.	165 ft.

Seed Standards: (Minimum Sample Size – 1/2 Pound)

Factor	Foundation (White tag)	Registered (Purple tag)	Certified (Blue tag)
Pure seed, minimum	98.00%	98.00%	98.00%
Other crops, maximum	0.10%	0.10%	0.50%
Inert matter, maximum	2.00%	2.00%	2.00%
Weed seed ³ , maximum	0.30%	0.30%	0.30%
Weed seed, GROUP A ⁴ , singly or combined	None	27/lb.	27/lb.
Germination, minimum	85%	85%	85%
Germination, minimum Alfa, Fawn, Kentucky 31	90%	90%	90%

*Taxonomists place Tall fescue in one of three genera: as *Festuca arundinacea* (see USDA Germplasm Resource Information Network – GRIN); as *Schedonorus arundinaceus* (see Flora of North America, Vol. 24, pgs. 446-448; USDA, NRCS Plants Database; and Integrated Taxonomic Information System – ITIS); and as *Lolium arundinaceum* (see USDA, NRCS Plant Guide and Plant Fact Sheet for Tall fescue).

¹ Includes off-type plants.

² See section IV, D in the OSCS Handbook. **This distance must be maintained from Tall fescue and Festulolium 6x**, and for Foundation and Registered classes from Meadow fescue.

³ None of the prohibited weeds listed in section V in the OSCS Handbook, nor St. Johnswort is allowed in any class of seed.

⁴ GROUP A – Buckhorn plantain, Docks, Sheep sorrel, and Bedstraw.

Fig. GLAC SM 6



CERTIFICATION STANDARDS
ANNUAL RYEGRASS
(Lolium multiflorum)
 Revised February 11, 2014;
 Proposed by GLAC to Board 2/10/15

Certification Standards: The general standards for seed certification found in the Oregon Seed Certification Service (OSCS) Handbook are basic to all crops, and together with the following specific regulations constitute the certified Annual ryegrass standards.

Varieties Certified: Varieties and classes eligible for planting may be found in the OSCS Handbook. A ploidy test must be conducted on all OECD Annual ryegrass pre-control samples as a condition of acceptance into the OSCS program.

Field History: Land must not have grown nor been seeded to these listed species and for the periods of time, as follows:

Previous crop	Time out required		
	Foundation	Registered	Certified
Annual ryegrass	5	5	5
Perennial ryegrass	5	5	2
Intermediate ryegrass	5	5	5
Festulolium 2x/4x	5	5	5
Festulolium 6x	0	0	0
Tall fescue	0	0	0
Meadow fescue	0	0	0

For Registered and Certified classes, these requirements are waived if the previous crop was of the same variety, same or higher class and certified. **Modified Land History** provisions apply to this crop (see OSCS General Standards IV, C. Land Requirements #2), which can reduce the period following a previous Annual ryegrass or Festulolium 2x/4x crop to three years for conventional tillage practices and two years if a continuous no-till MLH option is used. PLEASE NOTE: If the two year out no-till MLH option is used, an Annual ryegrass crop planted the following two years must also be no-till to qualify for certification. Annual ryegrass must be planted in distinct rows. Exceptions must be approved by the Seed Certification Office prior to planting.

Field Inspections: Include a seedling and a seed crop inspection. The seedling application must be submitted within 60 days of planting, and a seed crop application must be submitted by April 15 of each year in which seed is produced.

Field Standards:

Class of seed produced	Maximum permitted Other Varieties	Isolation Requirements ¹	
		Less than 5 acres	More than 5 acres
Foundation	None	900 ft.	900 ft.
Registered	0.5%	660 ft.	300 ft.
Certified	1.0%	330 ft.	165 ft.

Seed Standards: (Minimum Sample Size – 1/2 Pound)

Factor	Foundation (White tag)	Registered (Purple tag)	Certified (Blue tag)
Total ryegrass, minimum	99.00%	99.00%	99.00%
Crops other than ryegrass, maximum	0.10%	0.25%	0.50%
Perennial ryegrass, maximum ²	0.10%	1.00%	2.00%
Total other crop including perennial ryegrass, maximum	0.20%	1.25%	2.50%
Inert matter, maximum	1.00%	1.00%	1.00%
Weed seed ³ maximum	0.15%	0.15%	0.30%
Weed seed, GROUP A ⁴ , singly or combined	None	45/lb.	45/lb.
Germination, minimum	90%	90%	90%
Ploidy test, minimum ⁵	100%	99%	95%

¹ This distance must be maintained from all Ryegrass, Meadow fescue and Festulolium of the same ploidy. Isolation between diploids and tetraploids shall be no less than 15 feet. See section IV, D in the OSCS Handbook.

² See section IX, D5 in the OSCS Handbook.

³ None of the prohibited weeds listed in section V in the OSCS Handbook, nor St. Johnswort is allowed in any class of seed.

⁴ GROUP A – Buckhorn plantain, Docks, Sheep sorrel, and Bedstraw.

⁵ Ploidy Test: Is a test required to establish the incidence of diploid ryegrass in all tetraploid ryegrass varieties and assists in determining certification eligibility. A ploidy test should be requested at the time of sampling. Only varieties described as tetraploid must be tested, those described as diploid or those of 'unknown' ploidy need not be tested.

Fig. GLAC SM 7



CERTIFICATION STANDARDS
PERENNIAL RYEGRASS
(Lolium perenne)
 Revised February 12, 2013;
 Proposed by GLAC to Board 2/10/15

Certification Standards: The general standards for seed certification found in the Oregon Seed Certification Service (OSCS) Handbook are basic to all crops, and together with the following specific regulations constitute the certified Perennial ryegrass standards.

Varieties Certified: Varieties and classes eligible for planting may be found in the OSCS Handbook.

Field History: Land must not have grown nor been seeded to these listed species and for the periods of time, as follows:

Previous crop	Time out required (unless of the same variety, class and certified)		
	Foundation	Registered	Certified
Annual ryegrass	0	0	0
Perennial ryegrass	5	5	2
Intermediate ryegrass	5	5	2
Festulolium 2x/4x	5	5	2
Festulolium 6x	0	0	0
Tall fescue	0	0	0
Meadow fescue	0	0	0

For Registered and Certified classes, these requirements are waived if the previous crop was of the same variety, same or higher class and certified. Perennial Ryegrass must be planted in distinct rows. Exceptions must be approved by the Seed Certification Office prior to planting.

Field Inspections: Include a seedling and a seed crop inspection. The seedling application must be submitted within 60 days of planting, and a seed crop application must be submitted by April 15 of each year in which seed is produced.

Field Standards:

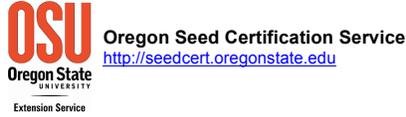
Class of seed produced	Maximum permitted Other Varieties	Isolation Requirements ^{1, 2}	
		Less than 5 acres	More than 5 acres
Foundation	None	900 ft.	900 ft.
Registered	0.5%	660 ft.	300 ft.
Certified	1.0%	330 ft.	165 ft.

Seed Standards: (Minimum Sample Size – 1/2 Pound) **Varieties:** **Acclaim, Agresso, Artal Bonita, Fantoom, Friend, Linn, Reveille, Sprinter, Taptoe**

Factor	Foundation (White tag)	Registered (Purple tag)	Certified (Blue tag)
Total ryegrass, minimum	99.00%	99.00%	99.00%
Crops other than ryegrass, maximum	0.10%	0.25%	0.50%
Annual ryegrass ³ , maximum	0.32%	1.00%	3.00%
Total other crops incl. Annual ryegrass, maximum	0.42%	1.25%	3.50%
Inert matter, maximum	1.00%	1.00%	1.00%
Weed seed ⁴ , maximum	0.15%	0.30%	0.50%
Weed seed, GROUP A ⁵ singly or combined	None	45/lb.	45/lb.
Germination, minimum	90%	90%	90%
Germination, minimum Linn	85%	85%	85%
Ploidy test, minimum ⁶	100%	99%	95%

¹ This distance must be maintained from all Ryegrass, Meadow fescue and Festulolium of the same ploidy. Isolation between diploids and tetraploids shall be no less than 15 feet. See section IV, D in the OSCS Handbook.
² Foundation and Registered fields of Perennial ryegrass must be isolated 300 ft. from Tall fescue and Festulolium 6x. Border removal is allowed for fields over five acres. See section IV, D in the OSCS Handbook.
³ See section IX, D5 in the OSCS Handbook.
⁴ None of the prohibited weeds listed in section V in the OSCS Handbook, nor St. Johnswort allowed in any class of seed.
⁵ GROUP A – Buckhorn plantain, Docks, Sheep sorrel, and Bedstraw.
⁶ Ploidy Test: Is a test required to establish the incidence of diploid ryegrass in all tetraploid ryegrass varieties and assists in determining certification eligibility. A ploidy test should be requested at the time of sampling. Only varieties described as tetraploid must be tested, those described as diploid or those of 'unknown' ploidy need not be tested.

Fig. GLAC SM 8



CERTIFICATION STANDARDS
INTERMEDIATE RYEGRASS
(Lolium hybridum)
 Revised February 14, 2012.
 Proposed by GLAC to Board 2/10/15

Certification Standards: The general standards for seed certification found in the Oregon Seed Certification Service (OSCS) Handbook are basic to all crops, and together with the following specific regulations constitute the certified Intermediate ryegrass standards.

Varieties Certified: Varieties and classes eligible for planting may be found in the OSCS Handbook.

Field History: Land must not have grown nor been seeded to these listed species and for the periods of time, as follows:

Previous crop	Time out required (unless of the same variety, class and certified)		
	Foundation	Registered	Certified
Annual ryegrass	5	5	2
Perennial ryegrass	5	5	2
Intermediate ryegrass	5	5	2
Festulolium 2x/4x	5	5	2
Festulolium 6x	0	0	0
Tall fescue	0	0	0
Meadow fescue	0	0	0

For Registered and Certified classes, these requirements are waived if the previous crop was of the same variety, same or higher class and certified. Intermediate Ryegrass must be planted in distinct rows. Exceptions must be approved by the Seed Certification Office prior to planting.

Field Inspections: Include a seedling and a seed crop inspection. The seedling application must be submitted within 60 days of planting, and a seed crop application must be submitted by April 15 of each year in which seed is produced.

Field Standards:

Class of seed produced	Maximum permitted Other Varieties	Isolation Requirements ^{1, 2}	
		Less than 5 acres	More than 5 acres
Foundation	None	900 ft.	900 ft.
Registered	0.5%	660 ft.	300 ft.
Certified	1.0%	330 ft.	165 ft.

¹ This distance must be maintained from all Ryegrass, Meadow fescue and Festulolium of the same ploidy. Isolation between diploids and tetraploids shall be no less than 15 feet. See section IV, D in the OSCS Handbook.

² Foundation and Registered fields of Intermediate ryegrass must be isolated 300 ft from Tall fescue and Festulolium 6x. Border removal is allowed for fields over five acres. See Section IV, General Standards in the OSCS Handbook.

Fig. GLAC SM 9



CERTIFICATION STANDARDS
MEADOW FESCUE
(Festuca pratensis¹)
 Revised February 8, 2011;
 Proposed by GLAC to Board 2/10/15

Certification Standards: The general standards for seed certification found in the Oregon Seed Certification Service (OSCS) Handbook are basic to all crops, and together with the following specific regulations constitute the certified Meadow fescue standards.

Varieties Certified: Varieties and classes eligible for planting may be found in the OSCS Handbook.

Field History: Land must not have grown nor been seeded to these listed species and for the periods of time, as follows:

Previous crop	Time out required		
	Foundation	Registered	Certified
Annual ryegrass	5 yrs.	5 yrs.	5 yrs.
Perennial ryegrass	5 yrs.	2 yrs.	2 yrs.
Intermediate ryegrass	5 yrs.	2 yrs.	2 yrs.
Festulolium 2x/4x	5 yrs.	2 yrs.	2 yrs.
Festulolium 6x	5 yrs.	2 yrs.	2 yrs.
Tall fescue	5 yrs.	2 yrs.	2 yrs.
Meadow fescue	5 yrs.	2 yrs.	2 yrs.

For Registered and Certified classes, these requirements are waived if the previous crop was of the same variety, same or higher class and certified. Meadow fescue must be planted in distinct rows. Exceptions must be approved by the Seed Certification Office prior to planting.

Field Inspections: Include a seedling and a seed crop inspection. The seedling application must be submitted within 60 days of planting, and a seed crop application must be submitted by April 15 of each year in which seed is produced.

Field Standards:

Class of seed produced	Maximum permitted Other Varieties ¹	Isolation Requirements ²	
		Less than 5 acres	More than 5 acres
Foundation	None	900 ft.	900 ft.
Registered	0.5%	660 ft.	300 ft.
Certified	1.0%	330 ft.	165 ft.

Seed Standards: (Minimum Sample Size – 1/2 Pound)

Factor	Foundation (White tag)	Registered (Purple tag)	Certified (Blue tag)
Pure seed, minimum	98.00%	98.00%	98.00%
Other crops, maximum	0.10%	0.10%	0.50%
Inert matter, maximum	2.00%	2.00%	2.00%
Weed seed ³ , maximum	0.30%	0.30%	0.30%
Weed seed, GROUP A ⁴ , singly or combined	None	27/lb.	27/lb.
Germination, minimum	85%	85%	85%

^{*}Taxonomists place Meadow fescue in one of three genera: as *Festuca pratensis* (see USDA Germplasm Resource Information Network – GRIN); as *Schedonorus pratensis* (see Flora of North America, Vol. 24, pgs. 446-448; Integrated Taxonomic Information System – ITIS; and USDA, NRCS Plants Database); and as *Lolium pratense* (see Integrated Taxonomic Information System – ITIS).

¹ Includes off-type plants.

² See section IV, D in the OSCS Handbook. This distance must be maintained from Meadow fescue, all Ryegrass, and Festulolium 2x/4x and for Foundation and Registered classes from Tall fescue and Festulolium 6x.

³ None of the prohibited weeds listed in section V in the OSCS Handbook, nor St. Johnswort is allowed in any class of seed.

⁴ GROUP A – Buckhorn plantain, Docks, Sheep sorrel, and Bedstraw.