Seed Laboratory

Ryegrass Annuality & Perenniality Testing

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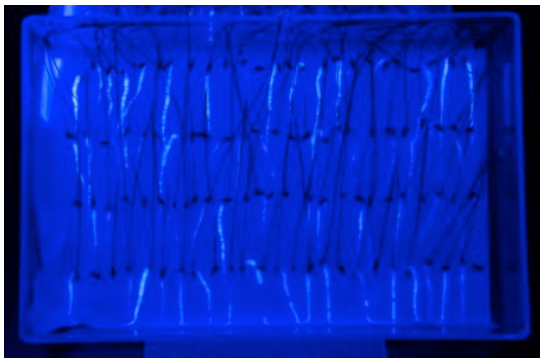
Variety Fluorescence Testing

- Seeds from a minimum of three lots, from at least two generations (one of which must be Breeder), are fluoresced, then grown out in the greenhouse.
- This sets the VFL* (Variety Fluorescence Level), which is used to calculate purity results with fluorescence tests using a formula from the AOSA Rules
- Visit www.aosca.org for more information and biannual deadlines. Samples *must* be submitted to the lab at least 2 months before deadline.



Fluorescence

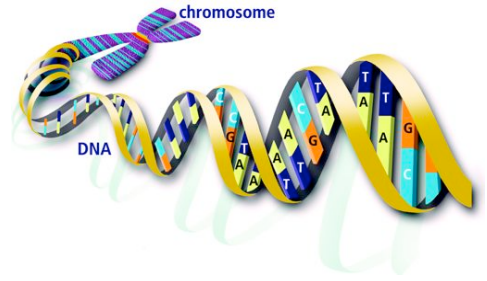
- AOSA Rules assume that beyond the VFL*, any annual seedlings will fluoresce, and perennial seedlings will not. If no VFL is established (or sample submitted as VNS), the rule assumes *all* fluorescing seedlings are annual.
- 400 Seeds are planted on white filter paper, germinated, and then the seedlings' roots are evaluated under black light.
- There is a formula that uses the mechanical purity %, the VFL %, and the TFL* % to calculate the percentages of annual and perennial ryegrass in a sample.

Fluorescence Grow-out

- Standard AOSA grow-out: the suspect seedlings are planted in the greenhouse & grown out for approx. 42 days.
- The results are used to revise the mechanical purity, and a new report is issued.

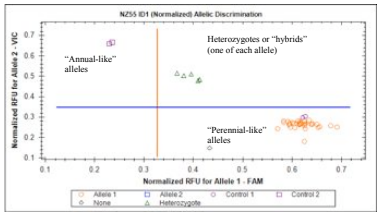
400-Seed Grow-out

- 400-Seed or "direct" grow-out (used for very high-fluorescing perennials, or customer request): 400 seeds are directly planted in organic media in the greenhouse, and evaluated in approx. 42 days.



RAD: Ryegrass Allelic Discrimination

- From a 400-seed fluorescence test, the suspect seedlings, as well as control seedlings, are sent for an allelic discrimination (DNA) test.



- The numbers of annual-like, perennial-like, and hybrid alleles are determined.
- These numbers are used to revise the mechanical purity, and a new report is issued..

*Acronyms:
VFL = Variety Fluorescence Level (the inherent fluorescence of a variety, as published by AOSCA)
TFL = Test Fluorescence Level (the actual % fluorescence found in a 400 seed fluorescence test

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Test Request Comparisons

Scenario 1 Purity & fluorescence	Scenario 2 Purity, fluor., & fluor. grow-out or RAD	Scenario 3 Purity, fluor., & sequential fluor. grow-out or RAD	Scenario 4 High fluorescing perennials 400-seed grow-out
Lab conducts purity test, and reports % of ryegrass with "mechanical" statement	Lab conducts purity test, and reports % of ryegrass with "mechanical" statement	Lab conducts purity test, and reports % of ryegrass with "mechanical" statement	Lab conducts fluorescence test, but does not use it to calculate the purity
Lab conducts germination & fluorescence tests & discards seedlings at end of test	Lab conducts germination & fluorescence tests, and sends out report	Lab conducts germination & fluorescence tests, and sends out report	Simultaneously, the lab plants 400 seeds directly in the greenhouse
Lab calculates purity and fluorescence using formula from AOSA Rules, and sends report out	Lab conducts grow-out or RAD regardless of % contaminants	Unless otherwise requested, lab proceeds with grow-out or RAD if contaminant exceeds certification standards (Certified generation)* (Lab will not call)	Plants are evaluated in approx. 42 days
If customer needs a grow-out or RAD, a new fluorescence must be conducted	Lab sends out new report, with revised percentages	Lab sends out new report, with revised percentages.	Results are used to calculate purity percentages, and a revised report is issued
Benefits	Benefits	Benefits	Benefits
-Cheapest & fastest option -Sufficient when TFL is less than VFL, or TFL falls within Certification tolerance	-More streamlined, test conducted regardless of fluorescence level -More accurate than with FL alone -Grow-out will incur hourly charges if fluorescence exceeds 15% -RAD results ready within a couple of days; price depends on # of seedlings	-More accurate than with FL alone -Call us for evaluation if Foundation or Registered generation -Grow-out will incur hourly charges if fluorescence exceeds 15% -RAD results ready within a couple of days; price depends on # of seedlings	-Most accurate test because of the large sample size -Saves time -Will not incur hourly charges -This approach can be used for any sample when customer needs higher levels of accuracy & confidence

*Maximum other ryegrass allowed in Certified generation (Blue Tags):
3% Annual contaminant in Perennial lot.
2% Perennial contaminant in Annual lot.

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