FALL DORMANCY

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PLANT CULTURE

Greenhouse

Container..... Bench, flat, or pot deep enough 15 to 20cm) to allow root development
Media..... Sand, soil or potting mix
Temp/Light..... 24 to 30˚C; 16+ hour photoperiod
No. of Plants ..... 24 to 40 per replication
No. of Reps ..... 4 minimum
Other ..... Spray and fertilize as necessary; inoculate with *Rhizobium meliloti* Dang

FIELD ESTABLISHMENT

Location ..... When plants are approximately 8 to 12 weeks old, transplant them to field (late May to early June); may direct seed and thin to single plant spacing
Spacing..... 30 cm x 0.6 to 1.0 m, approximately 25 plant /plot
Culture..... Maintain vigorous growth, keep nursery as weed free as possible

CLIPPING MANAGEMENT

Clipping..... Plots are clipped two to three times during the summer with the last cut no later than August 1; a fall cut is then made in early September; the appropriate final clipping date varies by location (e.g. September 8 at Rosemount, MN, and Tulelake, CA, October 3 at Davis, CA, October 23 at Imperial, CA); it is critical that regrowth occurs during the late September period but before a severe frost (less than -6.2 C); local experience will provide information on which clipping date provides the greatest separation among varieties for fall dormancy

RATING

Approximately 25-30 days after final clipping (usually early to mid October in MN, 25 days after clip back at all CA locations) individual plant heights are measured using either a score on a 1 to n scale with each increment = 5 cm or the actual metric height. Scoring at 21 to 25 days is necessary in nondormant entries. Plant height is considered the distance from the soil surface to the top of the canopy. The more fall dormant cultivars will be very decumbent; the least fall dormant cultivars will be upright and tall. The University of California uses the score method, and plot means are square root transformed to remove heterogeneity. The resulting variable is designated natural plant height (NPH).

CHECK CULTIVARS

A single set of check cultivars representing fall dormancy classes (FDC) 1 to 11 are designated. These check cultivars have been selected to maintain the intended relationship between the original set of nine check cultivars (Standard Tests, March 1991) and to have minimal variation across environments. The actual fall dormancy rating (FDR) based on the average University of California regression and the Certified Alfalfa Seed Council Class that each check cultivar represents are listed below.

Variety	FDR[1]	FDC[2]
Maverick	0.8	1.0
Vernal	2.0	2.0
5246	3.4	3.0
Legend	3.8	4.0
Archer	5.3	5.0
ABI 700	6.3	6.0
Dona Ana	6.7	7.0
Pierce	7.8	8.0
CUF101	8.9	9.0
UC-1887	9.9	10.0
UC-1465	11.2	11.0

[1]Number corresponds to the value calculated using the University of California regression equation.
[2]Number corresponds to fall dormancy class used by the Certified Alfalfa Seed Council (CASC)

COMPARING TEST RESULTS OVER YEARS

Although fall dormancy is a strongly expressed trait, genotype by environment interactions are significant. Tests conducted by the University of California show that the G*L*Y interaction is 6x the G*Y and 50x the G*L. Accurate separation of cultivars and assignment of fall dormancy class (FDC) is best obtained by testing for two years at three locations. However, acceptable ratings can be obtained with a single location year if the test is conducted at a representative site for the cultivars broad area of adaptation. Fall dormancy is reported to the nearest 0.1 class. The University of California uses an average regression of FDC on NPH across four diverse locations to assign FDR (FDR= 6.24(NPH) 7.36, r2=0.995).

ALTERNATIVE METHODS

The field evaluation test is most effective for accurately assigning the fall dormancy class. However, a seedling evaluation has been proposed[2,3]. This test can be very useful in make quick (3 to 4 weeks) separations of materials differing in FD.

REFERENCES

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