

Methods for Improving the Laboratory Germination of
Dactyloctenium radulans Seed

As Silcock and Williams reported in this volume (p. 9), caryopses of *Dactyloctenium radulans* (native button grass) germinated very poorly after 2 years of laboratory storage unless the seed was carefully scarified. In general laboratory germination of this species is notoriously low, irrespective of the seed's origin, e.g. from 13 collections tested, 10 gave <2% germination, yet the seed appeared sound.

The improvement in germination (c. 20%) produced by rubbing the seed with sandpaper still resulted in a much less than desirable level of germination. So a series of tests were carried out using different means of scarification, as well as using 0.2% KNO₃ to moisten the germination substrate instead of distilled water in one treatment. The germination tests in the following report were conducted at 25/35°C on paper with diurnal light and dark periods.

(A) First Test

Seed harvest date: 12/1/1972

Test date: 18/7/1973

<u>Treatment</u>	<u>% Germination</u>
1. No scarification	0.75 (mean)
2. Sandpapering	22.0 (mean)
3. 5 min 98% H ₂ SO ₄	9,0,0,83 (individual replicates)
4. 0.2% KNO ₃ to moisten paper	10.5 (mean)

These results indicate that acid scarification may produce very unpredictable effects even though high levels of germination are sometimes achieved using acid. In a later test this seed was immersed in 98% H₂SO₄ for 0, 1, 2, 3, 4, 5 or 6 minutes before rinsing and testing for viability. Without scarification 1% of seed germinated while 1 minute in acid gave 8.3% germination. No seed germinated after treatment for 2 to 6 minutes. Thus it seemed that 98% H₂SO₄ was too powerful to adequately

control its action. Localized heating was quite pronounced during rinsing and many of the seeds which did germinate had their radicles burnt off. It was decided to use 70% H_2SO_4 in the next tests.

(B) Second Test

Seed harvest date: March 1968

Initial viability tests using unscarified seed:

13/10/71 - 30%

4/7/73 - 18%

On 13/9/74 this seed was scarified before germination using 70% H_2SO_4 for 0, 5, 10, 15 and 20 minutes. Three replicates of 50 caryopses were used in each treatment, germination occurring at 25/35°C on paper moistened with distilled water.

<u>Time in acid</u>	<u>% Germination</u>
0	17.3
5	36.3
10	4.3
15	0.3
20	0

On the basis of this test a second trial was run under the same conditions beginning on 18/9/74. In this instance the times used for acid treatment were 0, 2, 4, 6 and 8 minutes.

<u>Time in acid</u>	<u>% Germination</u>
0	21.3
2	43.3
4	70.0
6	10.7
8	5.3

It would appear that scarification in 70% H_2SO_4 for about 4 minutes can give quite high germination results, although some radicles are still scorched. Timing is critical and this may be overcome by using less concentrated solutions of acid or through improvements in the technique used to prepare the scarified seed.

Similar results could be expected from seed of *Eragrostis eriopoda* and *E. setifolia*, which also proved difficult to germinate normally but which responded slightly to scarification with sandpaper. However their smaller seeds would probably require a shorter time of acid immersion and much greater care.

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