# Rule Change Proposal No. 11

## Purpose

To revise **Sec. 4.9.k(4)**.- 'germination promoting chemicals' to substitute the reference '1976 ISTA Rules' with the proper scientific references that support the use of gibberellic acid ($GA_3$) in breaking seed dormancy at the recommended concentrations.

## Present Rule

**4.9.k. (4) Germination promoting chemicals:** Gibberellic Acid ($GA_3$) (ISTA formulation Seed Sci and Technol. 4(1): 112). The germination substratum should be moistened with the recommended concentration, 200 ppm-500 ppm of $GA_3$ for most cases. Stronger solution may be used for stronger cases of dormancy. When the concentration is higher than 800 ppm the use of a buffer is recommended. A 500 ppm solution of $GA_3$ is prepared by dissolving 500 mg $GA_3$ in one liter of water.

## Proposed Rule

**4.9.k. (4) Germination promoting chemicals:** ***Gibberellic Acid ($GA_3$)*** **-** The germination substratum should be moistened with the recommended concentration, 200 ppm - 500 ppm (0.02-0.05%) of $GA_3$ for most cases. A stronger solution may be used for stronger cases of dormancy. The required $GA_3$ concentration varies according to species, cultivars, years, intensity of dormancy, and state of after ripening (Gaspar, S, J. Fazekas, and A. Petho (1975). Seed Sci. & Technol. 3:555-563; Bekendam, J., and J. Bruinsma (1965). Proc. Int. Seed Test. Assoc. 30: 869-886). When the concentration is higher than 800 ppm (0.08%) the use of a buffer is recommended. A 500 ppm solution of $GA_3$ is prepared by dissolving 500 mg $GA_3$ in one liter of water.

## Harmonization

This proposal keeps the level of harmonization with ISTA as is. Both organizations recommend the same concentration of $GA_3$ for breaking dormancy. The proposed change is to list the proper scientific references that support the use of gibberellic acid ($GA_3$) in breaking seed dormancy at the recommended concentrations.

## Supporting Evidence

The current rule lists '1976 ISTA Rules' as a reference for the use gibberellic acid ($GA_3$) as a germination promoting chemical. This does not provide scientific references to support the use of gibberellic acid ($GA_3$) in breaking seed dormancy at the recommended concentrations. The proposed rule provides the papers that describe the

research studies from where the original rule was derived. It will provide more educational materials to seed analysts who want to learn more on the use of $GA_3$ in overcoming dormancy, and provide basis to those who want to research the appropriate concentrations for species that do not respond to the recommended $GA_3$ rates mentioned in the current rule.

## References


Bekendam, J., and J. Bruinsma (1965). The chemical breaking of dormancy of wheat seeds. Proc. Int. Seed Test. Assoc. 30: 869-886).

Bekendam, J., and J. Bruinsma (1966). The chemical breaking of dormancy of barley seeds. Proc. Int. Seed Test. Assoc. 31: 779-787.

Bewley, J. D., and M. Black. 1982. Physiology and biochemistry of seeds. V. 2. Springer-Verlag, New York.

Chen, S. s. C., and J. E. Varner (1973). Hormones and Seed Dormancy. Seed Sci. & Technol. 1:325-338.

Gaspar, S, J. Fazekas, and A. Petho (1975). Effects of gibberellic acid (GA3) and prechilling on breaking dormancy in cereals. Seed Sci. & Technol. 3:555-563.


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