

Frost tolerances #7 - Spring 2016
May 9, 2016

On May 9, buds from the following cultivars were examined at Rosebrook Bog in Wareham: Early Black (EB), Howes (H), Ben Lear (BL), and Stevens (ST). In addition, uprights from those four varieties plus ones from Mullica Queen (MQ), Crimson Queen (CQ), Demoranville (DE), and Grygleski #1 (GH) were observed at State Bog. Based on visual appearance, BL and MQ seem to be the most advanced. Controlled freezing experiments bear this out - those two varieties were the most sensitive in our May 3rd experiment.

Based on internal and external **appearance**, many buds are at least at **elongation** stage but many continue to have the appearance of earlier stages. However, based on research here and in Wisconsin, if you are seeing advanced stages, the buds that appear less advanced are just as sensitive as the most advanced looking ones. Once buds begin to expand, and definitely by the cabbage head stage, internal changes advance regardless of temperature. *Cool temperature may hold back the visible growth of the buds, but the changes that lead to loss of cold tolerance still occur.* Therefore, once a cultivar reaches the 25°F tolerance, it should be presumed to have moved to the 27°F tolerance after 5-7 days regardless of external appearance; likewise, once at 27°F, tolerance advances to 29.5°F in an additional 5-7 days.

At **elongation** stage, tolerance for EB and H is 27°F (but advances to 29.5°F after 5-7 days); tolerance for BL and ST is 29.5°F. Based on appearance, new hybrids should be assumed to have the same tolerance as BL; this appears to be confirmed by lab experiments this spring in which DE, MQ, and CQ have responded similarly to BL.

At elongation stage, the bud begins to push upward - this is easily seen if looking at the upright from a side view. The elongation stage can also be considered 'bud break'.

ALWAYS CHECK THE TOLERANCE ON YOUR BOGS.



Example of elongation stage (BL).



Example of a bud that appears to remain at cabbage head stage (DE) but see information above.



EB at State Bog, elongation stage, 27°F, 5/9.



EB at Rosebrook, elongation stage, 27°F, 5/9.



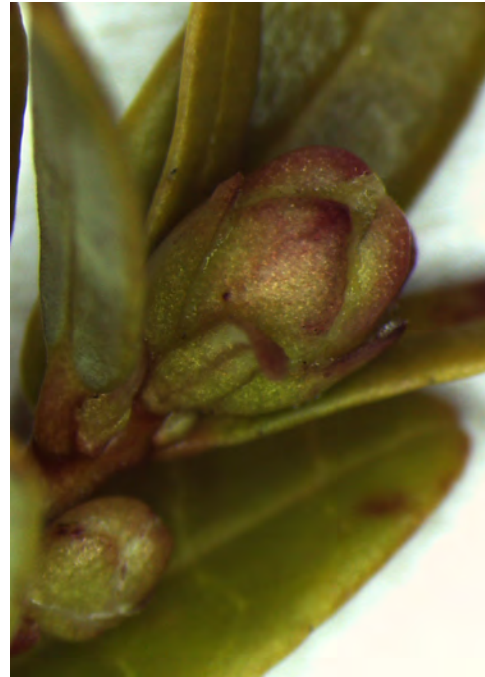
H at State Bog, elongation stage, 27°F, 5/9.



H at Rosebrook, elongation stage, 27°F, 5/9. Note double bud on this upright. Many multiple bud uprights have been observed this spring. They are generally more common on hybrid varieties.



BL at State Bog, early elongation stage, 29.5°F, 5/9.



BL at Rosebrook, elongation stage, 29.5°F, 5/9.



ST at State Bog, early elongation stage, 29.5°F, 5/9.



ST at Rosebrook, elongation stage, 29.5°F, 5/9. Note multiple buds.



CQ at State Bog, elongation stage, 29.5°F, 5/9.



MQ at State Bog, elongation stage, 29.5°F, 5/9.



DE at State Bog, elongation stage, 29.5°F, 5/9.



GH at State Bog, early elongation stage, 29.5°F, 5/9. This variety looked the least advanced.