

Frost tolerances #5 - Spring 2016
April 29, 2016

On April 29, buds from the following cultivars were examined at Rosebrook Bog in Wareham and at State Bog: Early Black (EB), Howes (H), Ben Lear (BL), and Stevens (ST). In addition, uprights from Mullica Queen (MQ), Crimson Queen (CQ), Demoranville (DE), and Grygleski #1 (GH) were observed at State Bog. Based on internal and external appearance, all buds are at least at the **bud swell** stage while many have reached **cabbage head**. At Rosebrook the BL appear to be nearly ready to being elongating.

At the **bud swell** stage, tolerance for EB and H is 22°F; tolerance for BL and ST is 25°F. At **cabbage head** stage, tolerance for EB and H is 25°F; tolerance for BL and ST is 27°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 MQ and CQ are responding similarly to BL.

Please note that cabbage head stage represents a progression from the bud swell bud stage: now buds that had gotten larger and rounder have expanded further to take on the appearance of small cabbages; there is a lumpy appearance due to opening of the bud scales. When looking down at the bud, the bud completely covers the base and part-way up the surrounding leaves.

Also note that buds are progressing slowly due to the persistent cold weather. However, based on previous research, 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; once at 27°F, tolerance advances to 29.5°F in an additional 5-7 days.

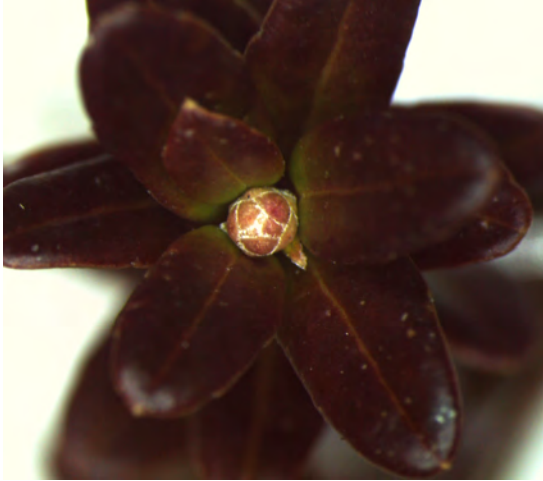
ALWAYS CHECK THE TOLERANCE ON YOUR BOGS.



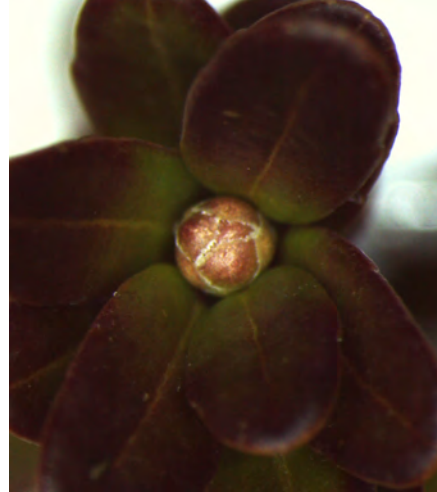
EB early cabbage head, 25°F, State Bog
4/29 Note - lumpy appearance.



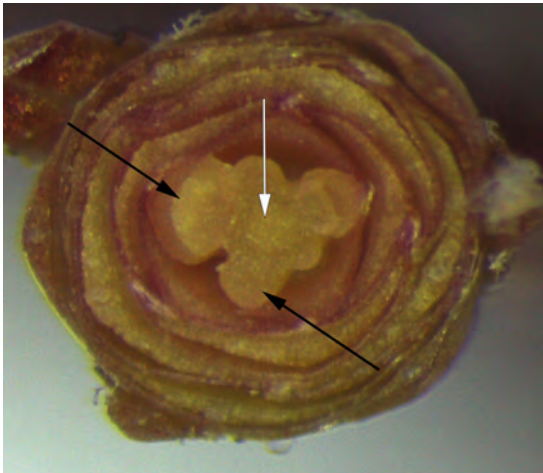
EB cabbage head, 25°F, Rosebrook 4/29



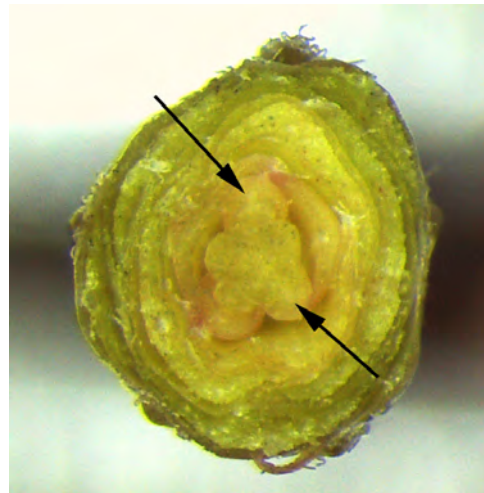
H bud swell stage, 22°F, State Bog 4/29
Appears not quite as advanced as
Rosebrook example on right.



H cabbage head stage, 25°F, Rosebrook
4/29 Note: most buds were not this
advanced.



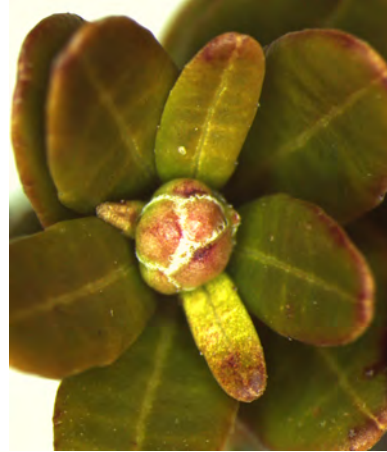
H cut bud from bud swell stage, State Bog.
Black arrows point to floral initials
(buds); area in center (white arrow) will
be the leafy growth above the flowers.



H cut bud from cabbage head stage,
Rosebrook. Black arrows point to floral
initials. Note greener interior of this bud
compared to the one on the left.



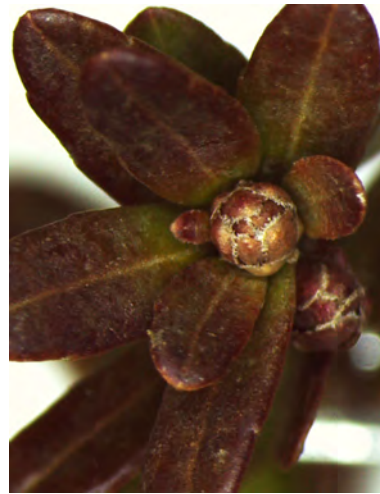
BL cabbage head stage, 27°F, State Bog
4/29 Smaller bud compared to one at right



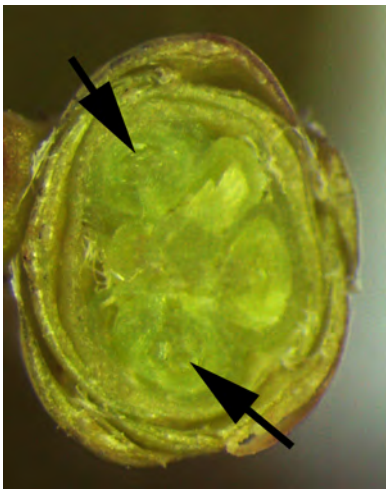
BL cabbage head stage, 27°F, Rosebrook
4/29



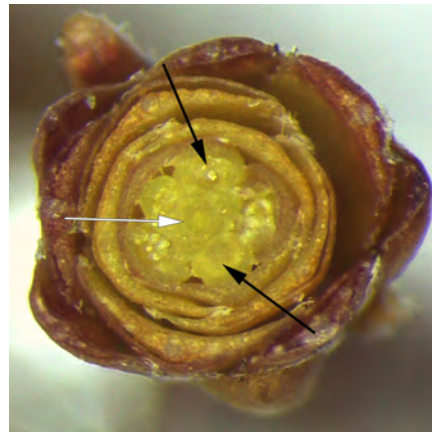
ST cabbage head, 27°F, State Bog 4/29



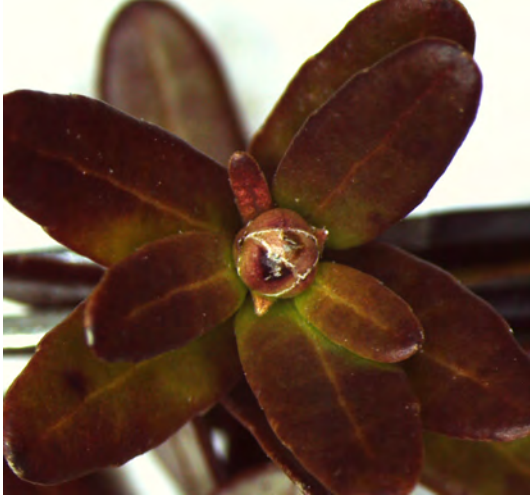
ST cabbage head, 27°F, Rosebrook 4/29



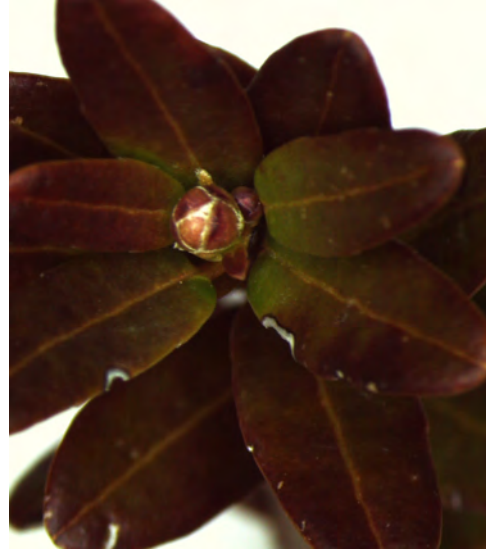
BL cut bud from Rosebrook, cabbage head stage, black arrows point to floral initials.



ST cut bud from State Bog, cabbage head stage, black arrows - floral initials, white arrow - vegetative meristem (will be the leafy growth above flowers)



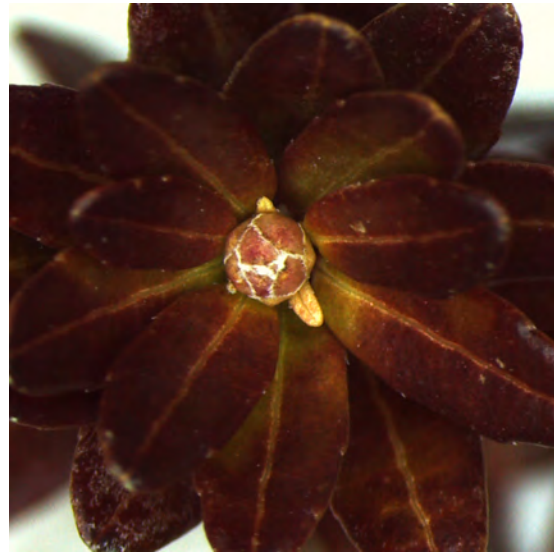
CQ , cabbage head, 27°F, State Bog 4/29



DE , cabbage head, 27°F, State Bog 4/29



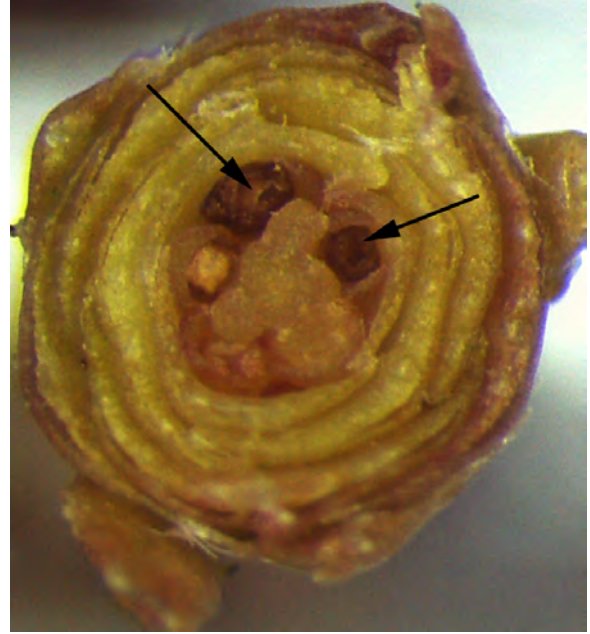
GH , cabbage head, 27°F, State Bog 4/29



MQ , cabbage head, 27°F, State Bog 4/29



GH from State Bog, cabbage head stage.
Black arrows point to floral initials.



MQ from State Bog, cabbage head stage.
Black arrows point to damaged floral initials. These will not produce flowers. Other floral initials and the vegetative meristem are undamaged.