

Supplemental Table 1. Anther development stages and corresponding typical plant morphologies in the male sterile lines KTM3315A grown in the field

Developmental stage	General description	Scale (Zadoks)
Meiosis phase	Flag leaf sheath extending	41
Tetrad phase	Flag leaf sheath opening	47
Early uninucleate phase	First visible awns	49
Medium uninucleate phase	Awns extending 0–2 cm	-
Late uninucleate phase	Awns extending 2–5cm long	-
Early binucleate phase	First spikelet of head visible	50
Medium binucleate phase	Half of head visible	54
Late binucleate phase	Head completely emerged	58
Trinucleate phase	Head completely emerged, 5 cm long	-
Late trinucleate phase	Flowering usually begins in the middle part of the head	60
Mature pollen grains phase	Flowering usually completed in the upper and lower parts of the head	-