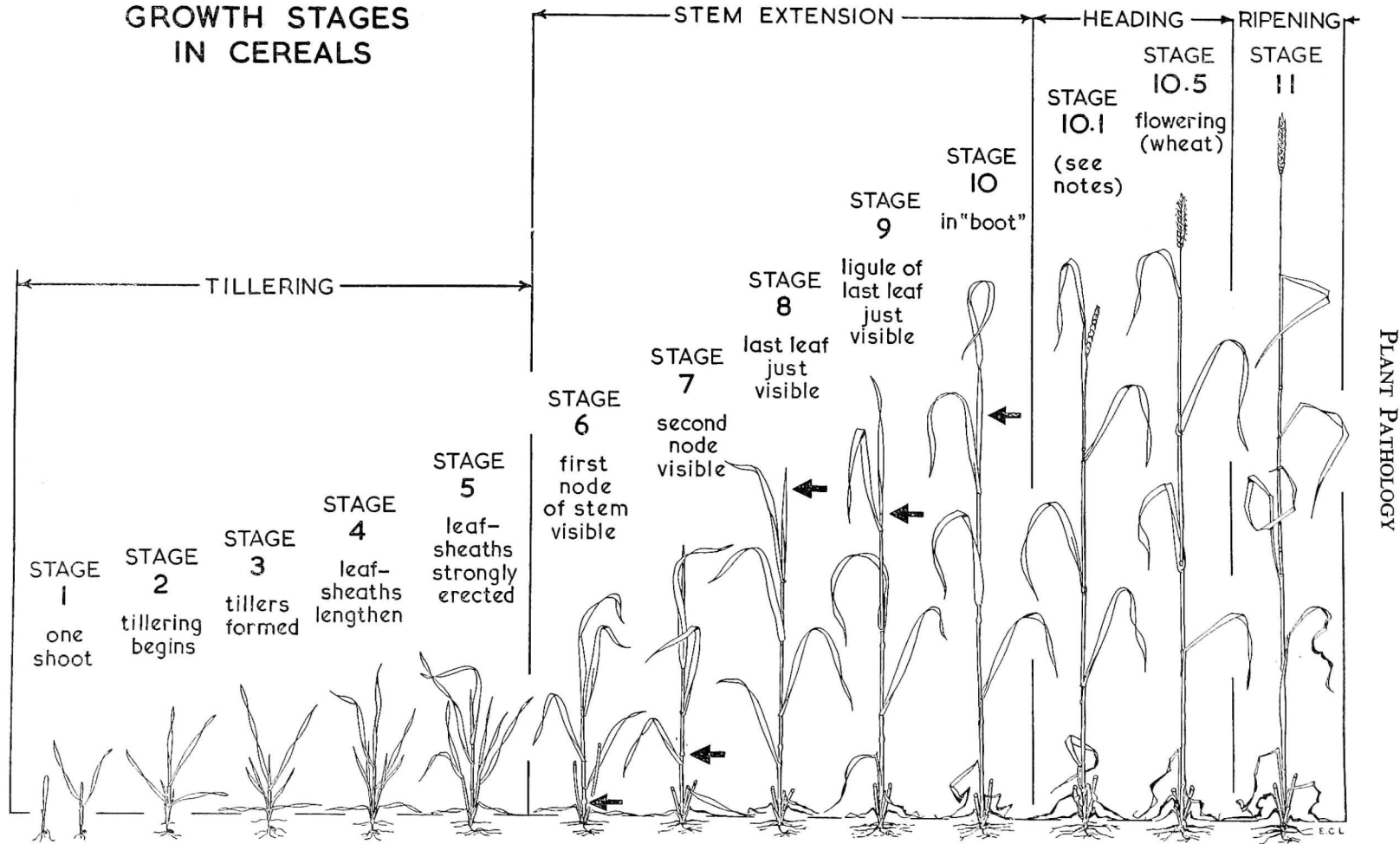


# GROWTH STAGES IN CEREALS



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## ILLUSTRATION OF THE FEEKES SCALE

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The following scale, essentially that originally provided for wheat by Feekes (1941) but with some additional notes by the late Dr. F. Earnshaw of the National Institute of Agricultural Botany, and with my illustrations from plants in the field, has been used extensively in advisory and investigational work on cereals in England and Wales during the past four years. With variations (as noted) in the heading stages, the scale has been found applicable not only to wheat, but also to oats, barley and rye. It is in use for defining the course of growth of cereal crops in relation to seasonal conditions and variety; for indicating the stage of development of the plants when mildew, rust and other disease and pest assessments are made; and also in connection with work on growth-regulator weed-killers, where the risk of damage to cereals is crucially dependent on the stage of growth at which the material is applied. The diagram has now been redrawn (p. 128), with reference to further detailed scale drawings of all four cereals from emergence to harvest made at the Plant Pathology Laboratory during the past three seasons.

Stage		
1	One shoot (number of leaves can be added) = "braiding"	TILLERING
2	Beginning of tillering	
3	Tillers formed, leaves often twisted spirally. In some varieties of winter wheats, plants may be "creeping" or prostrate	
4	Beginning of the erection of the pseudo-stem, leaf sheaths beginning to lengthen	
5	Pseudo-stem (formed by sheaths of leaves) strongly erected	STEM EXTENSION
6	First node of stem visible at base of shoot	
7	Second node of stem formed, next-to-last leaf just visible	
8	Last leaf visible, but still rolled up, ear beginning to swell	
9	Ligule of last leaf just visible	HEADING
10	Sheath of last leaf completely grown out, ear swollen but not yet visible	
10.1	First ears just visible (awns just showing in barley, ear escaping through split of sheath in wheat or oats)	
10.2	Quarter of heading process completed	
10.3	Half of heading process completed	FLOWERING (WHEAT)
10.4	Three-quarters of heading process completed	
10.5	All ears out of sheath	
10.5.1	Beginning of flowering (wheat)	
10.5.2	Flowering complete to top of ear	RIPENING
10.5.3	Flowering over at base of ear	
10.5.4	Flowering over, kernel watery ripe	
11.1	Milky ripe	
11.2	Mealy ripe, contents of kernel soft but dry	
11.3	Kernel hard (difficult to divide by thumb-nail)	
11.4	Ripe for cutting. Straw dead	

### REFERENCES

- FEEKES, W. (1941). De Tarwe en haar milieu. *Vers. XVII Tech. Tarwe Comm. Groningen*, 560-1.
- KELLER, C. and BAGGIOLINI, M. (1954). Les Stades Repères dans la Végétation du Blé. *Revue Romande, Lausanne*, 10, 17-20. [For other illustrations of the Feekes scale.]

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