Zadoks Code DC	CEREAL GROWTH STAGES	Important notes on herbicide application and crop development
00	**SOWING**	
03	Germination, seed swollen	
05	Radicle emerged from seed	
07	Coleoptile emerged from seed	
10	**EMERGENCE**	Knockdown herbicides such as glyphosate, paraquat and Spray.seed® can be used up until this crop growth stage.
	LEAVES ON MAIN SHOOT	1st leaf on all cereals has a rounded tip – find this before starting to count leaves.
11	1st leaf more than half visible	
12	2nd leaf more than half visible	Most post-emergent herbicides need at least 2 leaves fully expanded on the crop before application. This could be dependent on herbicide rate. Higher rates should be used at later crop development stages.
13	3rd leaf more than half visible	
14	4th leaf more than half visible	
15	5th leaf more than half visible	
16	6th leaf more than half visible	
17	7th leaf more than half visible	Some herbicides need 5 leaves (DC15) on the crop, (not counting tiller leaves) before application.
18	8 or more leaves visible and stem not elongating.	
	TILLERING	Crop tiller number is affected by plant density, time of sowing and or environmental conditions - and variety.
21	Main shoot and 1 tiller	Tiller number should only be used as an indicator of how "well" the crop is performing.
22	Main shoot and 2 tillers	
23	Main shoot and 3 tillers	It should not be used to determine herbicide timing.
24	Main shoot and 4 tillers	
25	Main shoot and 5 tillers	
26	Main shoot and 6 tillers	What is the secondary root development like? In a dry season this can be poor, leading to a crop unable to recover from a herbicide application.
27	Main shoot and 7 tillers	
28	Main shoot and 8 tillers	
29	Main shoot and 9 or more tillers	
	STEM ELONGATION	This is when the crop switches from growing leaves (vegetative) to producing grain (reproductive).
30	Stem starts to elongate	Most Group I herbicides should not be applied until now.
31	1st node detectable	Growing point is above ground level 2-3 cm.
32	2nd node detectable	
33	3rd node detectable	Use a sharp knife to split the main stem, starting at the base. A small head should be visible above the air space.
34	4th node detectable	

	BOOTING STAGES	
37	Flag leaf visible	STOP SPRAYING NOW!!!!!!!
39	Flag leaf collar just visible	Wheat now very sensitive to stress.
41	Early-boot stage	Flag leaf (last leaf) sheath extending
43	Mid-boot stage	Boot opposite collar of second last leaf
45	Late-boot stage	Boot above collar of second last leaf
47	Flag leaf sheath opening	
49	First awns visible	
	HEADING STAGES	
50	First spikelet of spike just visible	
52	20% of spike visible, early heading	
55	50% of spike visible, mid heading	
58	80% of spike visible, late heading	
60	Full heading but not flowering	
	FLOWERING	
62	20% of spikes are flowering	early flowering
65	50% of spikes are flowering	mid flowering
68	80% of spikes are flowering	late flowering
	KERNEL EXTENDING	
70.2	kernels near middle of spike extended 20%	
70.5	kernels extended 50%	
71	kernels watery ripe, clear liquid	
	MILK DEVELOPMENT	
73	early milk, liquid off-white	
75	mid milk, increase in solids	
77	late milk, increase in solids	
79	very late milk, half solid/half liquid	
	DOUGH DEVELOPMENT	
81	Very early dough - mostly solids when kernels crushed, doughy	
83	Early dough - kernels soft and almost dry	
85	Soft dough - kernels firm but finger nail impression not held	2,4-D can be used for preharvest spraying.
87	Hard dough - finger nail impression held	Glyphosate can be used – don't keep seed for sowing or sprouting.
	RIPENING	
90	kernels hard - difficult to divide by thumb nail	
92	harvest ripe - can no longer be dented by thumb nail	
93	kernels loosening in daytime	
94	over-ripe - straw dead and collapsing	