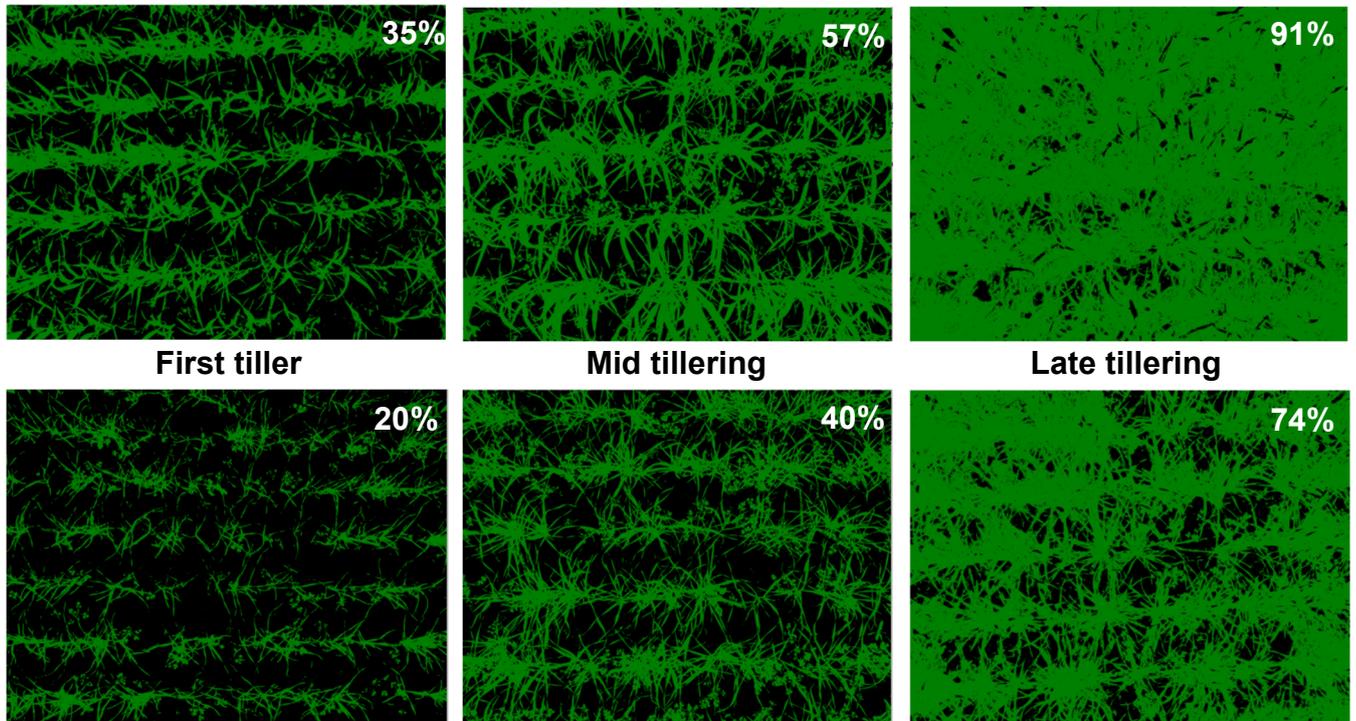


## Supplementary data



**Figure S1: Ground cover images analysed with a Canopy cover program.** This program was developed to detect leaf area on digital images. The top row are the images over tillering for the competitive wheat breeding line W470201, the bottom row is the commercial wheat cultivar Janz photographed at identical development stages.

**Table S1: Output of different models tested with Partial Least Square method.** Model 1 included 6 variables to explain weed biomass at anthesis. The Model 2 included only Light interception measured at first tiller present and Ground cover at the end of tillering. Model 3 only included light interception at first tiller present. N=60. Normalised RMSE is the normalised value of Root Mean Square Value Error

	Model 1	Model 2	Model 3
(Intercept)	53.30 (5.09) ***	53.30 (5.32) ***	53.30 (5.77) ***
Light interception first tiller	-19.25 (6.52) **	-18.62 (6.03) **	-27.83 (5.81) ***
Ground cover end tillering	-17.20 (7.77) *	-20.18 (6.03) **	
Wheat biomass flowering	10.01 (5.22)		
Light interception mid tillering	-10.58 (6.67)		
Light interception late tillering	11.13 (9.38)		
Ground cover late tillering	-8.72 (8.51)		
N	60	60	60
R2	<b>0.49</b>	<b>0.40</b>	<b>0.28</b>
Normalised RMSE	<b>0.23</b>	<b>0.23</b>	<b>0.25</b>

All continuous predictors are mean-centered and scaled by 1 standard deviation. \*\*\* p < 0.001; \*\* p < 0.01; \* p < 0.05.