



Sohag University



Faculty of Science



Botany & Microbiology Dep.

**INFLUENCE OF CULTIVATION DATE ON GROWTH
AND PHYSIOLOGICAL ACTIVITIES OF SOME
WHEAT CULTIVARS**

A THESIS

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ABBREVIATIONS

ABBREVIATIONS

GS1	Emergence to double ridge stage
GS2	Double ridge to anthesis stage
GS3	Anthesis to grain maturation stage
GDD	Growing degree days
Oct.	October
Nov.	November
Dec.	December
SSS	Soluble starch synthase enzyme
DAA	Days after anthesis
DAS	Days after sowing
t/ha	Ton/hectare
LAI	Leaf area index
LA	Leaf area
LAR	Leaf area ratio
CGR	Crop growth rate
RGR	Relative growth rate
CRI	Crown root initiation
DI	First sowing date
DII	Second sowing date
DIII	Third sowing date
NAR	Net assimilation rate
RWC	Relative water content
Chl	Chlorophyll
RCBD	Randomized complete block design

Influence of cultivation date on growth and physiological activities of some wheat cultivars

ABSTRACT

Planting date is one of the most important agronomic factors involved in producing high yielding of cereal crops, which affects the timing and duration of the vegetative and reproductive stages. The use of different dates of planting allowed us to subject wheat cultivars to heat stress, which consider the major environmental factor drastically reducing wheat production in Egypt. Therefore, a field experiment was conducted to determine the effect of three planting dates; early (25th Oct.), normal (25th Nov.) and late (25th Dec.) on phenology, growth, yield (yield components and yield quality) of four bread wheat (*Triticum aestivum* L.) cultivars; Shandaweel 1, Sids 12, Giza 168 and Sakha 93, at Shandaweel Agriculture Research Station (ARC), Egypt, during the two successive growing seasons of 2012/2013 and 2013/2014. In general, the obtained data showed that, the requirement of days and growing degree days (GDD) to attain different phenological stages (booting, heading, grain filling duration and maturity) decreased with delay in planting date. Also, planting on the normal date (25th Nov.) surpassed the other sowing dates in yield and yield components (spikes number/m², kernels number/spike, 1000-kernel weight, grain yield and straw yield). Delayed sowing puts adverse effects with respect to growth parameters of tested cultivars like plant height, leaf area index (LAI), crop growth rate (CGR), relative growth rate (RGR) and relative water content (RWC). Also, the late sowing decreased chlorophyll and grain carbohydrate content. However, the late sowing date (25th Dec.) caused an increase in net assimilation rate (NAR) and grain protein content. Concerning to sowing dates, data indicated that November 25 appeared to be optimum planting time to

ABSTRACT

harvest highest yield of wheat crop compared to those of early and late planting. The cultivar Shandaweel 1 produced high yield, but it was statistically similar to those of Sids 12 followed by Giza 168 and Sakha 93.

Keywords: wheat, grain, sowing dates, growing degree days, heat stress, yield, yield components, growth parameters, chlorophyll, protein, carbohydrate.