

Investigating traits of some wheat (*Triticum aestivum* L.) cultivars in temperate zone in Iran

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Results

Results showed that In wheat and triticale, cultivar Sivand produced maximum grain yield and harvest index, Results showed that significant and positive correlation existed between grain yield and spike length, awn length, peduncle length, number of seeds per spike, number of spikes per m², number of fertile tillers per plant, spike, straw and peduncle dry matter, 1000-kernel weight, harvest index and biological yield. Wheat cultivars Sivand and Bahar had lower growth rate at the beginning of the growing season, but they grew faster from tillering stage onward and thus reached the physiological maturity sooner. The correlations between date of emergence and booting, flowering and physiological maturity (except for tillering stage) were significantly negative. Days to tillering and stem elongation did not have any significant correlation with none of the other stages. Results also showed that correlation between booting stage and flowering, and between days to spike emergence and flowering and physiological maturity were positive. Totally, new cultivar as Sivand has better yield performance than the other cultivars in temperate zone of Iran.

Comparison of traits mean in flowering stage of wheat cultivars

Treatment /cultivar	LAI(green)	Chlo	CGR	SLA	SpMF	Grain Yield (kg/ha)
Bahar	5.13b	45.6b	17.15b	199.5bc	.19a	5644
Parsi	4.33c	46.22b	17.32b	216.5bc	.18a	6576
Pishtaz	4.09c	45.2b	13.82c	286..62a	.2a	7143
Pishgam	3.32d	47.35b	16bc	203.72bc	.18a	6572
Sirvan	3.32d	47.35b	16bc	255.64ab	.18a	4940
Sivand	3.84cd	49.48b	17.03b	220.75bc	.18a	7417

References

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Abstract

To investigate the physiology of yield formation in some wheat (*Triticum aestivum* L.) cultivars in temperate zone in Iran, an experiment was conducted at the nuclear agricultural research school in Karaj in 2015, by using randomized complete block design with four replications. Treatments included six cultivars of wheat. Various physiological traits were measured. Results showed that there were significant differences among different cultivars in the majority of studied traits. Also Result shows that in most traits (leaf area index (LAI), crop growth ratio (CGR), chlorophyll, and spike mass fraction (SpMF).

Pishtaz had minimum CGR between the wheat cultivars, because Pistaz cultivar could not use the shoot organs to photosynthesis and it maintained the lowest remobilization proses. Also Sivand had minimum CGR but it had highest yield of other wheat cultivars.

Keywords: Physiological traits; Yield; wheat.

Introduction

The world is facing the challenge of enhancing food security for a rapidly growing human population while ensuring at the same time the conservation of soil and water resources. Providing food for the growing population is only possible through improved agricultural technologies such as higher yielding crop varieties, improving fertilizer/water use efficiency, and effective pest and disease control management.

Wheat is one of the most important strategic crop that play important role in food security of Iran. Therefore, studies of the approaches that result in increased production are among the important issues in the agriculture of the country. Therefore, the availability of suitable wheat cultivars to different climate condition of Iran is very essential to the sustainable production of this important food crop.

Materials and Methods

To investigate the physiology of yield formation in some dominant cultivars belonging to temperate zone, wheat (*Triticum aestivum* L.) in Iran, an experiment was conducted in 2015, by using randomized complete block design with four replications. Treatments included six cultivars of wheat. Various phonological, morphological and physiological traits were measured. A randomized complete block design was used with three replications. The experimental field was a medium high land with sandy loam textured soil (table 2). Plot size (experimental unit) was 15 m². Seeding rate was 350 plant m². During the grow season 5 time irrigations the field (before sowing, after sowing, end of tillering, heading and end of flowering). The collected data were statistically analyzed as a Randomized Complete Block Design (RCBD) using analysis of variance (ANOVA) for all barley cultivars. The mean of genotypes and cultivars included in this trial compared by using Duncan's Multiple Range Test at (P≤ 0/05). All statistical analysis were performed using the Statistical Analysis System (SAS, Ver. 9.1).