

VERIFICATION OF VARIETAL PURITY IN WHEAT

BY

MOHAMED EL SAYED SAID AHMED KAMMOURA

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ABSTRACT

Seed categories and crop varieties play an important role in wheat production in Egypt, which effect on genetic purity of wheat genotypes. So, this investigation aimed to study the effect of seed sources and varieties on yield and its attributes. Two field experiments were conducted at the Experimental Farm of Giza Agricultural Research Center (ARC), Giza Governorate, Egypt, during the two successive winter growing seasons of 2014/2015 and 2015/2016 on the optimum sowing date 15th of November. Four wheat varieties (Misr1, Gemmeiza 11, Giza 168 and Sids 12) and their seed categories (Basic, Certified and Farmer saved seeds) were used in this study. Yield and its attributes and off- type percentage were estimated in the field experiment, further more phenol color reaction and ISSR technology were carried out at Seed Technology Department Laboratory. The results indicated significant differences between wheat genotypes and its seed categories for the most traits. Gemmeiza 11 variety gave the highest value in most studied traits *i.e.*, flag leaf chlorophyll content SPAD, flag leaf area, spike length, No. of spikes /m², No. of grains/spike, 1000-grain weight and grain yield/fad., while the lowest value of those traits were recorded by Misr 1 variety. For the effect of seed categories on yield and yield attributes, basic seeds gave the greatest value for most characters, except for plant hight where farmer seed recorded the highest value. Meanwhile insignificant effects were obtained from seed categories on flag leaf chlorophyll content SPAD. The interaction effects between genotypes and seed categories indicated that Gemmeiza 11 and Sids 12 varieties with Basic and Certified seed categories gave the highest value of most traits, while Misr 1 variety with farmer seed category gave the lowest value for yield traits. Insignificant effects were

noticed between wheat genotypes for the off- type % while seed categories showed highly significant effects where, Farmer saved seed recorded the highest value and Basic seed gave the lowest value for these traits.

According to seed quality characters, no significant differences were recorded between Varieties or between seed categories during both season and their combined analyses in germination percentage. While, significant differences were recorded in the most germination measurements and electrical conductivity test.

Wheat genotypes showed different color reaction to phenol while seed categories took the same pattern in phenol color reaction for each genotype.

Positive significant correlation coefficients were existed between grain yield and each of spike grain weight, number of grains/spike and 1000-grain weight, respectively, but negative highly association correlation was noticed between grain yield and off-type percentage. Also, positive significant correlation coefficients were recorded between 1000- seed weight and both of chlorophyll content and spike grain weight, however it was negatively significant correlated with seed vigour index, seedling length and seedling length rate.

Eight ISSR primers were used for fingerprinting the four wheat cultivars and their seed categories produced 97 band, 31 of them were polymorphic (68.04%) polymorphism. The highest level of polymorphism was observed in primer HB-12 which showed 95.00% polymorphism, while the lowest polymorphism was 28.57% in primer HB-09.

CONTENTS

	Page
1. INTRODUCTION	1
2. REVIEW OF LITERATURE	4
3. MATERIAL AND METHODS	31
4. RESULTS	48
4.2. Field inspection, earliness characters	48
4.1.1. Days to 50% heading	48
4.1.2 Days to 50% Maturity.....	51
4.2. Field Inspection, yield and its attributes.....	53
4.2.1. Flag leaf chlorophyll content (SPAD)	53
4.2.2. Flag leaf area (cm ²)	56
4.2.3. Plant height (cm).....	60
4.2.4. Spike length (cm).....	63
4.2.5. No. of fertile spikelets/spike	66
4.2.6. No of sterile spikelets/spike.....	70
4.2.7. No. of spikes /m ²	72
4.2.8. No. of grains/spike.....	75
4.2.9. 1000- grain weight (gm).....	76
4.2.10. Spike grain weight (gm).....	78
4.2.11. Grain yield (Kg/ fad.)	81
4.2.12. Straw yield (Kg/fad.).....	85
4.2.13. Biological yield (Kg/ fad.).....	88
4.2.14. Harvest index	92
4.2.15. Off- type parentage	95

4.3. Laboratory tests, standard germination test and other measurements.....	97
4.3.1. Standard germination test and its measurements.....	97
4.3.1.1. First count percentage.....	97
4.3.1.2. Germination percentage.....	99
4.3.1.3. Shoot length (cm).....	100
4.3.1.4. Root length (cm).....	102
4.3.1.5. Seedling length (cm).....	105
4.3.1.6. Seedling fresh weight (gm).....	107
4.3.1.7. Seedling dry weight(gm)	108
4.3.1.8. Seed vigour index (SVI).....	110
4.3.1.9. Seedling vigour Index.....	12
4.3.1.10. Seedling length rate	114
4.3.2. Electrical conductivity (EC).....	116
4.3.3. Phenol color reaction test	119
4.4. The relationship between different field characters and standard germination test and its measurements.....	119
4.5. ISSR marker technology	124
5. SUMMARY AND CONCLUSION.....	130
6. REFERANCES	146
ARABIC SUMMARY	

LIST OF TABLES

No.	TITLE OF TABLE	Page
(1)	Morphological characteristics for Misr1 according to UPOV.....	34
(2)	Morphological characteristics for Gemmeiza11 according to UPOV.....	35
(3)	Morphological characteristics for Giza 168 according to UPOV.....	36
(4)	Morphological characteristics for Sids 12 according to UPOV.....	37
(5)	Name and pedigree of the four used wheat cultivars...	40
(6)	List of the primer names and their nucleotide sequences used in the study for ISSR procedure.....	46
(7)	Mean performance of days to heading and days to maturity for some wheat varieties under three seed categories during two successive seasons (2014-2015 and 2015-2016) and their combined	49
(7-a)	Days to 50% heading as affected by the interaction between wheat varieties and seed categories (2 nd season)	51
(7-b)	Days to maturity as affected by the interaction between wheat varieties and seed categories (2 nd season)	53
(8)	Mean performance of flag leaf Chlorophyll content (SPAD) for some wheat varieties under three seed categories during two successive seasons (2014-2015 and 2015-2016) and their combined	55

(8-a) Flag leaf Chlorophyll content (SPAD) as affected by the interaction effect between wheat varieties and seed categories (1 st season).....	55
(9) Mean performance of plant height and flag leaf area for some wheat varieties under three seed categories during two successive seasons (2014-2015 and 2015-2016) and their combined.....	57
(9-a) Flag leaf area (cm ²) as affected by the interaction between wheat varieties and seed categories (1 st season).....	59
(9-b): Flag leaf area (cm ²) as affected by the interaction between wheat varieties and seed categories (2 nd season).....	59
(9-c) Flag leaf area (cm ²) as affected by the interaction between wheat Varieties and seed categories (Combined)	60
(9-d) Plant height as affected by the interaction between wheat varieties and seed categories (1 st season).....	62
(9-e) Plant height as affected by the interaction between wheat varieties and seed categories (2 nd season).....	62
(9-f) Plant height as affected by the interaction between wheat varieties and seed categories (Combined).....	62
(10) Mean performance of spike length for some wheat varieties under three seed categories during two successive seasons (2014-2015 and 2015-2016) and their combined	64
(10-a) Spike length as affected by the interaction between wheat varieties and seed categories (combined).....	66

(11) Mean performance of No. of fertile spikelets/ spike and No. of sterile spikelets / spike for some wheat varieties under three seed categories during two successive seasons (2014-2015 and 2015-2016) and their combined	67
(11-a) No. of fertile spikelets/ spike as affected by the interaction between wheat varieties and seed categories (1 st season).....	69
(11-b) No. of fertile spikelets/spike as affected by the interaction between wheat varieties and seed categories (2 nd season).....	69
(11-c) No. of fertile spikelets/ spike as affected by the interaction between wheat varieties and seed categories (combined).....	70
(11-d): No. of sterile spikelets/ spike for wheat as affected by the interaction between varieties and seed categories (combined).....	71
(12) Mean performance of No. of spikes /m ² and spike grain weight for some wheat varieties under three seed categories during two successive seasons (2014-2015 and 2015-2016) and their combined	73
(12-a) No. of spike /m ² as affected by the interaction between wheat varieties and seed categories (1 st season).....	74
(13) Mean performance of 1000 seed weight and Spike grain weight for some wheat varieties under three seed categories during two successive seasons (2014-2015 and 2015-2016) and their combined.....	77

(13-a) Spike grain weight (gm) as affected by the interaction between wheat varieties and seed categories (1 st season).....	80
(14) Mean performance of Grain yield (kg/fad) and Straw yield (kg/ fad) for some wheat varieties under three seed categories during two successive seasons (2014-2015 and 2015-2016) and their combined	82
(14-a.) Grain yield kg/ fad as affected by the interaction between wheat varieties and seed categories (1 st season).....	84
(14-b): Straw yield kg/ fad as affected by the interaction between wheat varieties and seed categories (1 st season).....	86
(14-c) Straw yield kg/ fad as affected by the interaction between wheat varieties and seed categories (2 nd season).....	87
(14-d) Straw yield kg/ fad as affected by the interaction between wheat varieties and seed categories (Combined).....	87
(15) Mean performance of biological yield (kg/fad) and harvest index for some wheat varieties under three seed categories during two successive seasons (2014-2015 and 2015-2016) and their combined	89
(15-a) Biological yield (kg/fad) as affected by the interaction between wheat varieties and seed categories (1 st season).....	91
(15-b) Biological yield (kg/ fad) as affected by the interaction between wheat varieties and seed categories (2 nd season).....	91

(15-c) Biological yield (kg/fad) for wheat as affected by the interaction between wheat varieties and seed categories (Combined).....	91
(15-d) Harvest index as affected by the interaction between wheat varieties and seed categories (1 st season).....	94
(15-e) Harvest index as affected by the interaction between wheat varieties and seed categories (2 nd season).....	94
(15-f) Harvest index for wheat as affected by the interaction between wheat varieties and seed categories (Combined).....	94
(16) Mean performance of off- type percentage of wheat varieties under three seed categories during two successive seasons (2014-2015 and 2015-2016) and their combined.....	96
(17) Mean performance of first count % and germination % for wheat varieties under three seed categories during two successive seasons (2014-2015 and 2015-2016) and their combined.....	98
(18) Mean performance of shoot length and root length for wheat varieties investigated under three seed categories during two successive seasons (2014-2015 and 2015-2016) and their combined.....	101
(18-a) Shoot length (cm) as affected by the interaction between varieties and seed categories (1 st season)...	103
(18-b) Shoot length (cm) as affected by the interaction between wheat varieties and seed categories (Combined).....	103

(18-c) Root length (cm) as affected by the interaction between wheat varieties and seed categories (1 st season).....	104
(19) Mean performance of seedling length and seedling fresh weight for wheat varieties investigated under three seed categories during two successive seasons (2014-2015 and 2015-2016) and their combined.....	106
(19-a) Seedling length (cm) as affected by the interaction between varieties and seed categories (1 st season)...	
(20) Mean performance of seedling dry weight and seed vigour index weight for wheat varieties investigated under three seed categories during two successive seasons (2014-2015 and 2015-2016) and their combined.....	107
(20-a) Seed vigor index (SVI) affected by the interaction between wheat varieties and seed categories (1 st season).....	109
(21) Mean performance for seedling vigour index and seedling length rate/day for wheat varieties investigated under three seed categories during two successive seasons (2014-2015 and 2015-2016) and their combined.....	111
(21-a) Seedling length rate as affected by the interaction between wheat varieties and seed categories (2 nd season).....	113
(22) Mean performance of electrical conductivity ($\mu\text{Scm}^{-1}\text{g}^{-1}$) for some wheat varieties under three seed categories during two successive seasons (2014-2015 and 2015-2016) and their combine.....	115
	117

(22-a) Electrical conductivity ($\mu\text{Scm}^{-1}\text{g}^{-1}$) as affected by the interaction between varieties and seed categories (Combined).....	118
(23) Effect of phenol reaction of wheat varieties and their seed categories using 1% contraction under one, two, three and 4 hours.....	120
(24) Correlation coefficient between grain yield and field characters with seed viability and vigour measurements of wheat.....	121
(25) Number of monomorphic, polymorphic bands and polymorphism percentage produced by each ISSR primer of the tested wheat varieties.....	125
(26) Genetic diversity coefficients among wheat varieties and seed categories.....	129