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Gemmeiza 12 – A NEW EGYPTIAN HIGH YIELDING AND RUST RESISTANT BREAD WHEAT (*Triticum aestivum* L.) CULTIVAR

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ABSTRACT

Gemmeiza 12, a new bread wheat variety released by Wheat Research Department, Field Crops Research Institute, ARC, Egypt in 2012, offers wheat growers a new choice for high yielding, and rust resistant variety. Gemmeiza 12 originated and selected from a hybrid made at the International Maize and Wheat Improvement Center (CIMMYT). The parentages and pedigree of Gemmeiza 12 are : OTUS/3/SARA/THB//VEE CMSS97Y00227S-5y-010M-010Y-010M-2Y-1M-0Y-OGM .Based on the results of 76 yield trials conducted during three successive growing seasons 2007/2008 , 2008/2009 and 2009/2010 and 73 verification yield trials through the three growing seasons 2010/2011 and 2011/2012 and 2012/2013 in addition to 22 demonstration fields during 2012/2013 growing season.

The results proved the superiority of the new cultivar Gemmeiza 12 over most of the dominating wheat cultivars i.e, Sakha 93, Gemmeiza 9, Giza 168 and Sids 12 at Delta region and Middle Egypt. Moreover, the new cultivar yielded more than Sakha 93 at all locations representing Upper Egypt and Out Valley zones but its productivity was slightly less than Giza 168 and Sids 12 in both locations. The results obtained from the on-farm trials and the demonstration field assure the superiority of Gemmeiza 12 The new released variety was resistant to rust diseases especially both yellow and stem rust diseases. The flour of Gemmeiza 12 is acceptable for bread making since the protein content reached about 13% and the wet gluten percentage was 29.1%

INTRODUCTION

Wheat (*Triticum aestivum* L.), the cereal leading crop is the main human staple food in Egypt as well as in many countries over all the world. Moreover, it is considered to be the major source of straw fodder for animal feeding. The Egyptian national wheat production in 2012/2013 season approximately amounted 9.46 million ton while the total consumption was about 16 million tons of grains and flour. Therefore, there is a need to increase the total wheat production to overcome the gap between production and consumption.

In the short term, it is not feasible to increase the area devoted to wheat. Increased production per unit area appears to be the main possible mean of reducing the wheat gap.The required yield increases may be achieved by introducing high yielding varieties and simultaneously implementing improved cultural practices. Such improved varieties must resist or tolerate the unfavorable environments and be stable in a broad spectrum of environments.

Egypt's national wheat research program adopted the strategy of Comstock and Moll (1963) to stabilize wheat production, by separating environments by macro- environmental differences such as temperature, rainfall and soil type and developing several varieties, each highly adapted to a closely identified sub-region with a relatively uniform environment under this condition, trials usually show a small variance due to genotype environment interaction, with a major variance due to genetics. Current policy favors use of more than one cultivar in a given location, therefore, more varieties with wide adaptability one sought to improve yield performance and stabilize production. However, developing narrowly adapted or location specific varieties suited to specific zones or locations must not be ignored.

Wheat yield have increased gradually over the past years , from 4.95 ard/ fed in the year 1950 to 18.67 ard/fed in the year 2013.In a study by (Ageez *et.al*., 1999)came to a conclusion that the genetic yield increase amounted 4.2% per year during 50 years period from 1950 till the year 2000.

To achieve yield maximization and avoid a plateau or decline in average yields, a continuous efforts and effective breeding program are essential. Ongoing efforts must be focused and subjecting promising selected materials to yield and agronomic evaluation in more sites to obtain reliable data and use off-station testing for yield verification and demonstration in framer's fields.

The national wheat research program had released the two varieties Sakha 61 for Delta region and Sakha 69 for all over the country due to its wide adaptability (Gomma *et. al.*, 1984).Moreover, more wheat cultivars were released during nineties namely, Gemmeiza 3(El-Sayed *et.al.,* 1996), Gemmeiza 5 (Mitkees *et.al.,* 1998) , Sakha 93 and Giza 168 which were characterized by their high resistance to strip rust and high yielding ability (Shehab El- Din *et.al*., 1999) in addition to the wheat cultivar Gemmeiza 9 which proved its superiority on the dominating wheat cultivars Sakha 93, Sids 1 and Gemmeiza 5 as well as its highly resistance to rust diseases (Mosaad *et. al*., 2000) .

The Egyptian wheat breeders through their continuous efforts had released further bread wheat cultivars, i.e. Gemmeiza 10 (El- Shami *et. al*. 2005), Sids 12 (Mahrous *et. al*., 2009), Sids 13 Moustafsa *et. al*., 2010) and Gemmeiza 11(Sadek, Eman *et. al*., 2013).

The present research work was undertaken to introduce a new Egyptian wheat cultivar resistant to rust diseases and high yielding ability under different environmental conditions.

MATERIALS AND METHODS

The new bread wheat cultivar Gemmeiza 12 has been selected from CIMMYT materials grown at El- Gemmeiza Agricultural Research Station, ARC. in 2005/2006 season. The cross name and pedigree of the new cultivar is OTUS/3/SARA/THB//VEE (CMSS97YOO227 S-5Y-010M-010Y- 010M-2Y – 1M-0Y- OGM). Moreover, the following yield trials were carried out to test the performance of the new wheat cultivar Gemmeiza 12 as follows:

1-Preliminary yield trials:

The newly released cultivar Gemmeiza 12 was advanced to Gemmeiza screening nurseries in 2006/2007 season. Gemmeiza 12 was tested for grain yield ability in 2007/2008 growing season against 64 promising lines including the dominating local wheat cultivars Sakha 93 , Gemmeiza 9 , Giza 168 and Sids 12 in 9 preliminary yield trials conducted at nine research stations representing different ecological zones of wheat growing regions at over all the country ;i.e. North Delta, Middle Delta , Middle Egypt , Upper Egypt ,and Out Valley .The experimental design used in these trials was randomized complete block design (RCBD) with four replicates according to Steel and Torrie (1960).The plot area was 4.8 m^2 including 6 rows , 4 m long and 20 cm apart.

2- Advanced yield trials:

In the next season 2008/2009, the new cultivar Gemmeiza 12 and 15 other promising lines including four local check cultivars , Sakha 93 , Gemmeiza 9, Giza 168 and Sids 12 were tested for yielding ability in 29 advanced yield trials in different ecological zones . Again the new cultivar was tested in 2009/2010 growing season along with 16 promising genotypes including the check cultivars Sakha 93, Gemmeiza 9 and Giza 168 in the second phase of advanced yield trials .In these yield trials, all promising lines as well as the check cultivars were tested in large plot area experiment (3.0 x3.5 m= 10.5 m^2 each) using planting method usually the farmers used (broadcasting). In addition, five advanced yield trials in both seasons including the same genotypes were conducted using drill planting method only at the main Agricultural Research Stations i.e., Gemmeiza, Sakha, Giza, Sids and Shandaweel. The statistical design was RCBD with four replications according to Steel and Torrie (1960).

3- Verification yield trials:

Seventy-Three on-farm trials were carried out in the farmer's fields in the old and new lands representing over all Egypt in three successive

seasons 2010/2011, 2011/2012 and 2012/2013 including the new released cultivar and the dominating wheat cultivars i.e., Sakha 93, Gemmeiza 9, Giza 168 and Sids 12 .The area of each experimental plot was (100 m^2) for each cultivar. Four randomly selected samples 4 m^2 were harvested and grain yield was weighted and adjusted to ard/fed.

4- Demonstration fields:

Twenty Two demonstration fields including Gemmeiza 12 along with 4 dominating wheat cultivars were carried out at 4 governorates representing Delta region. The area of each selected field was 1 fed. The demonstration field was planted in hills 10 cm apart on raised beds and the width of beds was 120 cm. At harvesting time, 4 randomly selected samples (4m^2) were harvested and threshed .The grain yield of each sample was weighted and adjusted to ard/fed.

5- Disease severity:

Disease severity score, expressed as the % coverage of leaves with rust pustules and plant reaction, to indicate the infection type;0=immune ,R=resistant, MR=moderately resistant,MS=moderately susceptible and S= Susceptible were recorded. Moreover, Average Coefficient of Infection (ACI) was calculated using adapted scale of Saari and Wilcoxson (1974) as follows: O=0.0, R=0.2, MR=0.4, X (mixed reaction) = 0.6, MS=0.8 and S=1.0

6- Technological and quality characters:

Some technological and quality characters i.e, protein %, ash %, extraction rate % and gluten % (wet and dry) for Gemmeiza 12 in comparison with 4 dominating wheat cultivars were done by Crop Technology Research Department, Food Technology Research Institute, ARC.

7- Distinctness Uniformity and Stability tests (DUS):

The morphological characteristics of Gemmeiza 12 were done by the Central Administration of Seed Certification (CASC) according to the International Union for the Protection of new Varieties of plants (UPOV).

RESULTS AND DISCUSSION

1- Preliminary yield trials:

The results given in (Table 1-a) showed the grain yield (ard/fed) of the new released bread wheat Gemmeiza 12 and four commercial wheat cultivars in 2007/2008 growing season at Delta region . The new cultivar yielded almost the same as Sakha 93 , Gemmeiza 9 and Giza 168 and significantly at over all locations less than Sids 12 wheat cultivar .Meanwhile, the yield of Gemmeiza 12 yielded about 2.1% less than the checks mean at Delta region i.e. Sakha ,Gemmeiza and Kafr El-Hamam Research Stations. Grain yield of the new cultivar exceeded all the commercials wheat cultivars mean at Middle Egypt by 6.7% (Table 1-b).Likewise, the new cultivar Gemmeiza 12 outyielded all check cultivars at Upper Egypt with significant increase over Giza 168 and Sids 12.Moreover, the grain yield increase of

Gemmeiza 12 was only 0.6% over the checks mean at El-Nubaria Research Station. (Table 1- c). Results of the preliminary yield trial at overall Egypt indicate that the new wheat cultivar Gemmeiza 12 out yielded the checks mean, Sakha 93, Giza 168 and Gemmeiza 9 while, yielded the same as Sids 12 (Table 1-d).

Table (1-a):Grain yield (ard./fed.) of the preliminary yield trials for Gemmeiza 12 and four bread wheat cultivars at Delta region in 2007/2008 season.

Cultivars	Locations			Mean
	Sakha	El-Gemmeiza	Kafer El-Hamam	
Sakha 93	22.71	25.21	16.37	21.43
Gemmeiza 9	20.40	26.96	19.78	22.38
Giza168	23.42	24.12	19.25	22.26
Sids 12	23.74	27.10	20.11	23.56
Checks mean	22.50	25.85	18.88	22.41
Gemmeiza 12	**22.07**	**24.06**	**19.69**	**21.94**
C.V %	8.89	8.02	8.79	8.59
L.S.D. at 5%	2.71	2.76	2.33	2.60

Table (1-b):Grain yield (ard./fed.) of the preliminary yield trials for Gemmeiza 12 and four bread wheat cultivars at Middle Egypt in 2007/2008 season.

Cultivars	Locations			Mean
	Giza	Sids	Mallawy	
Sakha 93	14.17	25.05	19.97	19.73
Gemmeiza 9	12.42	21.39	19.61	17.81
Giza 168	12.83	20.28	21.78	18.30
Sids 12	9.25	23.71	23.49	18.82
Checks mean	12.17	22.61	21.21	18.66
Gemmeiza 12	**12.42**	**25.92**	**21.41**	**19.91**
C.V%	25.59	10.00	4.67	13.42
L.S.D. at 5%	2.21	3.08	1.33	2.21

Table (1-c): Grain yield (ard./fed.) of the preliminary yield trials for Gemmeiza 12 and four bread wheat cultivars at Upper Egypt and Out Valley in 2007/2008 season.

Cultivars	Locations		Mean	Out Valley
	Shandaweel	Matanaa		Nubaria
Sakha 93	22.25	23.79	23.02	12.47
Gemmeiza 9	22.95	21.98	22.47	16.14
Giza 168	20.93	19.80	20.37	16.60
Sids 12	23.07	20.78	21.93	18.29
Checks mean	22.30	21.59	21.95	15.88
Gemmeiza 12	**23.94**	**25.43**	**24.68**	**15.97**
C.V%	14.21	10.20	12.34	11.60
L.S.D. at 5%	4.42	3.19	2.73	2.66

Table (1-d): Grain yield (ard./ fed.) of the preliminary yield trials for Gemmeiza 12 and four bread wheat cultivars at over all Egypt in 2007/2008 season.

Cultivars	Locations				Mean
	Delta	Middle Egypt	Upper Egypt	Out valley	
Sakha 93	21.43	19.73	23.02	12.47	19.16
Gemmeiza 9	22.83	17.81	22.47	16.14	19.81
Giza 168	22.26	18.30	20.37	16.60	19.38
Sids 12	23.56	18.82	21.93	18.29	20.65
Checks mean	22.41	18.66	21.95	15.88	19.73
Gemmeiza 12	**21.94**	**19.91**	**24.68**	**15.97**	**20.63**
C.V%	8.59	14.79	12.34	11.60	11.82
L.S.D. at 5%	1.50	2.21	2.73	2.66	2.28

2-Advanced yield trials:

Data in (Table 2-a) show the grain yield of advanced yield trials for Gemmeiza 12 and four bread wheat cultivars at North Delta in 2008/2009 growing season. The newly bread wheat cultivar Gemmeiza 12 gave more grain yield than the check cultivars Sakha 93 , Giza 168 and Sids 12 but less grain yield than Gemmeiza 9 with an average increase of 3.9% over the checks mean at North Delta.

The new released cultivar Gemmeiza 12 yielded more than all tested wheat cultivars at Gemmeiza, Kafr El-Hamam and Sharkia-2 locations at South Delta region. The grain yield of the new cultivar exceeded all the commercial wheat cultivars i.e.Sakha 93, Gemmeiza 9, Giza 168 and Sids 12 with 4.5% increase over all the checks mean at South Delta region(Table2-b).

For the results of Middle Egypt region (Table 2-c), data showed that the yield of the newly bread wheat cultivar had overcome the checks cultivars Sakha 93, Gemmeiza 9 and Giza 168 at over all locations while, yielded almost the same as Sids 12 cultivar. The increase in grain yield over checks mean was estimated by 4.3% at Middle Egypt.

The results of advanced yield trials at Upper Egypt (Table 2-d) in 2008/2009 season cleared that the new released wheat cultivar Gemmeiza 12 yielded 23.35 ard/fed almost the same as the check cultivar Gemmeiza 9 and surpassed the other three checks Sakha 93 , Giza 168 and Sids 12 and the checks mean at Shandaweel location .Meanwhile, its productivity was significantly less than the check cultivars at El-Matanaa location while, yielded almost the same as Sakha 93, Gemmeiza 9 and Giza 168 and significantly less than Sids 12 at Kom-Ombo .The productivity of the new cultivar at over all Upper Egypt was 6.3% less than the checks mean.

Data in Table 2-e revealed that Gemmeiza 12 yielded more than all check cultivars at Gemmeiza, Giza and Sids Research Stations when using drill planting method .Meanwhile, at Sakha research station the yield of the new cultivar surpassed Sakha 93, Gemmeiza 9 and Giza 168.The yield of the new released cultivar surpassed the checks mean at the five Agricultural Research Stations by 10.8% when using drill planting method.

The data presented in Table 2-f showed that the new cultivar was less in its yield productivity compared with the local checks at all Out Valley region. The yield productivity was estimated by about 3.8%less than all checks mean at over all Out Valley locations.

The results of the advanced trials over all Egypt in 2008/2009 season (Table 2-j) cleared that the new cultivar Gemmeiza 12 outyielded the check cultivar Sakha 93 and Giza 168 at North and South Delta, Middle Egypt and when using drill planting method in addition to its superiority over the check cultivar Sids 12 at North and South Delta and in drill sowing method. The average increase in grain yield of Gemmeiza 12 above all checks mean at over all Egypt in 2008/2009 season was only 2.7 % although its yield productivity was insignificantly less than the check cultivars Giza 168 and Sids 12 at both Upper Egypt and Out Valley regions.

Table(2-a): Grain yield (ard/ fed.) of the advanced yield trials (D.BW)for Gemmeiza 12 and four bread wheat cultivars at North Delta in 2008/2009 season.

Cultivars	Locations						Mean
	El-Serw	Dakhalia 1	Dakhalia 2	Sakha	Etai-Elbarood	Behiraa	
Sakha 93	20.23	19.01	10.47	25.73	18.07	21.33	19.14
Gemmeiza 9	18.09	20.58	15.40	26.81	21.90	24.67	21.24
Giza 168	18.61	21.52	13.87	26.82	19.07	22.03	20.31
Sids 12	16.73	24.98	12.20	27.41	14.53	18.67	19.09
Checks mean	18.42	21.52	12.99	26.69	18.39	21.67	19.95
Gemmeiza 12	**20.16**	**23.97**	**14.67**	**28.33**	**16.60**	**20.67**	**20.73**
C.V %	10.91	3.65	5.72	6.07	5.39	7.40	6.52
L.S.D. at 5%	2.78	1.09	1.10	2.34	1.35	2.15	1.86

Table (2-b): Grain yield (ard / fed.) of the advanced yield trials (D-BW) for Gemmeiza 12 and four bread wheat cultivars at South Delta in 2008/2009 season.

Cultivars	Locations								Mean
	Gemmeiza	Sers El-Liaan	Tag El-Ez	Kafr El-Hamam	Sharkia - 1	Sharkia - 2	Monufia	Qaluobia	
Sakha 93	22.63	23.47	17.90	21.33	21.23	18.23	22.27	28.13	21.9
Gemmeiza9	24.13	23.50	17.58	21.38	23.70	16.90	23.40	32.00	22.82
Giza 168	23.47	25.57	17.67	22.73	23.73	18.70	24.00	29.67	23.19
Sids 12	23.20	24.50	23.10	21.25	23.53	17.07	20.20	28.53	22.67
Checks mean	23.36	24.26	19.06	21.67	23.05	17.73	22.47	29.58	22.65
Gemmeiza 12	**26.27**	**24.93**	**21.59**	**24.91**	**20.23**	**19.90**	**22.67**	**28.93**	**23.68**
C.V %	7.07	9.44	4.59	2.58	7.33	9.08	16.88	11.94	8.61
L.S.D. at 5%	2.39	3.26	1.20	0.83	2.32	2.24	5.57	4.95	2.85

In 2009/2010 growing season, yields of the new variety Gemmeiza 12 and the common check cultivars Sakha 93, Gemmeiza 9 and Giza 168 are given in Tables 3a, b,c,d,e,f and j. In North Delta (Table 3-a) , Gemmeiza 12 gave more grain yield than Sakha 93 , Giza 168 and the checks mean at El-Serw, Dakhalia 1, Dakhalia 2 and Sakha locations in addition to Sakha 93 at

Etai- Elbarood location. Meanwhile , the productivity of the new cultivar was significantly less than Sakha 93 and insignificantly less than Gemmeiza 9 and Giza 168 at El-Behiraa location.The grain yield of the new variety exceeded the checks mean by 2.97% at North Delta region.

Table (2-c):Grain yield (ard / fed.) of the advanced yield trials (D-BW) for Gemmeiza 12 and four bread wheat cultivars at Middle Egypt in 2008/2009season.

Cultivars	Locations					
	Giza	Fayoum	Sids	Mallawy	Menia	Mean
Sakha 93	25.45	26.00	31.67	23.53	21.53	25.64
Gemmeiza 9	26.38	22.33	29.8	24.43	21.93	24.97
Giza 168	26.96	25.00	29.63	24.23	19.87	25.14
Sids 12	28.36	27.00	28.87	24.41	28.93	27.51
Checks mean	26.79	25.08	29.99	24.15	23.07	25.82
Gemmeiza 12	**28.71**	**24.00**	**30.73**	**23.23**	**27.93**	**26.92**
C.V %	6.33	12.12	5.74	6.85	7.91	7.79
L.S.D. at 5%	2.41	4.19	2.48	2.32	2.41	2.76

Table (2-d): Grain yield (ard / fed.) of the advanced yield trials (D-B.W) for Gemmeiza 12 and four bread wheat cultivars at Upper Egypt in 2008/2009 season.

Cultivars	Locations			
	Shandaweel	Mattana	Kom-Ombo	Mean
Sakha 93	18.62	22.93	21.20	20.92
Gemmeiza 9	23.83	23.67	20.93	22.81
Giza 168	22.32	25.53	21.00	22.95
Sids 12	22.32	24.27	23.67	23.42
Checks mean	21.78	24.10	21.70	22.52
Gemmeiza 12	**23.35**	**19.40**	**20.60**	**21.12**
C.V %	11.13	7.19	6.41	8.24
L.S.D. at 5%	3.42	2.35	1.96	2.58

Table (2- e): Grain yield (ard / fed.) of the advanced yield trials (D-BW)– Drill for Gemmeiza 12 and four bread wheat cultivars in 2008/2009 season

Cultivars	Locations					
	Gemmeiza	Sakha	Giza	Sids	Shandaweel	Mean
Sakha 93	23.03	23.20	28.00	34.80	22.09	26.22
Gemmeiza 9	25.87	22.97	25.75	33.50	21.05	25.83
Giza 168	22.57	23.38	20.25	34.30	25.19	25.14
Sids 12	22.60	27.05	23.84	34.27	24.55	26.46
Checks mean	23.52	24.15	24.46	34.22	23.22	25.91
Gemmeiza 12	**29.43**	**25.68**	**30.33**	**36.23**	**21.93**	**28.72**
C.V %	7.20	6.89	10.79	4.02	9.98	7.78
L.S.D. at 5%	2.58	2.42	3.81	1.99	3.29	2.82

Table (2-f): Grain yield (ard / fed.) of the advanced yield trials (D-BW) for Gemmeiza 12 and four bread wheat cultivars at out Valley in 2008/2009 season.

Cultivars	Locations						
	Nubaria	Al-Bostan	Assuit	New valley	Tushki	El-Ewinat	Mean
Sakha 93	19.99	10.95	10.40	19.63	19.63	18.77	16.56
Gemmeiza 9	17.87	10.25	11.33	19.00	19.22	14.87	15.42
Giza 168	18.53	13.00	9.33	19.09	19.49	19.80	16.54
Sids 12	21.20	11.80	11.33	18.57	22.07	20.37	17.56
Checks mean	19.40	11.50	10.60	19.07	20.10	18.45	16.52
Gemmeiza 12	**14.60**	**11.52**	**11.33**	**18.84**	**18.79**	**20.23**	**15.89**
C.V %	7.93	11.84	15.68	8.83	6.64	4.27	9.20
L.S.D. at 5%	1.76	1.95	2.33	2.58	1.86	1.16	1.94

Table (2-j): Grain yield (ard / fed.) of the advanced yield trials (D-BW) for Gemmeiza 12 and four bread wheat cultivars at over all Egypt in 2008/2009 season.

Cultivars	Locations						Mean
	North Delta	South Delta	Middle Egypt	Upper Egypt	Out Valley	Drill	
Sakha 93	19.14	21.9	25.64	20.92	16.56	26.22	21.73
Gemmeiza 9	21.24	22.82	24.97	22.81	15.42	25.83	22.18
Giza 168	20.31	23.19	25.14	22.95	16.54	25.14	22.21
Sids 12	19.09	22.67	27.51	23.42	17.56	26.46	22.79
Checks mean	19.95	22.65	25.82	22.53	16.52	25.91	22.23
Gemmeiza 12	**20.73**	**23.68**	**26.92**	**21.12**	**15.89**	**28.72**	**22.84**
C.V %	6.52	8.61	7.79	8.24	9.20	7.78	8.02
L.S.D. at 5%	1.81	2.84	2.76	2.57	1.94	2.82	2.45

The new wheat cultivar Gemmeiza 12 yielded 20.76 ard/fed at over all mean of nine locations representing South Delta region. The estimated increase was 3.5% over the checks mean (Table 3-b). Moreover, at Middle Egypt, the yield of the new bread wheat cultivar Gemmeiza 12 exceeded the check cultivars at all the tested locations in Middle Delta region. The average increase in grain yield of Gemmeiza 12 above all checks mean cultivars at over all Middle Egypt was 7.3% (Table 3-c).

Regarding to Upper Egypt , (Table 3-d), the new cultivar Gemmeiza 12 yielded insignificantly less than all check cultivars at Shandaweel, Gemmeiza 9 at El-Mattanaa and both Gemmeiza 9 and Giza 168 at Kom-Ombo. The decrease in grain yield at over all Upper Egypt regions reached about -3.1%.

The grain yield (ard/fed) of the advanced yield trials when sown by drill planting method for Gemmeiza 12 and three bread wheat cultivars in 2009/2010 growing season are presented in Table 3-e .The new cultivar proved its superiority above Gemmeiza 9 and Giza 168 cultivars at Gemmeiza , Sids,Sakha and Shandaweel locations while, yielded more over Sakha 93 at Giza location .The average yield increase of Gemmeiza 12 was

1.13 ard/fed (4.8%) when compared with the means of all check cultivars across all tested locations.

Table (3-a): Grain yield (ard / fed.) of the advanced yield trials (D-BW)for Gemmeiza 12 and three bread wheat cultivars at North Delta in 2009/2010 season.

Cultivars	Locations						
	El-Serw	Dakahlia 1	Dakahlia 2	Sakha	Etai-Elbarood	Behira	Mean
Sakha 93	16.82	9.54	10.40	20.49	13.27	23.13	15.60
Gemmeiza 9	16.28	13.47	13.49	21.25	18.67	20.53	17.28
Giza 168	16.83	10.8	12.27	21.47	17.54	21.13	16.67
Checks mean	16.63	11.27	12.05	21.07	16.49	21.6	16.52
Gemmeiza 12	**18.90**	**11.80**	**12.60**	**23.11**	**16.14**	**19.50**	**17.01**
C.V %	7.42	21.36	21.66	8.04	5.19	5.97	11.61
L.S.D. at 5%	1.82	3.53	3.85	2.54	1.25	1.83	2.47

Table (3-b): Grain yield (ard / fed.) of the advanced yield trials (D-BW) for Gemmeiza 12 and three bread wheat cultivars at South Delta in 2009/2010 season.

Cultivars	Locations									Mean
	Gemmeiza	Sers El-lian	Tag El-Ez	Kafr El-Hamam	Sharkia 1	Sharkia 2	Menofiya	Qaluobia	Bahteem	
Sakha 93	22.93	17.44	15.14	20.93	23.73	13.57	21.67	27.40	15.20	19.78
Gemmeiza 9	24.2	17.94	14.87	21.27	24.73	14.1	22.34	21.03	20.64	20.12
Giza 168	25.29	17.77	13.14	23.2	24.03	14.07	26.67	17.33	20.83	20.26
Checks mean	24.14	17.71	14.38	21.8	24.16	13.91	23.56	21.92	18.89	20.05
Gemmeiza 12	**27.43**	**18.18**	**14.80**	**22.80**	**21.00**	**15.30**	**23.67**	**22.35**	**21.35**	**20.76**
C.V %	5.93	6.1	9.78	4.71	6.41	9.86	13.23	9.39	2.48	7.54
L.S.D. at 5%	2.2	1.59	1.93	1.57	2.15	2.1	4.45	3.53	0.65	2.24

Table (3-c): Grain yield (ard / fed.) of the advanced yield trials (D-BW) for Gemmeiza 12 and three bread wheat cultivars at Middle Egypt in 2009/2010 season

Cultivars	Locations					Mean
	Giza	Fayoum	Sids	Mallawy	Menia	
Sakha 93	26.8	14	24.01	17.42	18.94	20.23
Gemmeiza 9	26.2	19.33	22.63	18.32	18.67	21.03
Giza 168	26.85	19.33	19.35	18.14	19.07	20.55
Checks mean	26.62	17.55	21.99	17.96	18.9	20.6
Gemmeiza 12	**27.00**	**20.00**	**25.39**	**18.38**	**19.89**	**22.11**
C.V %	4.25	14.73	8.76	7.09	6.95	8.36
L.S.D. at 5%	1.52	3.94	2.99	1.86	1.86	2.43

In Out Valley zone (Table 3-f), Gemmeiza 12 proved its superiority over the check cultivars Sakha 93, Gemmeiza 9 and Giza 168 at Assuit, Ismailia and El-Ewinat locations. Meanwhile, its productivity was less than all check cultivars at Nubaria location and gave more yield than Sakha 93 cultivar at El-Bostan location as well as Giza 168 at New Valley and fewer yields than Gemmeiza 9 at both locations. The grain yield productivity was in favor of Gemmeiza 12 by 1.24 ard/fed (9.1 %) at over all Out Valley regions.

The new released cultivar outyielded the mean yield of all the check cultivars in 34 advanced yield trials at over all Egypt in 2009/2010 season by 4.1% (Table 3-j).

Table (3-d): Grain yield (ard/fed.) of the advanced yield trials(D-BW)for Gemmeiza 12and three bread wheat cultivars at Upper Egypt in 2009/2010 season.

Cultivars	Locations			Mean
	Shandaweel	Mattana	Kom-Ombo	
Sakha 93	18.87	16.87	13.69	16.47
Gemmeiza 9	17.97	20	17.6	18.52
Giza 168	19.05	18.67	17.8	18.51
Checks mean	18.63	18.51	16.36	17.83
Gemmeiza 12	**17.63**	**19.00**	**15.22**	**17.28**
C.V %	7.69	10.42	15.82	11.31
L.S.D. at 5%	2.14	2.79	3.59	2.84

Table (3-e): Grain yield (ard / fed.) of the advanced yield trials (D-BW-Drill)for Gemmeiza 12 and three bread wheat cultivars in 2009/2010 season.

Cultivars	locations					Mean
	Gemmeiza	Sakha	Giza	Sids	Shandaweel	
Sakha 93	23.5	21.95	17	30.76	22.22	23.09
Gemmeiza 9	27.07	21.45	19.83	29.35	21.39	23.82
Giza 168	27.8	21.94	18.33	28.31	20.59	23.39
Checks mean	26.12	21.78	18.39	29.47	21.4	23.43
Gemmeiza 12	**29.70**	**22.33**	**18.33**	**30.69**	**21.77**	**24.56**
C.V %	10.41	5.00	10.51	4.91	8.62	7.89
L.S.D. at 5%	4.10	1.60	2.83	2.11	2.84	2.70

Table (3-f): Grain yield (ard / fed.) of the advanced yield trials (D-BW) for Gemmeiza 12 and three bread wheat cultivars at Out Valley in 2009/2010 season.

Cultivars	locations						Mean
	Nubaria	Al-Bostan	Assuit	New valley	Ismalia	El-Ewinat	
Sakha 93	20.75	10.00	7.20	21.18	6.92	15.77	13.64
Gemmeiza 9	21.27	12.47	6.00	20.35	8.39	16.01	14.08
Giza 168	22.93	11.40	6.40	12.69	8.00	16.96	13.06
Checks mean	21.65	11.29	6.53	18.07	7.77	16.25	13.59
Gemmeiza 12	**20.60**	**11.07**	**7.73**	**20.11**	**8.48**	**20.97**	**14.83**
C.V %	11.04	12.12	6.30	3.31	6.34	4.18	7.21
L.S.D. at 5%	3.35	1.93	0.95	0.85	0.79	1.05	1.49

The average grain yield of Gemmeiza 12 was 20.97 ard/fed over three growing seasons of 2007/2008, 2008/2009 and 2009/2010. The mean yield of the new released cultivar out yielded all the checks mean, Sakha 93,

Gemmeiza 9 and Giza 168. However, its yield productivity was insignificantly less than Sids 12 over two growing seasons of 2007/2008 and 2008/2009 (Table 4).

Table (3-j): Grain yield (ard / fed.) of the advanced yield trials (D-BW) for Gemmeiza 12 and three bread wheat cultivars at over all Egypt in 2009/2010 season.

Cultivars	Locations						Mean
	North Delta	South Delta	Middle Egypt	Upper Egypt	Out valley	Drill	
Sakha 93	15.6	19.78	20.23	16.47	13.64	23.09	18.14
Gemmeiza 9	17.28	20.12	21.03	18.52	14.08	23.82	19.14
Giza 168	16.67	20.26	20.55	18.51	13.06	23.39	18.74
Checks mean	16.52	20.05	20.6	17.83	13.59	23.43	18.67
Gemmeiza 12	**17.01**	**20.76**	**22.11**	**17.28**	**14.83**	**24.56**	**19.43**
C.V %	11.61	7.54	8.36	11.31	6.71	7.89	8.90
L.S.D. at 5%	2.47	2.24	2.43	2.84	1.33	2.70	2.34

Table 4: Average grain yield (ard/fed) for Gemmeiza 12 and four bread wheat cultivars over three growing seasons.

Cultivars	years			Mean
	2007/2008	2008/2009	2009/2010	
Sakha 93	19.16	21.73	18.14	19.68
Gemmeiza 9	19.81	22.18	19.14	20.38
Giza 168	19.38	22.21	18.74	20.11
Sids 12	20.65	22.79	-	21.72
Checks mean	19.75	22.23	18.67	20.22
Gemmeiza 12	**20.63**	**22.84**	**19.43**	**20.97**
C.V%	11.82	8.05	8.90	9.59
L.S.D. at 5%	2.28	2.45	2.34	2.35

3-Verification yield trials:

The results presented in table 5-a show the average grain yield for Gemmeiza 12 and four commercial wheat cultivars in 23 on-farm yield trials grown in different governorates represent all production areas in Egypt in 2010/2011 growing season .The obtained data confirm the results we got in yield trials which support the superiority of Gemmeiza 12 over the dominating wheat cultivars at Delta region and compete with Sids 12, Giza 168 and Sakha 93 at Upper Egypt and yielded the same as Sakha 93 at New lands .
The results of 32 on - farm trials in 2011/2012 which are presented in Table 5-b showed that Gemmeiza 12 surpassed the check cultivars at Delta region while its productivity was less than Gemmeiza 9 at Upper Egypt and new lands. In 2012/2013 growing season , the grain yield of Gemmeiza 12 overcome Giza 168 and Sids 12 at Delta region as well as Giza 168 in the new lands(Table 5-c).

Table (5-a): Grain yield (ard / fed.) of verification yield trials of the newly released cultivar Gemmeiza 12 in 2010 /2011 season.

Zones	Governorates	No. of trials	Sakha 93	Gemmeiza 9	Giza 168	Sids12	Gemmeiza12
North Delta	El-Behera	2	20.02	19.95	21.70	22.12	22.12
	Kafr El –Sheikh	2	17.80	18.20	19.28	-	-
Mean			18.91	19.08	20.49	22.12	22.12
Middle Delta	Sharkia	2	16.05	14.00	17.76	22.15	21.52
	Dakahlia	2	18.31	20.98	14.20	19.91	19.35
	Gharbia	2	22.80	22.40	23.40	25.2	28.00
Mean			19.05	19.13	18.45	22.42	22.96
South Delta	Monufia	2	23.32	23.24	22.26	22.49	23.50
	Qalyubia	2	24.11	24.91	26.57	26.60	25.58
	Giza	2	25.20	25.90	25.90	23.80	24.30
Mean			24.21	24.68	24.91	24.30	25.06
Upper Egypt	El-Menia	2	23.20	23.19	19.76	27.16	25.34
	Sohag	2	17.92	-	20.16	15.68	18.02
	Aswan	1	16.80	-	16.00	16.00	14.00
Mean			19.31	23.91	18.64	19.61	19.12
New Lands	Port Said	1	18.44	24.35	17.81	20.27	16.47
	Nubaria	1	13.89	19.25	15.58	19.39	17.36
Mean			16.17	21.80	15.69	16.86	16.92
Zones mean			19.53	21.72	19.84	21.66	21.24

Table (5-b): Grain yield (ard / fed.) of verification yield trials of the newly released cultivar Gemmeiza 12 in 2011 /2012 season.

Zones	Governorates	No. of trials	Gemmeiza9	Giza 168	Sids12	Gemmeiza12
North Delta	El-Beheira	2	21.28	20.86	24.50	24.22
	Alexandria	2	22.68	22.26	20.86	21.39
	Kafr El –Sheikh	4	19.33	22.38	18.12	20.50
Mean			21.10	21.83	21.16	22.04
Middle Delta	Dakahlia	2	23.80	21.75	23.76	20.75
	Gharbia	2	30.00	22.23	25.36	25.72
Mean			26.9	21.99	24.56	23.24
South Delta	Monufia	3	20.81	24.12	25.25	26.35
	Qalyubia	2	28.51	24.98	27.72	30.20
	Giza	1	27.30	29.05	29.40	27.30
Mean			25.54	26.05	27.46	27.95
Middle Egypt	Faiyum	2	-	27.65	29.30	26.10
	Beni-suef	2	-	19.25	18.65	20.55
Mean			-	23.45	23.98	23.33
Upper Egypt	El-Menia	2	-	21.41	22.10	22.10
	Assiut	2	-	24.36	19.57	22.70
	Sohag	2	-	22.40	23.24	19.60
	Aswan	1	-	16.80	18.30	13.70
Mean			-	21.24	20.80	19.53
New Lands	Ismailia	1	24.50	21.00	24.50	21.70
	Port Said	1	22.93	17.86	24.38	19.18
	Suez	1	17.92	17.64	18.70	18.48
	Nubaria	1	14.93	17.73	20.53	20.53
Mean			19.12	18.79	21.24	20.34
Zones mean	32		23.17	22.23	23.20	22.80

Table (5-c): Grain yield (ard./ fed.) of verification yield trials of the newly released cultivar Gemmeiza 12 in 2012 /2013 season.

Zones	Governorates	No. of trials	Giza 168	Sids12	Gemmeiza12
North Delta	El-Behera	1	21.21	22.40	20.72
	Kafr El –Sheikh	2	18.83	17.99	17.90
	Alexandria	1	18.55	15.89	23.73
	Damietta	1	19.83	17.90	19.25
Mean			19.60	18.54	20.4
Middle Delta	Sharkia	2	22.47	22.94	19.74
	Gharbia	1	22.40	22.40	23.80
	Dakhalia	2	19.33	19.13	26.59
Mean			21.40	21.49	23.38
South Delta	Monufia	2	22.26	22.56	23.88
	Qalyubia	2	24.72	30.42	30.21
Mean			23.49	26.49	27.04
New Lands	Port Said	1	16.67	23.05	21.94
	Suez	1	19.60	20.44	18.48
	Alexandria	1	22.82	19.40	18.97
	Kafr El –Sheikh	1	17.22	22.68	17.08
Mean			19.07	21.39	19.11
Zones mean			20.89	21.98	22.48

4-Demonstration fields:

It is clear from the results of 22 demonstration fields presented in Table 6 that the new cultivar Gemmeiza 12 yielded 25.70 ard/fed and surpassed the yield of the check cultivars Gemmeiza 9, Giza 168 and Sids 12 in the demonstration fields at four governorates representing Delta region i.e. , Gharbia, Monufia, Dakhalia and Qalyubia. The grain yield of Gemmeiza 12 exceeded the mean yield of the four governorates.

Table (6): Average grain yield (ard/fed) of Gemmeiza 12 and four commerical wheat cultivars at four governorates in 2012/2013 season.

Cultivars	Demonstration field (ard/fed)	Governorate	Mean * (ard/fed)
Gemmeiza 9	24.24	Gharbia	20.77
Giza 168	22.79	Monufia	22.10
Sids 12	24.46	Dakhalia	19.37
Gemmeiza 12	25.70	Qalyubia	19.10

* Central Administration of Agricultural Statistic (CAAS)

5-Rust disease resistance:

Tables 7-a, b and c showed disease rust resistance scores for the new released wheat cultivar Gemmeiza 12 at Gemmeiza, Sakha and Nubaria Agric. Res. Stations during 2007/2008, 2008/2009 and 2009/2010 growing seasons. Performance of Gemmeiza 12 reflecting good resistance for both

leaf and stem rust diseases comparing with the dominating wheat cultivars. Table 7-d reveal the mean average coefficient of leaf and stem rust diseases of Gemmeiza 12 under field conditions at three stations. The data showed that the new cultivar Gemmeiza 12 exhibited the lowest values of mean ACI for leaf and stem rust diseases being 0.66 and 0.00 respectively compared with the check cultivars Sakha 93, Gemmeiza 9 and Giza 168.

Table (7-a): leaf and stem rust disease severity at adult stage for Gemmeiza 12 and four bread wheat cultivars at Gemmeiza, Sakha and Nubaria Res. Stations in 2007/008 season.

Cultivar	Gemmeiza		Sakha		Nubaria	
	Leaf rust	Stem rust	Leaf rust	Stem rust	Leaf rust	Stem rust
Sakha 93	80 S	0	5S	0	10 MR	0
Gemmeiza 9	0	0	5R	0	10 MR	0
Giza 168	0	0	Tr.R	0	0	0
Sids 12	0	0	Tr.MS	0	Tr.R	0
Gemmeiza 12	0	0	Tr.R	0	Tr.R	0

Table (7-b): leaf and stem rust disease severity at adult stage for Gemmeiza 12 and four bread wheat cultivars at Gemmeiza, Sakha and Nubaria Res. Stations in 2008/009 season.

Cultivar	Gemmeiza		Sakha		Nubaria	
	Leaf rust	Stem rust	Leaf rust	Stem rust	Leaf rust	Stem rust
Sakha 93	80S	0	30S	0	10 MR	0
Gemmeiza 9	30S	0	5MS/S	0	5 MR/MS	0
Giza 168	0	10MR	0	5MS	Tr.R	5 MS
Sids 12	10S	40S	10MR/MS	10S	10MR	0
Gemmeiza 12	0	0	Tr.MR	0	10 MS/S	5 MR/MS

Table (7-c): leaf and stem rust disease severity at adult stage for Gemmeiza 12 and four bread wheat cultivars at Gemmeiza, Sakha and Nubaria Res. Stations in 2009/2010 season.

Cultivar	Gemmeiza		Sakha		Nubaria	
	Leaf rust	Stem rust	Leaf rust	Stem rust	Leaf rust	Stem rust
Sakha 93	30 S	0	30 S	0	5 MS	TR.MR
Gemmeiza 9	10 MS	0	20 S	0	5 MS	TR.S
Giza 168	0	TR.MS	Tr.S	0	TR.MR	TR.MS
Sids 12	0	0	0	0	0	0
Gemmeiza 12	10 R	0	0	0	0	0

Table (7-d): Mean average coefficient of leaf and stem rust disease infection (ACI) at adult stage for Gemmeiza 12 and four bread wheat cultivars at Gemmeiza, Sakha and Nubaria Res. Stations in 2009/2010 season.

Cultivar	Gemmeiza		Sakha		Nubaria		Mean ACI	
	Leaf rust	Stem rust	Leaf rust	Stem rust	Leaf rust	Stem rust	Leaf rust	Stem rust
Sakha 93	30.00	0.00	30.00	0.00	4.00	0.80	21.33	0.26
Gemmeiza 9	8.00	0.00	20.00	0.00	4.00	2.00	10.66	0.66
Giza 168	0.00	1.60	2.00	0.00	0.80	1.60	0.93	1.06
Sids 12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Gemmeiza 12	**2.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.66**	**0.00**

6-Technological and quality characters:

Technological and quality characters for the new wheat cultivar Gemmeiza 12 were carried out by Field Crops Technology Research Department, Food Technology Research Institute, ARC. The results showed that milling performance for Gemmeiza 12 has been good, since it had the highest hectoliter value being 83.9 kg/hl. with flour yield often higher than all check cultivars i.e, Sakha 93, Gemmeiza 9, Giza 168 and Sids 12 .Protein content of the grain has been 1% higher than Giza 168 and about comparable with Gemmeiza 9 .The flour of Gemmeiza 12 is acceptable for bread making, since the protein content reached about 13% and the wet gluten percentage was 29.1% (Table 8).

Table (8): Some technological and quality characters of the new bread wheat Gemmeiza 12 and four commercial wheat cultivars:

Cultivar	Hectoliter weight Kg/hl	Protein%	Ash%	Extraction Rate%	Gluten%	
					Wet	Dry
Sakha93	82.1	10.0	1.8	70.0	21.8	7.2
Gemmieza9	81.0	12.6	1.7	68.5	30.8	10.3
Giza168	82.1	12.0	1.8	68.3	28.8	9.1
Sids 12	82.1	10.8	1.8	70.0	23.2	8.0
Checks mean	82.3	11.7	1.7	69.4	26.9	8.96
Gemmeiza 12	83.9	13.0	1.6	71.0	29.1	9.8

7-Description of Gemmeiza 12:

Gemmeiza 12 has a spring growth habit with medium maturity. Tillering is profuse and leaves are moderately narrow. The spikes are fully awns and mid dense. The variety is somewhat medium tall. Kernels color is white, medium in size and tends to have a hard texture. The morphological characteristics of the new released cultivar shown in table 9 were carried out by the Central Administration of Seed Certification (CASC) according to the International Union for the Protection of new Varieties of plants (UPOV). The Distinctness Uniformity and Stability (DUS) test should be done before releasing the variety.

Table 9: Some morphological characteristics of the new released wheat cultivar Gemmeiza 12 according to the International Union for the Protection of new Varieties of plants (UPOV)

No.	Characteristics	Description
1	Pigmentation of coleoptile	Very weak (1)
2	Anthocyanin coloration of auricles	Very weak (1)
3	Plant growth habit	Erect (1)
4	Flag leaf rolling	Medium (5)
5	Time of ear emergence (first spike on 50% of ears)	Early (5)
6	Glaucosity of flag leaf sheath	Strong (7)
7	Glaucosity of flag leaf blade	Medium (5)
8	Ear: anthocyanin pigmentation	Very weak (1)
10	Glaucosity of ear neck	Strong (7)
11	Glaucosity of ear	Medium (5)
12	Plant height (stem, ear and awns)	Medium (5)
13	Awns presence	Present (3)
14	Awns length	Medium (5)
15	Lower glume: Shoulder shape	Sloping (1)
16	Lower glume: Shoulder width	Narrow (3)
17	Lower glume: beak length	Short (3)
18	Lower glume: beak shape	geniculate (5)
19	Lower glume: extent of internal hairs	Week(3)
20	Lowest lemma: beak shape	Slightly curved(3)
21	Straw : pith in cross section	Thin(3)
22	Ear length (ear and awns)	Medium (5)
23	Ear: hair density at the lower edge of the rachis	Weak (3)
24	Shape of ear	Tapering (1)
25	Density of ear	Dense (7)
26	Grain color	White (1)
27	Length of grain brush hairs	Short (3)
28	Seasonal type	Spring type (3)

In conclusion, we can strongly recommend the new bread wheat cultivar Gemmeiza 12 to be grown at North Delta, South Delta and Middle Egypt, since its productivity overcome most of the dominating wheat cultivars i.e, Sakha 93, Gemmeiza 9, Giza 168 and Sids 12. In addition, the new cultivar surpassed the dominating wheat cultivar Sakha 93 at all locations representing Upper Egypt and Out Valley zones however, its productivity was slightly less than Giza 168 and Sids 12 in both locations. The performance of Gemmeiza 12 was good when using drill planting at Sakha, Gemmeiza, Giza, Sids and Shandaweel Agriculture Research Stations. The relative grain yield of four commercial wheat cultivars in comparison with Gemmeiza 12 in 76 yield trials over three years period proved that grain yield of Gemmeiza 12 was 3.7% higher than the commercial wheat cultivar means in the major wheat production areas of Egypt.

Seeds of Gemmeiza 12 will be available for planting in 2014/2015 season. Foundation seed will be maintained and distributed by Wheat Research Department, Field Crops Research Institute, ARC. Egypt.

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جميزة 12: صنف قمح خبز جديد عالى المحصول ومقاوم للأصداء

إيمان محمد صادق ،أنور عجيز، مصطفى المنوفى ، محروس أبو شريف، أسعد حمادة ، أحمد موسى ، رضا قمبر، صبرى سليم ، جمال الشعراوى ، عبد الفتاح مراد ، صلاح عبد المجيد ، أبوبكر أبو وردة ، أحمد تمام ، محمد مشرف ، عز الدين عبد الرحمن السيد ، حسن عشوش ، موريس توفيليس ، حمدى هنداوى ، هيام السيد محجوب ، أحمد كمال مصطفى ، هانى البرهامى ، عبد السلام المنشاوى ، وفاء العوضى ، نادية عبد النور ، صبحى عبد الدايم ، سهير محمد حسن ، عبد الله سويلم ، سيد الصاوى ، سعيد حماد ، ماجدة عبد الرحمن ، رمضان عبد السلام ، صباح أبو العلا ، محمد عبد الكريم خالد ، إبراهيم عبد الهادى أمين ، محمد زكريا ، منال عبد الصمد حسن ، أحمد جاد الله ، ماهر عبد المنعم المغربى ، عزة محمد عبد العال ، عادل هجرس ، أحمد

طه مصطفى ، محمود شمروخ محمود ، محمد يوسف مبارك ، ثناء عبدالكريم ، أمجد محمد مرسى ، هدى الغرباوى ، مؤمن عبد الوهاب عجلان ، وليد زكى اليمانى فرحات ، السيد عبد الحميد ، خالد الدمرداش ، خالد إبراهيم جاد ، شيرين ناثان ، إبراهيم صبرى عبداللطيف ، محمد نوبى عبد القادر ، عبد السلام جمعه ، عنايات غانم ، سيد خليل محمود ، موسى جرجس ، نبيل حنا ، محمد على موسى ، عادل جودة ، محمد عبد الفتاح سالم ، عبد الخالق خطاب ، عبد اللطيف حسين ، عبد ربة الحاج ، نجوى عبد الفتاح ، فرغل حفناوى ، مصطفى عزب مصطفى ، محمد صفاء شرشر ، تاج الدين شهاب الدين ، مسعد عبد العليم ، سامى رضا صبرى ، محمد صالح ، *إبراهيم إمبابى و *محمد عبد القادر حسن .
قسم بحوث القمح – معهد بحوث المحاصيل الحقلية – مركز البحوث الزراعية – جيزة – مصر
***قسم بحوث أمراض القمح - معهد بحوث امراض النبات - مركز البحوث الزراعية – جيزة – مصر**

تم إستنباط صنف قمح الخبز الجديد جميزة ١٢ فى قسم بحوث القمح بمحطة البحوث الزراعية بالجميزة من خلال الإنتخاب فى أحد الهجن المستوردة من المركز الدولى لتحسين القمح والذرة بالمكسيك(OTUS/3/SARA/THB//VEE (CIMMYT

تم تقييم محصول الصنف الجديد فى ٧٦ تجربة حقلية مصغرة ومكبرة تغطى كافة مناطق إنتاج القمح فى مصر خلال ثلاثة مواسم زراعية هى ٢٠٠٨/٢٠٠٧ و ٢٠٠٩/٢٠٠٨ و ٢٠١٠/٢٠٠٩ . تم تقييم محصول الصنف جميزة ١٢ فى ٧٣ تجربة تأكيدية خلال مواسم ٢٠١١/٢٠١٠ و ٢٠١٢/٢٠١١ و ٢٠١٣/٢٠١٢بالإضافة الى ٢٢ حقل إرشادى فى موسم ٢٠١٣/٢٠١٢ .

أظهرت النتائج تفوق الصنف جميزة ١٢ على معظم الأصناف التجارية السائدة فى مصر وهى سخا ٩٣ – جميزة ٩ –جيزة ١٦٨ – والصنف سدس ١٢ فى منطقة الدلتا ومصر الوسطى بالإضافة إلى تفوقة على الصنف سخا ٩٣ فى منطقتى مصر العليا وخارج الوادى ولكن إنتاجيتة كانت أقل بنسبة ضئيلة عن الصنف جيزة ١٦٨ وسدس ١٢ فى تلك المنطقتين.

أكدت نتائج التجارب التأكيدية أفضلية الصنف الجديد جميزة ١٢ على الأصناف التجارية. بلغت إنتاجية محصول الصنف الجديد ٢٥.٧ أردب فى الحقول الإرشادية المقامة فى أربعة محافظات تمثل مناطق إنتاج القمح فى الوجه البحرى .

أظهرت النتائج أن الصنف الجديد مقاوم للأصداء خاصة الصدأ الأصفر والأسود بالإضافة إلى جودتة لإنتاج رغيف خبز جيد لإرتفاع نسبة البروتين وكذلك الجلوتين فى الدقيق وذلك عند مقارنتة بالأصناف التجارية السائدة فى مصر .

قام بتحكيم البحث

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