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GIZA 13: A NEW FLAX VARIETY AS A FIBER TYPE

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ABSTRACT

Ten flax genotypes, including eight promising local strains and the two check varieties Sakha 3 and Giza 9 (fiber type), were evaluated in twelve different environments at four locations (Sakha, Etay El-Baroud, El-Ismailia and El-Gemmiza Agricultural Research Stations) in three consecutive seasons (from 2021/2022 to 2023/2024) for straw, fiber and seed yields and associated traits. The experimental design was a randomized complete block trial with three replicates for each of the twelve environments. Analysis of variance showed highly significant differences among genotypes (G), environments (E) and the interaction between (G x E) for all traits analyzed, except for the oil content in (E) and (G x E). This indicates considerable variation among genotypes, which, showed different responses to environmental conditions. The considerable variation attributed to the residuals for all traits except the oil fraction indicates that genotypes vary in their stability, suggesting that predictions based only on mean performance are difficult.Consequently, combining yield and performance stability is advantageous. Yield stability (YSi) statistics showed that Giza 13 had better mean performance and stability in straw and fiber yields per fed and fiber percentage compared to the other lines and the two check varieties Sakha 3 and Giza 9. S.933/10/3/3 showed good performance and stability for seed yield, oil yield and related traits. Consequently, this genotype (S.933/10/3/3) can be used in breeding programmes to develop genotypes with consistently high seed and oil yields. The results of this study showed that variety 620/3/5 (Giza 13) had a remarkable increase in productivity compared to the two control varieties Sakha 3 and Giza 9, by 18.6% and 21.8% in straw yield per feddan, 6.0% and 4.2% in fiber content and 25.0% and 26.5% in fiber yield per feddan, respectively. The results showed that S.620/3/5 had the highest average performance for three important traits: straw yield, fiber yield per fed and the percentage of fiber content. The promising variety 620/3/5 is proposed for commercialization as a new commercial flax fiber variety named Giza 13. It is therefore recommended that the Fiber Research Department in Egypt replaces Sakha 3 and/or Giza 9 with Giza 13 in their growing areas.

Key words*: New flax variety, Fiber type, Stability.*

INTRODUCTION

Flax seed is increasingly recognized as an important functional food component and is one of the most important sources of alpha-linolenic acid, which is known for its health benefits. Akhtar *et al* (2013) and Goyal *et al* (2014). Flax is the second most important fiber crop in Egypt after cotton. It is an important industrial crop. Various important industries depend on its two products: fibers and seeds. High-quality flax varieties are used to produce linen textiles such as damask and lace fabrics. Flax fibers are used in textile production, either alone or in combination with other fibers such as cotton. The coarser types are used for the production of threads and ropes.

Flax fibers are an essential component in the production of high quality paper used for printed banknotes and cigarette rolls. The former aim of the fiber crops research department was to develop dual-purpose flax varieties for fiber and oil production. The increasing demand for flax fibers and a clear market preference for fibers over seeds have prompted the Fiber Crops Research Department to implement a new strategy since 2016. This strategy focuses on the development of flax varieties that are predominantly bred as fiber varieties or dual-purpose varieties, with an emphasis on fiber qualities.

Successful innovative varieties must show improved performance in yield and other important agronomic traits. Yield qualities are complex attributes that depend on several factors, each of which contributes to yield in different ways. Genotype effectiveness must be consistent under many environmental conditions.

The differences in genotype performance under different environmental conditions are referred to as genotype-environment interaction. In this interaction, a known plant breeder can evaluate the performance of genotypes across many environments, including different locations and different years. When genotype interacts significantly with location or time, the selection of optimal genotypes becomes more complex Abo El-komsan *et al* (2023).

Better genotypes have minimal interaction with external conditions and are therefore stable. The main cause of differences in yield stability between genotypes is the widespread occurrence of genotypes interactions with the environment (GE). Any genotype with a high yield potential and consistent performance in different environments is of great value for plant breeding. Several researchers analyzed genotype-environment interactions and the persistence of flax genotypes in different environments (Abo El-Zahab and Abo-Kaied, 2000, El-Hariri *et al* 2004, El-Haleem *et al* 2016 and Jassim and Aziz, 2022).

This work aimed to evaluate the stability of some flax genotypes in different production environments and identify optimal genotype for straw yield, fiber yield and fiber content.

MATERIALS AND METHODS

The materials utilized for the current experiment comprise 10 flax genotypes, eight native strains, and two commercial variants (Giza 9 and Sakha 3) serving as controls. The pedigree and origin of the ten examined genotypes are partially detailed in Table 1.

Table 1. Pedigree, origin and the type classifications.

No	Genotype	Pedigree	origin	Type
١	S.413/1/4/3	I.5282/1 x I. 267/2	Local strain	F
٢	S.435/11/11/4	S.162/12 x I. 267/2	Local strain	F
٣	S.421/60/15/6	S.162/12 x S. 6/2	Local strain	D
٤	S.402/1	Giza 5 x I. 235	Local strain	O
٥	S.620/3/5	S.422 x Giza 7	Local strain	F
٦	S.933/10/3/3	I. Herms x S.2419/1/3	Local strain	D
٧	S.402/3/4/8	Giza 5 x I. 235	Local strain	D
٨	S.889/50/6/10	S.2465/1/3 x S.10	Local strain	O
٩	Sakha 3	I. Belinka x I. 2569	Local cultivar	F
10	Giza 9	S.420/140/5/10 x Bombay	Local cultivar	F

(Fiber type, F, dual purpose type, D, oil type, O) of the ten flax genotypes in this study.

The cross (S.422 x Giza 7) was made in the 2012/2013 growing season at the Giza Agricultural Research Station. The hybrid seeds from this cross were cultivated in the 2013/2014 season at the breeding station of the Giza Agricultural Research Station. Pedigree selection for these hybrids was carried out from the F_2 to the F_5 generation, using three selection cycles according to the independent selection stages approach (Poehlman, 1979). In the F_6 generation of the 2018/2019 season, the new cultivar was identified as a promising strain from the cross (S.422 x Giza 7).

This cultivar was evaluated for yield and quality traits in comparison with seven promising strains and two check cultivars, namely Giza 9 and Sakha3. Three for eight preliminary yield trials were conducted at four locations. Prior to sowing, the physical and chemical properties of the soil at the four trial sites (Ismailia, Sakha, Etay El-Baroud and Gemmiza Agricultural Research Stations) were analysed at the Soils, Water, and Environment Research Institute, Agricultural Research Centre, Ministry of Agriculture and Land Reclamation (Table2).

Table 2. Mechanical and chemical analysis of soil at Ismailia, Sakha, Etay El-Baroud and Gemmiza locations.

Locations	Soil	Organic matter	Available Nitrogen	EC	pH value
Ismailia	sandy	0.052 %	7.11 ppm	0.16	7.37
Sakha	clayey	2.80%	31.00 ppm	1.85	8.50
EtayEl-Baroud	clayey	3.70 %	38.04 ppm	1.44	7.64
Gemmiza	clayey	1.60%	29.18 ppm	1.26	6.61

The aforementioned materials were assessed at the same sites over three consecutive seasons (from2021/2022 to 2023/2024) over twelve advanced yield trials. The experimental method employed was a randomized complete blocks design with three replications for each of the twelve settings (combinations of locations and years). Flax seeds of each genotype were planted in the second week of November for all trials across all seasons. The plot comprised 10 rows, each measuring 3 meters in length and 2 meters in width. A plant density of 2500 seeds per square metre was employed. Agronomic methods that recommended were adhered from planting to harvest. Data on 10 randomly selected plants from each plot were collected to ascertain the averages of the individual plant characteristics. Straw, seed, and fiber yields per feddan (fed) were determined on a plot basis. The oil percentage (%) was calculated as the average of two random seed samples per plot utilising a Soxhlet device (A.O.A.C., 1995). The subsequent characters were documented:

1) Straw yield, fiber yield, and associated characteristics included Straw yield (tonnes per feddan), Total fiber yield (tonnes per feddan), Plant height (cm), Technical stem length (cm), and Fiber percentage.

2) Seed yield, oil yield, and associated characteristics included Seed yield (tonne per feddan), oil yield (tonne per feddan), number of capsules per plant, 1000-seed weight in grammes (seed index), and oil%.

Statistical analysis

Statistical analysis was conducted using plot means. Data from each of the twelve situations, comprising three years and four locations, were analyzed. The Bartlett test of homogeneity was employed prior to the combined analysis. An analysis of variance was performed, indicating that the genotype x environment interaction was significant for every trial.

A yield-stability statistic (YSi) designed for concurrent selection of yield and stability was computed in accordance with Kang and Magari (1995). The processes involved in calculating the YSi statistic are as follows:

Genotypes were rated based on yield, with the genotype exhibiting the lowest yield assigned a value of 1. 2) An amendment to the yield ranking was implemented, +1 if the genotype mean yield exceeded the overall mean yield (OMY) for a test, +2 and +3 if the genotype mean yield was at least one least significant difference (LSD) above OMY, respectively, -1 if the genotype mean yield fell below OMY, -2 and -3 if the genotype mean yield was at least one LSD below OMY. The modified rank was designated as Y. A stability rating (S) was designated as follows: 0 if σ^2 was not significant, and -2, -4, and -8 if σ^2 was significant at the 10%, 5%, and 1% probability levels, respectively. The corrected rank, Y, and the stability rating, S, for each genotype were aggregated. 6) The genotypes exhibiting YSi > ∑YSi/t (number of genotypes) were selected.

RESULTS AND DISCUSSION

1- Variability

1-1- Straw yield, fiber yield and their related characters

Table 3 presents the results of a combined analysis of variance for ten flax genotypes, comprising eight promising strains and two check varieties, Sakha 3 and Giza 9 (G), across twelve environments (4 locations x

3 seasons). The analysis revealed highly significant differences among genotypes in straw yield (ton/fed), total fiber yield (ton/fed) plant height (cm), technical length (cm), and total fiber percentage. This suggests that these genotypes exhibit a substantial degree of diversity for the aforementioned traits. Environments (E) exhibited highly significant differences for straw yield and its associated traits, demonstrating considerable variance among the studied environments.

Comparable outcomes regarding straw yield and its associated traits across several flax genotypes were also documented by Haynes *et al* (1995), Abo-Kaied *et al* (2006, 2008), Abo-Kaied *et al* (2011), Abo-Kaied *et al* (2015), Kineber *et al* (2015) and Abo El-komsan *et al* (2023). The notable genotype-environment interactions for straw yield and associated variables revealed variations in the ranking of genotypes for their prospective straw yield.

The variations attributable to GxE (linear), indicating heterogeneity, were significant or highly significant for plant height (cm), technical stem length (cm), and total fiber percentage (%), suggesting the presence of linear components of GxE. The variation in genotypes for the aforementioned variables in relation to the environmental index was considerable. This environmental index encompasses all variations among settings, including disparities in soil fertility, cultural practices, pest or disease prevalence, humidity, sunlight, and other factors (Haynes *et al* 1995).

The variance attributable to residuals for straw yield per fad and long fiber yield per fed was not significant. The pooled regression deviation (residual) was significantly substantial for straw yield and its associated traits, indicating that the genotypes varied in stability, thereby suggesting that prediction would be challenging and that mean performance alone would be inadequate (Kang 1993). Consequently, the amalgamation of yield and performance stability is advantageous.

1-2-Seed yield, oil yield and their related traits

Table 3 presents the combined ANOVA for seed and oil yields per fed, oil%, number of capsules per plant, and 1000-seed weight. Genotypes mean squares were extremely significant for seed yield and its components, except for the number of capsules per plant, which was barely significant.

Table 3. Genotype x environment interaction mean squares and its partitioning into heterogeneity due to environmental index and residual from the combined analysis of variance over twelve environments for straw, seed yields and their related characters.

	Characters \ SOV	Genotypes(G) 9#	Environment (E) (11)#	Interaction (GxE) (99)#	Heterogeneity (9)#	Residual (90)#	Pooled Error (216)#
Straw yield and its components	Straw yield/fed (ton)	1.512**	10.674**	0.046**	0.00511^{ns}	0.0456**	0.009
	Total fiber yield/fed (ton)	0.152**	0.413**	0.0018**	0.00029^{ns}	0.0017**	0.00032
	Plant height (cm)	710.854**	662.915**	35.328**	88.661**	29.994**	2.908
	Technical stem length(cm)	482.688**	854.761**	35.871**	68.585*	32.600**	6.063
	Total fiber percentage (%)	51.027**	3.547**	0.347**	1.638**	0.218**	0.030
Seed yield and its components	Seed yield/fed (ton)	0.0060**	0.1117**	0.0003**	0.0010**	0.0002**	0.00015
	Oil percentage (%)	14.141**	0.200^{ns}	0.007^{ns}	0.268**	0.005^{ns}	3.254
	Oil yield/fed (ton)	0.00084**	0.00168**	0.00005**	0.00014**	0.00004**	0.00006
	Capsules number/plant	28.480*	193.400**	14.092**	31.780**	12.323**	2.387
	1000-seed weight (g)	46.4341**	0.1230**	0.0053**	0.0057^{ns}	0.0053**	0.0304

***, ** = Indicate significant and highly significant, respectively.**
Ns = non – significant, # =Values designated the corresponding degrees of freedom.

The results unequivocally demonstrated that the environments (E) had highly significant influence for all tested traits, except for oil%, which was not significant.

This data indicates a broad spectrum of diversity among different situations. These results align with those of Abo El-Zahab *et al* (1994).

Moreover, genotypes by environment interactions were markedly significant for all variables, with the exception of oil%. This indicates that genotypes exhibited significantly varied responses to environmental stimuli. The results indicate that the genotypes examined exhibit significant genetic variability, which is adequate to facilitate enhancement through the selection of superior genotypes.

The variations attributed to heterogeneity were significant for seed yield and its components, excluding 1000-seed weight, indicating the presence of linear components of genotype × environment (GxE) interactions. This indicates that genetic heterogeneity for the aforementioned traits, in relation to the environmental index, was considerable. The significant variances in residuals for all seed characteristics (seed yield per fed, oil yield per fed, number of capsules per plant, and 1000-seed weight) indicate that genotypes vary in stability, suggesting that predictions based solely on mean performance would be challenging. The variance attributable to residuals for oil percentage (%) was not significant.

2- Genotypic means performance and stability

2-1- Straw yield, fiber yield and their related characters

Table 4 presents the average performances, mean rankings, and yield stability statistic (YSi) as per Kang and Magari (1995) for straw yield per feddan, total fiber percentage, total fiber yield per feddan, plant height, and technical stem length among ten flax genotypes. S.620/3/5 exhibited superior performance, with elevated mean values for straw yield per feddan (4.399 tone), total fiber percentage (20.22%), and total fiber yield per feddan (0.888 tone) in comparison to other lines and the two check varieties, Sakha 3 and Giza 9 (fiber type).

Table 4. Mean yield, rank (assigned before stability analysis was made), yield stability statistic (YS_i) and stable genotypes of seed yield/fed, oil percentage, oil yield/fed, capsules number/plant and 1000-seed weight for ten flax genotypes.

Genotypes		Seed yield/fed (ton)			Oil percentage (%)			Oil yield/fed (ton)		
		Means	Rank	YS_i	Means	Rank	YS_i	Means	Rank	YS_i
1	S.413/1/4/3	0.429	8	3 +	38.13	7	8 +	0.164	8	11 +
2	S.435/11/11/4	0.398	3	-8	36.32	1	-2	0.145	2	-9
3	S.421/60/15/6	0.425	6	1 +	37.35	3	2	0.155	4	-3
4	402/1	0.433	9	4 +	38.20	8	9 +	0.165	9	4 +
5	S.620/3/5 #	0.408	4	-5	38.11	5	6 +	0.155	4	-3
6	S.933/10/3/3	0.461	10	5 +	37.32	2	1	0.172	10	5 +
7	S.402/3/4/8	0.428	7	2 +	38.24	10	11 +	0.164	7	10 +
8	S.889/50/6/10	0.409	5	-4	38.22	9	10 +	0.156	6	-1
9	Sakha 3	0.396	2	-9	38.07	4	5	0.151	3	-7
10	Giza 9	0.307	1	-10	38.12	6	7 +	0.117	1	-10
General mean		0.409		-2.1	37.81		5.7	0.154		-0.3
LSD $_{0.05}$		0.0005			0.70			0.0003		

Genotypes		Capsules number/plant			1000-seed weight (g)		
		Means	Rank	YS_i	Means	Rank	YS_i
1	S.413/1/4/3	21.81	4	-6	8.41	7	6 +
2	S.435/11/11/4	21.66	2	-8	7.28	4	1
3	S.421/60/15/6	23.10	8	2 +	7.42	5	2
4	402/1	22.66	5	-2 +	8.22	6	9 +
5	S.620/3/5 #	22.76	6	-1 +	6.45	3	0
6	S.933/10/3/3	23.43	9	3 +	8.67	10	9 +
7	S.402/3/4/8	20.85	1	-10	8.64	8	11 +
8	S.889/50/6/10	21.77	3	-7	8.65	9	8 +
9	Sakha 3	23.65	10	5 +	5.73	1	-10
10	Giza 9	22.78	7	0 +	6.09	2	-9
General mean		22.45		-2.4	7.56		2.7
LSD $_{0.05}$		0.60			0.007		

#= Giza 13.

+= Genotype selected on the basis of YS_i.

This strain showed a notable enhancement in productivity compared to the two check varieties, Sakha 3 and Giza 9, with superiority of 18.6% and 21.8% for straw yield per feddan, 6.0% and 4.2% for fiber percentage, and 25.0% and 26.5% for fiber yield per feddan, respectively. Results indicated that S.620/3/5 demonstrated the highest mean performances for three significant traits: straw yield, fiber yield per fed, and fiber percentage. Consequently, this strain (S.620/3/5) may be disseminated as commercial cultivars and/or integrated as breeding stocks in a flax breeding program aimed at developing high-yield cultivars. This strain (S.620/3/5) achieved second place in plant height and third place in technical stem length.

According Kang and Magari (1995), six out of ten flax genotypes exhibited stability due (Table 4) to high yield and stability for straw yield per fed, three strains shown stability for total fiber%, and four strains were stable for total fiber yield per fed, plant height, and technical length. S.620/3/5 demonstrated excellence performance and stability across all traits. Consequently, this promising strain. 620/3/5, may be endorsed for release as a novel commercial flax fiber variety.

2-2-Seed yield, oil yield and their related traits

The mean performances for seed yield per fed, oil percentage, oil yield per fed, number of capsules per plant, and 1000-seed weight of ten flax genotypes, averaged across twelve environments, along with the yield stability statistic (Ysi), are presented in Table 5. S.933/10/3/3 achieved the first or second ranking for seed yield, oil yield, and associated traits, with the exception of oil percentage. The highest oil percentage was recorded by S.402/3/4/8. In terms of stability measures (Ysi), five out of ten flax genotypes demonstrated stability for seed yield per fed, six strains exhibited stability for oil percentage, four strains were stable for oil yield per fed, six strains showed stability for capsules per plant, and five genotypes were stable for 1000-seed weight. S.933/10/3/3 demonstrated high yield and stability for seed yield, oil yield, and associated traits. Consequently, the strain (S.933/10/3/3) can be utilized in breeding programs aimed at developing genotypes with stable high seed and oil yields.

Table 5. Mean yield, rank (assigned before stability analysis was made), yield stability statistic (YS_i) and stable genotypes of straw yield, fiber yield/fed and their related characters for ten flax genotypes.

Genotypes		Straw yield/fed (ton)			Total fiber percentage (%)			Total fiber yield/fed(ton)		
		Means	Rank	YS_i	Means	Rank	YS_i	Means	Rank	YS_i
1	S.413/1/4/3	3.976	8	2 +	16.654	1	-10	0.665	1	-10
2	S.435/11/11/4	3.984	9	3 +	17.489	6	-5	0.699	7	-3 +
3	S.421/60/15/6	3.895	3	-7	17.55	7	-4	0.684	5	-6
4	402/1	3.961	7	0 +	17.284	5	-6	0.687	6	-5
5	S.620/3/5 #	4.399	10	5 +	20.218	10	5 +	0.888	10	5 +
6	S.933/10/3/3	3.951	6	-1 +	17.073	2	-9	0.677	2	-9
7	S.402/3/4/8	3.907	4	-5	17.283	4	-7	0.678	3	-8
8	S.889/50/6/10	3.939	5	-2 +	17.228	3	-8	0.682	4	-7
9	Sakha 3	3.708	2	-9	19.07	8	3 +	0.709	9	2 +
10	Giza 9	3.613	1	-10	19.412	9	4 +	0.702	8	-1 +
General mean		3.933		-2.4	17.926		-3.7	0.707		-4.2
$LSD_{0.05}$		0.0037			0.0067			0.00069		

Genotypes		Plant height (cm)			Technical stem length (cm)		
		Means	Rank	YS_i	Means	Rank	YS_i
1	S.413/1/4/3	88.181	5	-5	67.21	5	-4
2	S.435/11/11/4	87.673	4	-7	66.707	4	-6
3	S.421/60/15/6	90.700	7	2 +	67.603	6	-3
4	402/1	92.091	8	3 +	71.253	9	4 +
5	S.620/3/5 #	94.177	9	4 +	69.027	8	2 +
6	S.933/10/3/3	88.694	6	-3	68.215	7	0 +
7	S.402/3/4/8	85.103	2	-9	64.035	2	-9
8	S.889/50/6/10	80.772	1	-10	62.598	1	-10
9	Sakha 3	96.094	10	5 +	75.419	10	5 +
10	Giza 9	87.328	3	-8	64.937	3	-8
General mean		89.081		-2.8	67.727		-2.9
$LSD_{0.05}$		0.661			0.955		

#= Giza 13

+= Genotype selected on the basis of YS_i

CONCLUSION

The strain 620/3/5 demonstrated superior and stable performance in straw and fiber yields per fed, along with associated traits such as total fiber percentage, plant height, and technical stem length. The strain 620/3/5 may be recommended for release as new commercial fiber-type flax, named (Giza 13).

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"جيزة ١٣" صنف جديد من الكتان كطراز ليفي"

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تم تقييم ١٠ تراكيب وراثية من الكتان عبارة عن ٨ سلالات مبشرة مع صنفين تجاريين: هما جيزة ٩ وسخا ٣ (طراز ليفي) كأصناف قياسية لتقدير محصول كل من القش والبذور والزيت ومكوناتهم، وذلك عبر١٢ بيئة أربعة مواقع (محطة البحوث الزراعية بسخا محافظة كفر الشيخ، محطة البحوث الزراعية بإيتاي البارود- محافظةالبحيرة، محطة البحوث الزراعية بالإسماعيلية محافظة الإسماعيلية و محطة البحوث الزراعية بالجميزة محافظة الغربية)، وذلك خلال ثلاثة مواسم متتالية (من ٢٠٢١/٢٠٢٢ إلى ٢٠٢٣/٢٠٢٤). وكان التصميم التجريبي المستخدم هو القطاعات الكاملة العشوائية ذات الثلاث مكررات عبر البيئات الاثنتي عشرة السابقة.تشير النتائج أن تباين كل من التراكيب الوراثية (G) والبيئات (E) والتفاعل بينهم (GxE) كانت عالية المعنوية لكل الصفات تحت الدراسة، مما يدل على مدى التباين الواسع بين التراكيب الوراثية وبينالبيئات، وكذلك اختلاف استجابة هذه التراكيب للظروف البيئية ماعدا (E) والتفاعل بينهم (GxE) لصفة النسبة المئوية للزيت، كذلك المعنوية العالية للتباين الراجع للجزء المتبقي من التفاعل لكل الصفات تحت الدراسة ما عدا النسبة المئوية للزيت، وذلك يشير إلى اختلاف هذه التراكيب فيما بينها علاوة على صعوبة التنبؤ بثبات سلوكها الوراثي عند الاعتماد فقط على متوسط أدائها . كما أشار مقياس الثبات (YS_i) والذي يقيس ثبات السلوك مع المحصول العالي إلى أن السلالة ٦٢٠/٣/٥ (جيزة ١٣) ظلت محتفظة بتفوقها في المحصول وثبات السلوك لصفات محصول القش والألياف للفدان بالإضافة إلى النسبة المئوية للألياف ، كذلك السلالة ٩٣٣/١٠/٣/٣ لمحصوليالبذرة والزيت والصفات المرتبطة بهما لذلك يمكن الاستفادة من هذه السلالة في برامج التربية لانتاج تراكيب وراثية متميزة وثابتة في محصولي البذور والزيت. اما بخصوص السلالة ٦٢٠/٣/٥ (جيزة ١٣) والتي اظهرت تفوق وثبات لصفات محصولي القش والألياف للفدان بالإضافة إلى النسبة المئوية للألياف عند مقارنتها مع الصنفين القياسيين

سخا٣ و جيزة ٩ وكانت نسب التفوق ١٨,٦% و ٢١,٨% لمحصول القش/فدان، و ٦% و ٤,٢% لصفة النسبة المئوية للألياف و٢٥% و٢٦,٥% لصفة محصول الألياف/فدان علي التوالي ، كما احتفظت بتفوقها وثباتها في سلوكها الورثي للصفات الثلاثة المهمة للطراز الليفي (وهي محصولي القش والألياف للفدان والنسبة المئوية للألياف). وبذلك نوصي بإطلاق السلالة ٥/٣/٦٢٠ كصنف كتان طراز ليفي تحت اسم جيزة ١٣. كما يوصي قسم بحوث محاصيل الألياف بإحلال جيزة ١٣ في الزراعة المصرية كصنف طراز ليفي محل الصنفيين الليفيين جيزة ٩، وسخا ٣ .في مناطق الانتاج الخاصة بهما.

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