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                                        149
T. dactyloides              LTQFNSASLNRHLSRAYENNIAGYKNEGFVEVLAAQQSPENPNWFQ

Zea mays         (132)      LTQFNSASLNRHLSRAYGNNIAGYKNEGFVEVLAAQQSPENPNWFQ      (177)

T. dactyloides              QGTADAVRQYMWLFEEH

Zea mays         (177)      QGTADAVRQYMWLFEEH        (193)
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Figure 4. Protein amino acid sequences coded by the *Zea mays Agpsemzm* gene (NP_001105178) and the putative PCR-generated *Agpsem* gene of *Tripsacum*. Amino acid positions are indicated for *Zea mays*.

leads to the replacement of a glycine (maize) with a glutamine acid (*Tripsacum*).

The major differences between the nucleotide sequences of the maize *Agpsemzm* gene and the putative *Tripsacum Agpsem* gene were observed in the intron regions, whereas the coding sequence remains conserved. However, by comparison, the sequence differences found in both introns and exons between the maize *dek1* gene and putative *Tripsacum dek1* gene were not as varied. This fact is both very interesting and points to the need for further research.

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Studies on secondary traits of maize inbreds, hybrids and composites across environments

--Devi, P; Singh, NK

Yield stability, as a selection trait in plant breeding programmes as well as in evaluation trials, is constantly gaining importance over yield capacity. This is especially important where environmental conditions vary considerably.

The present study was undertaken during the monsoon season of 2007 in three environments: normal conditions, low nitrogen and irrigated conditions, and low nitrogen and rain (non-irrigated) conditions. Five inbred lines, 10 single crosses and two standard checks, namely Surya (composite) and Nath Samrat 1133 (hybrid), were used as experimental materials with the objective of identifying stable genotypes for the secondary traits, anthesis-silking interval (ASI) and days to 75% ear leaf senescence. The evaluation trials were conducted in each environment in a randomized complete block design with three replications at the Crop Research Centre of the G. B. Pant University of Agriculture and Technology, Pantnagar. The experimental unit was a one row plot 5 m long and 75 cm apart, forming a plot size of 3.75 m^2 and a plant-to-plant distance of 25 cm. The stability of the characters for each genotype was calculated by regressing the mean values of individual genotypes on environmental index and by calculating the deviations of the regression coefficients from unity as suggested by Eberhart and Russell (Crop Sci. 6:36-40, 1966).

The pooled analysis of variance revealed significant differences among genotypes, environments and their interaction for both traits. Inbred lines P_2 and P_3 were found to be the most stable and desirable, whereas single crosses P_1xP_2, P_2xP_3, P_3xP_5 and standard check Surya were identified as ideal in terms of grain yield potential and stability parameters for both the ASI and days to 75% ear leaf senescence (Table).

Table. Stability parameters for anthesis-silking interval (ASI) and days to 75% ear leaf senescence.

Genotypes	Grain yield (kg/ha)	ASI (days)			Days to 75% ear leaf senescence		
	$\overline{X}$ i	$\overline{X}$ i	bi	S^2d_i	$\overline{X}$ i	bi	S^2d_i
Parents							
Pop 31 (P_1)	769.73	4.09	0.877	0.033	80.50	2.539	11.005**
Pop 446 (P_2)	889.29	3.92	0.744	-0.001	78.83	1.735	-0.405
YHP-A (P_3)	1009.72	3.50	0.942	-0.043	80.33	1.312	0.378
Pop 445 (P_4)	737.82	2.67	-0.253**	-0.054	77.00	-0.423*	-0.251
YHP-B (P_5)	858.56	3.17	0.616	2.248**	78.83	-0.375**	-0.546
Crosses							
P_1 x P_2	2184.55	2.50	0.471**	-0.070	80.50	2.253	0.367
P_1 x P_3	1258.50	4.92	1.397	0.140	78.83	3.851	5.318**
P_1 x P_4	1672.48	4.83	1.196**	-0.077	79.83	-0.375**	-0.546
P_1 x P_5	1493.96	4.44	1.341*	-0.040	80.33	0.047*	-0.408
P_2 x P_3	2043.22	4.83	2.429**	0.038	79.94	0.017	0.778
P_2 x P_4	1590.45	3.76	0.418	0.392	79.00	1.126	-0.337
P_2 x P_5	1721.28	2.33	0.725**	-0.074	79.50	3.095*	0.384
P_3 x P_4	1703.05	4.11	1.849**	-0.065	80.17	0.232	0.539
P_3 x P_5	1861.14	5.17	1.921**	-0.077	80.00	-0.142	0.907
P_4 x P_5	1841.12	3.00	0.471**	-0.070	77.33	-2.068*	5.332**
Checks							
Nath Samrat 1133	1530.57	3.17	0.507*	0.018	91.83	2.296	2.341*
Surya	2032.55	4.17	1.341	1.107**	79.33	1.878	0.080
Mean	1482.23	3.798	1.000		80.12	1.000	
SE (±)	219.936	0.373	0.355		1.009	1.430	

Expression of unusual characters in ear shoot and tassel of maize

--Singh, NK; Devi, P; Mishra, P

Maize (*Zea mays* L.) is a monoecious species that produces only unisexual flowers in separate male and female inflorescences. It is one of the most important cereals, with the highest yield potential and diverse uses from staple food and feed to industrial products like starch and biofuels. It is strongly believed that maize is essential for global food security. Maize is largely grown under rainfed conditions where various abiotic and biotic stresses severely affect the genetic yield potential. A global climatic change is now considered to be underway and is expected to result in a long-term trend towards changes in environmental conditions. Congenial environmental seasons support optimal development, however, unfavouable environments influence the genetic architecture of the plant and reduce yield directly by affecting plant growth and development, and indirectly by modifying the normal plant phenotype. Unpredictability of weather conditions has occasionally resulted in many unusual expressions in plant characteristics in general, and ear and tassel characteristics in particular, in maize. Multiple ears on single nodes are one of the environmentally induced oddities widely reported in maize hybrids grown during 2006 in Iowa, Illinois, and Indiana. The expression of multiple ears in inbred lines, populations and experimental hybrids was also recorded in maize grown in the Tarai region of Uttarakhand, India during the monsoon season of 2007. The twin ear expression on