

(*Panicum miliaceum* L.)

**Study of some morphological traits and straw and grain yield in different
varieties of common millet (*Panicum miliaceum* L.)**

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(Ilyn and Zolotkin, 1986)

(Meslankova and Resh, 1990)

(Muhammed and Shib, 2004)

(Santhakumar, 1999)

(Sphacelotheca destruens)

(Panvar and Kapila, 1992)

(Chidambaram and palanisamy, 1995)

(Hawlader, 1991)

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(Sen and Hamid, 1986)

(Reddy and Larshmi, 1991)

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Table 1. Combined analysis of variance for grain and straw yields and some morphological traits in common millet varieties in different environments in Karaj, Gorgan and Dezful

S.O.V.	d.f.	MS									
		Tillor No.	Leaf No	Stem diameter	Days to Flowering	Panicle length	Grain no./panical	1000 grain weight	Straw yield	Grain yield.	
Environment (Env.)	7	39.6 **	2.207 ^{ns}	0.962 **	3029.9 **	1716.28 **	7195380 **	14.923 **	171.3 **	0.073	
Error	16	1.477	3.547	0.009	6.183	5.645	10343.28	0.08	2.068	2.005 **	
Variety(Var.)	9	6.753 **	18.6 **	0.161 **	97.532 ^{ns}	426.86 **	435179 **	3.155 **	5.763 ^{ns}	0.552 **	
(Var × Env.)	×	63	1.476 **	3.54 **	0.026 **	54.29 **	29.221 **	34.35 **	0.211 **	5.689	0.145
Error	144	0.651	0.746	0.005	10.257	3.507	13258	0.042	1.748	0.073	

* and **: Significant at 5% and 1% levels of probability, respectively.

ns: Non-significant

Table 2. Mean comparison for grain and straw yields and some morphological traits in common millet varieties

Variety	Tiller No.	Leaf No.	() Stem diameter (mm)	Days to flowering	() Panicle length (cm)	Grain No/ panicle	() 1000 grain weight (g)	() Straw Yield (t/h)	() Grain Yield (t/h)
KCM1	4.175a	9.5a	7.15ab	62.5a	35.70a	571c	4.026d	7.190a	0.892b
KCM2	4.325a	9.2a	7.29ab	59.5a	33.12abc	861abc	4.63bc	7.560a	1.360ab
KCM3	5.546a	8.2ab	5.81ab	55.0a	29.13bcd	817bc	4.010d	7.990a	1.859a
KCM4	5.546a	8.1ab	5.61ab	56.7a	30.79abcd	779bc	4.170cd	6.810a	1.239ab
KCM5	5.400a	7.5ab	6.57ab	57.1a	27.51bcde	853abc	4.452bcd	8.310a	1.700ab
KCM6	4.910a	8.6ab	4.61b	58.2a	22.27e	887ab	4.230bcd	7.870a	1.440ab
KCM7	5.496a	7.8ab	6.64b	58.87a	26.87cde	799bc	4.230bcd	7.640a	1.690ab
KCM8	5.617a	6.4b	6.61b	57.4a	28.50bcde	755bc	4.510bcd	6.930a	1.70ab
KCM9	4.830a	7.8ab	8.54a	56.7a	33.6abc	1111a	5.106a	7.150a	1.70ab
KCM10	5.340a	7.8ab	6.58b	57.4a	24.42de	763bc	4.760ab	7.220a	1.490ab

Means. in each column, followed by at least one similar letter are not significantly different at the 5 % probability level- using Duncan's Multiple Range Test.

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Table 3. Simple correlation coefficients (df=8) between grain and straw yields and some traits in common millet varieties in Karaj (2001-2003)

Traits	Tiller No.	Leaf No.	Stem diameter	Days to flowering	Panicle length	Grain No./panicle	1000 grain weight	Straw yield	Grain yield
Tiller No.	1								
Leaf No.	-0.134 ^{ns}	1							
Stem Diameter.	-0.417 ^{ns}	0.205 ^{ns}	1						
Day to fl.	-0.539 ^{ns}	0.035 ^{ns}	0.158 ^{ns}	1					
Panicle length.	0.587 ^{ns}	-0.518 ^{ns}	0.505 ^{ns}	0.124 ^{ns}	1				
Grain No/panicle	-0.046 ^{ns}	-0.565 ^{ns}	0.299 ^{ns}	-0.031 ^{ns}	0.449 ^{ns}	1			
1000 grain weight	0.447 ^{ns}	0.465 ^{ns}	0.488 ^{ns}	-0.513 ^{ns}	0.069 ^{ns}	0.434 ^{ns}	1		
Straw yield	0.264 ^{ns}	0.159 ^{ns}	-0.421 ^{ns}	-0.437 ^{ns}	0.413 ^{ns}	0.315 ^{ns}	-0.335 ^{ns}	1	
Grain yield	0.332 ^{ns}	-0.225 ^{ns}	-0.549 ^{ns}	0.226 ^{ns}	0.638 [*]	-0.189 ^{ns}	-0.773 ^{**}	0.315 ^{ns}	1

* and **: Significant at 5% and 1% levels of probability, respectively.

ns: Non-significant

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Table 4. Simple correlation coefficients(df=8) between grain and straw yields and some traits in common millet varieties in Gorgan (2001-2003)

Traits	Tiller No.	Leaf No.	Stem diameter	Days to flowering	Panicle length	Grain No./panicle	1000 grain weight	Straw yield	Grain yield
Tiller No.	1								
Leaf No.	0.685 *	1							
Stem Diameter.	-0.838 **	0.665 *	1						
Day to flowering	-0.462 ^{ns}	0.662 *	0.521 ^{ns}	1					
Panicle length	-0.356 ^{ns}	0.570 ^{ns}	0.027 ^{ns}	0.179 ^{ns}	1				
Grain No./panicle	0.237 ^{ns}	0.137 ^{ns}	0.365 ^{ns}	0.476 ^{ns}	0.136 ^{ns}	1			
1000 grain weight	0.153 ^{ns}	-0.175 ^{ns}	0.292 ^{ns}	-0.315 ^{ns}	0.038 ^{ns}	0.761 *	1		
Straw yield	0.026 ^{ns}	0.171 ^{ns}	-0.046 ^{ns}	0.186 ^{ns}	0.146 ^{ns}	0.407 ^{ns}	0.235 ^{ns}	1	
Grain yield	0.687 *	0.685 *	-0.413 ^{ns}	0.554 ^{ns}	-0.417 ^{ns}	0.412	0.424 ^{ns}	0.475 ^{ns}	1

* and **: Significant at 5% and 1% levels of probability, respectively.

ns: Non-significant

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Table 5. Simple correlation coefficients (df=8) between grain and straw yields and some traits in common millet varieties in Gorgan (2001-2003)

Traits	Tiller No.	Leaf No.	Stem diameter	Days to flowering	Panicle length	Grain No./panicle	1000 grain weight	Straw yield	Grain yield
Tiller No.	1								
Leaf No.	-0.529 ^{ns}	1							
Stem Diameter	0.240 ^{ns}	0.448 ^{ns}	1						
Day to flowering	0.030 ^{ns}	0.294 ^{ns}	0.570 ^{ns}	1					
Panicle length	0.515 ^{ns}	0.249 ^{ns}	0.276 ^{ns}	0.505 ^{ns}	1				
Grain No./panicle	0.044 ^{ns}	0.344 ^{ns}	0.632 [*]	0.892 ^{**}	0.458 ^{ns}	1			
1000 grain weight	-0.220 ^{ns}	0.205 ^{ns}	0.679 [*]	0.809 ^{**}	0.531 ^{ns}	0.889 ^{**}	1		
Straw yield	0.230 ^{ns}	0.318 ^{ns}	0.295 ^{ns}	0.586 ^{ns}	0.578 ^{ns}	0.530 ^{ns}	0.454 ^{ns}	1	
Grain yield	0.439 ^{ns}	0.541 ^{ns}	0.371 ^{ns}	0.703 [*]	0.858 ^{**}	0.685 [*]	-0.635 [*]	0.780 ^{**}	1

* and **: Significant at 5% and 1% levels of probability, respectively.
ns: Non-significant

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Table 6. Simple correlation coefficients (df=8) between grain and straw yields and some traits in common millet varieties in three locations (2001-2003)

Traits	Tiller No.	Leaf No.	Leaf No.	Days to flowering	Panicle length	Grain No./panicle	1000- grain weight	Straw yield	Grain yield
Tiller No.	1								
Leaf No.	0.793 **	1							
Stem Diameter	-0.598 ^{ns}	0.109 ^{ns}	1						
Day to flowering	-0.765 **	0.590 ^{ns}	0.325 ^{ns}	1					
Panicle length	-0.559 ^{ns}	0.374 ^{ns}	0.472 ^{ns}	0.394 ^{ns}	1				
Grain No./panicle	0.066 ^{ns}	0.221 ^{ns}	0.487 ^{ns}	0.542 ^{ns}	0.081 ^{ns}	1			
1000- grain weight	-0.110 ^{ns}	-0.315 ^{ns}	0.736 *	0.199 ^{ns}	0.086 ^{ns}	0.684 *	1		
Straw yield	-0.582 ^{ns}	0.106 ^{ns}	0.267 ^{ns}	0.542 ^{ns}	0.435 ^{ns}	0.695 *	0.302 ^{ns}	1	
Grain yield	0.657 *	0.677 *	0.025 ^{ns}	0.782 **	0.412 ^{ns}	0.573 ^{ns}	0.293 ^{ns}	0.783 **	1

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* and **: Significant at 5% and 1% levels of probability, respectively.

ns: Non-significant

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Study of some morphological traits and straw and grain yield in different varieties of common millet (*Panicum miliaceum* L.)

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ABSTRACT

Mehrani, A., A. Mosavat and A. A., Shooshi. 2007. Study of some morphological traits and straw and grain yield in different varieties of common millet (*Panicum miliaceum* L.).*Iranian Journal of Crop Sciences*. 9(3): 282-295

This experiment was conducted to study straw and grain yield and morphological traits in 10 common millet by using a RCB design with three replications in Karaj, Dezful and Gorgan in three consecutive growing seasons (2000-2003). Data were recorded on traits such as tiller no.plant⁻¹, leaf no.plant⁻¹, stem diametere, days to 50% flowering, panicle length, seed number per panicle, 1000- grain weight. The grain and straw yields of each variety was also determined by harvesting a 5 m² area of two center rows in each plot, and the weights were then adjusted to 14% of moisture. Results indicated that there were significant differences for all traits among varieties at 0.01 probability level, except for, days to 50% flowering and straw yield. Mean comparisons showed that var. 2 with 9.2 leaves, var. 9 with the stem diameter of 8.54 mm, var. 1 with panicle length of 35.7 cm, var. 9 with 1111 grain per panicle, var. 9 with 1000- grain weight of 5.16 g, and var. 3 with the grain yield of 1.859 t/ha had the highest values among the other varieties. Meanwhile, the results showed that there were significant and positive correlation between straw yield and number of grain per panicle (0.695*) but there were significant and positive correlation between grain yields and tiller number per plant (0.657*), leaf number per plant(0.677*) ,days to 50% flowering(0.782*) and straw yield (0.782*).

Key words: Common millet, Grain yield, Morphological traits, Days to flowering, Panicle, 1000 grain weight

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