

.....
(*Zea mays* L.)

(*Zea mays* L.)

.

)
(.) (

(/ /)

.

.

.

.

:

-
-
-
-

. ()

(*Zea mays* L.)

. ()

/

. ()

. ()

. ()

. ()

. ()

)

. ()

ÿ

. ()

. ()

. ()

()

. ()

. ()

()

()

()

ÿ

()

()

()

l
l

()

()

ÿ

ÿ

()

()

()

..... / / /

(

)

| | | | |
|-------|--------------------------|--------------------------|-------------------------------|
| SC704 | Th 91A 1354-G 42 O NTR-2 | Th 91A 1353-G 41 Q NTR-1 | Th 92B 6270-10-POb-44G2 |
| DC370 | Th 97B 6088-POb-91 CD | Th 88A 1344-S87 P 69Q | Th 89B 6324-Rio-Hater(1)-8561 |
| SC250 | Th 94A 1126-Side-9245 | Th 91A 1305 Comp-1-112 | Th 93B 6020--Pob-47-cC5 |
| SC302 | Th 94A 1128-Acress 9245 | PR 91A 1306 Comp-1-54 | PR 91B 5301 EDS 90620 Flint |
| SC400 | Th 87B 6089-Pob-92 C0 | Th 94A 1122--E | PR 93B 5212-c peel.16 C21 |
| SC500 | Th 94A 1128 Acress 9245 | Th 93A 1121- Sakha-9134 | Th 83A 1321 R-4-Acress -8569 |

yyy /

ÿ

(

)

() ()
() ()

() \ddot{y}

\ddot{y}
(\ddot{y})

Dicky John

()

\ddot{y}

\ddot{y} ()

()

SAS

$$r_{g(xy)} = \frac{\sigma_{g(xy)}}{\sqrt{\sigma_{g(x)}^2 \sigma_{g(y)}^2}}$$

(ASI)

\ddot{y}

MANOVA

()

()

()

()

\ddot{y}

(\ddot{y})

Path 2

ÿ

ÿ

ÿ

)

(/)

) SC500

(

) SC302 (/

.() (/

ÿ/)

(

ÿÿ (ÿ/)

(/)

ÿÿ

/) ÿ ÿ (/)

(/

/

.()

ÿ ÿ ÿ
ÿ ÿ

/)

.()

(

.()

()

| ÿÿ | | | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|---|-----|------|------|-----|-----|--------|
| / | d-f | / | i-k | / | ij | / | i-k | / | e-i | / | f-i | / | b-f | / | h-k | ÿ/ | i-k | 1 |
| ÿ/ | a-f | | c-g | / | e-i | ÿ/ | c-h | / | c-e | / | a-h | / | c-g | ÿ / | f-j | / | d-i | 2 |
| ÿ/ | b-f | ÿ/ | c-k | / | c-e | / | d-j | ÿ/ | a | / | f-i | / | a-e | ÿ / | f-i | ÿ/ | d-i | 4 |
| / | b-f | ÿ/ | c-h | / | g-j | / | i-k | / | g-l | ÿ/ | a-f | / | f-j | / | d-g | ÿ/ | b-g | 5 |
| ÿ/ | b-f | ÿ | d-k | / | e-i | / | h-k | / | d-h | | a-i | / | i-m | / | d-h | | f-k | 6 |
| ÿ/ | a-f | / | f-k | / | ab | / | b-f | / | lm | / | a-g | / | k-n | ÿ / | fghi | / | b-h | 7 |
| / | ef | ÿ/ | d-k | / | e-i | / | b-e | / | k-m | / | a | / | i-n | ÿ / | f-j | / | e-j | 8 |
| / | a-d | ÿ/ | c-h | / | b-d | / | c-j | / | f-l | / | ab | / | abc | ÿ | f-i | / | b-h | 9 |
| / | a-d | / | abc | / | e-i | / | c-j | / | f-l | ÿ/ | a-f | / | c-g | / | ijk | ÿ/ | a-e | 10 |
| ÿ/ | a-f | / | e-k | / | e-i | / | c-j | / | e-k | / | a-h | / | a-d | / | h-k | / | g-k | 11 |
| / | ab | ÿ/ | c-k | / | c-f | / | b | / | h-m | / | ab | / | d-h | / | ab | | ab | 12 |
| ÿ/ | a-f | / | b-d | / | f-j | / | c-j | / | c-g | / | e-i | / | abc | / | a | / | abc | 13 |
| ÿ | b-f | | b-g | / | e-i | / | b-e | / | k-m | / | a-h | / | n | ÿ / | e-i | ÿ/ | d-i | 14 |
| / | c-f | / | g-k | / | f-j | / | i-k | / | e-j | / | a-i | / | j-n | / | hijk | / | g-k | 15 |
| / | d-f | | b-g | / | e-i | / | h-k | / | j-m | / | a-i | / | l-n | ÿ / | f-i | ÿ | b-f | 16 |
| ÿ/ | a-f | ÿ/ | c-k | | d-h | / | g-k | / | g-l | / | ab | / | g-j | / | c-g | / | b-g | 17 |
| / | a-c | / | a-c | / | e-i | / | c-j | / | bc | / | e-i | / | ab | / | bc | / | b-h | 18 |
| ÿ/ | a-f | ÿ/ | c-j | / | e-i | / | e-k | / | d-i | / | abc | / | d-h | ÿ / | f-j | / | e-j | 19 |
| / | a-e | / | d-k | | d-h | ÿ/ | c-h | / | e-j | / | a-i | / | e-i | / | c-h | / | a-d | 20 |
| / | d-f | / | b-e | / | h-j | / | g-k | / | d-i | / | a-d | / | k-n | / | h-k | / | a-f | 22 |
| / | b-f | ÿ/ | c-k | / | e-i | / | i-k | / | d-h | / | i | / | a | / | bcd | / | a-g | 23 |
| / | f | / | h-k | / | jk | / | jk | / | b-d | / | j | / | c-g | ÿ / | g-j | ÿ / | k | 24 |
| ÿ/ | b-f | / | jk | / | d-g | ÿ/ | c-h | / | f-l | ÿ/ | a-i | / | g-k | / | h-k | | c-h | 25 |
| ÿ/ | a-f | ÿ/ | d-k | / | bc | ÿ/ | c-i | / | h-m | / | a-e | / | d-h | / | h-k | / | b-g | 26 |
| / | d-f | / | f-k | / | b | / | bc | / | m | / | a-i | / | h-l | ÿ / | f-i | ÿ/ | d-i | 27 |
| / | d-f | ÿ/ | c-k | / | e-i | / | b-e | / | m | / | a-g | / | e-i | ÿ | f-j | ÿ/ | g-k | 28 |
| ÿ | b-f | / | k | / | e-i | ÿ/ | c-i | / | c-f | / | ghi | / | g-j | / | h-k | / | g-k | 29 |
| / | d-f | / | g-k | | f-j | / | k | / | g-l | / | a-i | / | g-k | ÿ / | f-i | / | b-h | 30 |
| / | d-f | ÿ/ | c-k | / | e-i | / | b-g | / | f-l | | c-i | / | mn | / | jkl | / | g-k | KDC370 |
| / | ab | / | a | / | kl | / | b-d | / | b-d | / | hi | / | i-m | / | i-l | / | h-k | KSC250 |
| / | ab | | b-g | / | h-j | / | c-j | / | d-h | / | d-i | / | i-m | / | l | ÿ / | jk | KSC302 |
| ÿ/ | b-f | ÿ/ | c-i | / | e-i | ÿ/ | c-h | / | d-i | / | a-i | / | e-i | | kl | / | d-i | KSC400 |
| / | a | / | ab | | l | / | jk | / | b | / | b-i | / | i-m | / | b-e | / | a | KSC500 |
| / | ab | / | a-d | ÿ/ | a | / | a | / | g-l | / | b-i | / | ab | / | c-f | ÿ | k | KSC704 |
| ÿ/ | | ÿ/ | | / | | / | | / | | / | | / | | ÿ / | / | | | |
| / | | / | | /ÿ | | / | | / | | / | | / | | / | | / | | |
| - / | | - / | | - / | | - / | | - / | | - / | | / | | - ÿ/ | | - / | | |

-

| | | | | | | | | |
|--------------------|--------------------|--------------------|--------------------|---------------------|---------------------|---------------------|---------------------|-----|
| (gr) | (kg) | | | | (mm) | (cm) | (cm) | |
| \dot{y}/\ddot{y} | \dot{y}/\ddot{y} | \dot{y}/\ddot{y} | \dot{y}/\ddot{y} | \dot{y}/\ddot{y} | \dot{y}/\ddot{y} | \dot{y}/\ddot{y} | \dot{y}/\ddot{y} | () |
| \dot{y}/\ddot{y} | \dot{y}/\ddot{y} | \dot{y}/\ddot{y} | \dot{y}/\ddot{y} | \dot{y}/\ddot{y} | $-\dot{y}/\ddot{y}$ | $-\dot{y}/\ddot{y}$ | $-\dot{y}/\ddot{y}$ | () |
| () | (mm) | (mm) | (mm) | (cm) | | | | |
| \dot{y}/\ddot{y} | \dot{y}/\ddot{y} | \dot{y}/\ddot{y} | \dot{y}/\ddot{y} | $-\dot{y}/\ddot{y}$ | \dot{y}/\ddot{y} | \dot{y}/\ddot{y} | \dot{y}/\ddot{y} | () |
| \dot{y}/\ddot{y} | \dot{y}/\ddot{y} | \dot{y}/\ddot{y} | \dot{y}/\ddot{y} | \dot{y}/\ddot{y} | \dot{y}/\ddot{y} | \dot{y}/\ddot{y} | \dot{y}/\ddot{y} | () |

.....

.....

.....

.....

(Zea mays L.)

.....

.()

(\hat{y} /)
(\hat{y} /)

\hat{y} / \hat{y}

.()

)

(

()

.()

1- Collinearity

2- Tolerance index

3- Variance Inflation Factor

| () | | | () | | |
|---|-----|-----|------|-----|----|
| - | - | - | - / | - / | |
| - | ŷ/ | ŷ/ | - | ŷ/ | |
| - | ŷ/ | ŷ/ | - | ŷ/ŷ | |
| - | -ŷ/ | -ŷ/ | - | - / | |
| ŷ/ | ŷ/ | ŷ/ | / | / | |
| ŷ/ | ŷ/ | ŷ/ | ŷ/ŷ | ŷ/ŷ | |
| ŷ/ | ŷ/ | ŷ/ | /ŷ | / | |
| ŷ/ | - | - | ŷ/ŷ | - | ŷŷ |
| ŷ/ | - | - | / | - | |
| -ŷ/ | - | - | -ŷ/ŷ | - | |
| = - / + ŷ/ () + ŷ/ŷ () - / () + / () + ŷ/ ŷ () + / () | | | | | |
| = - / + / () + ŷ/ŷ () + /ŷ () + ŷ/ŷ (ŷŷ) + / () - ŷ/ŷ () | | | | | |

| () | | | | | | | - |
|-------|-----|-------|---------|------|-------|------|-------|
| ŷ/ | ŷ/ŷ | ŷ/ŷ ŷ | -ŷ/ŷŷ | -ŷ/ŷ | -ŷ/ŷ | ŷ/ | |
| ŷ/ | ŷ/ŷ | ŷ/ŷ | ŷ/ŷŷ | -ŷ/ŷ | -ŷ/ | ŷ/ | |
| ŷ/ ŷ | ŷ/ŷ | ŷ/ŷ | -ŷ/ŷŷŷ | ŷ/ | ŷ/ŷ | -ŷ/ | |
| ŷ/ | ŷ/ŷ | ŷ/ŷŷ | -ŷ/ŷŷ | ŷ/ŷ | ŷ/ŷ | ŷ/ | |
| -ŷ/ ŷ | ŷ/ŷ | -ŷ/ | ŷ/ŷŷŷŷŷ | -ŷ/ŷ | ŷ/ŷ ŷ | -ŷ/ŷ | |
| ŷ/ ŷ | ŷ/ | -ŷ/ | -ŷ/ŷŷ | ŷ/ŷ | -ŷ/ŷ | ŷ/ ŷ | ŷ |
| | | | | | | | ŷ/ŷ : |

.....

()

ÿ

ÿ

()

()
()

(ÿ/)
(-ÿ/)

(ÿ/ ÿ)
(ÿ/)

(/)
/) ÿÿ

(

ÿ

/)

(ÿ ÿÿ ÿ)

/)

()

(
(/)
()

()
()
y

()

() y

(y/)
(y/)
(y) (y) ()
/

()
(y)

y

()

ÿ

(-ÿ/)

ÿ/

()

ÿ/

()

ÿÿ

()

ÿÿ

ÿÿ

ÿ

()

ÿÿ

ÿ

(ÿ/ÿ)

() -

| () | | | | | | | |
|-----------------------|---------------------------------|-----------------------|--------------------|----------------------------------|-----------------------|------------------------------|------------------|
| $\dot{y}/$ | $\dot{y}/\dot{y} \ \ddot{y}$ | $\dot{y}/$ | $\dot{y}/$ | $\dot{y}/\dot{y}\dot{y}\dot{y}$ | \dot{y}/\dot{y} | \dot{y}/\dot{y} | |
| $\dot{y}/ \ \ddot{y}$ | $\dot{y}/\dot{y}\dot{y}$ | \dot{y}/\dot{y} | $-\dot{y}/\dot{y}$ | $-\dot{y}/\dot{y}\dot{y}\dot{y}$ | $\dot{y}/$ | \dot{y}/\dot{y} | |
| $\dot{y}/$ | $\dot{y}/\dot{y}\dot{y}$ | $\dot{y}/ \ \ddot{y}$ | \dot{y}/\dot{y} | \dot{y}/\dot{y} | $-\dot{y}/\dot{y}$ | $\dot{y}/\dot{y}\dot{y}$ | $\dot{y}\dot{y}$ |
| $\dot{y}/$ | $\dot{y}/\dot{y}\dot{y}\dot{y}$ | $\dot{y}/$ | $\dot{y}/$ | $\dot{y}/\dot{y}\dot{y}$ | $-\dot{y}/\dot{y}$ | $\dot{y}/\dot{y} \ \ddot{y}$ | |
| $\dot{y}/$ | \dot{y}/\dot{y} | $\dot{y}/ \ \ddot{y}$ | $\dot{y}/$ | $\dot{y}/\dot{y}\dot{y}$ | \dot{y}/\dot{y} | \dot{y}/\dot{y} | \dot{y} |
| $\dot{y}/$ | $\dot{y}/\dot{y} \ \ddot{y}$ | $\dot{y}/$ | \dot{y}/\dot{y} | $\dot{y}/\dot{y}\dot{y}$ | $\dot{y}/ \ \ddot{y}$ | \dot{y}/\dot{y} | |

$\dot{y}/$:



| (Ton/ha) | (mm) | (cm) | | | (gr) | | (cm) | (cm) | |
|----------|------|------|-----|-----|------|-----|------|------|--------|
| d-h | k | a-i | b-d | bc | ij | g-l | b-d | c-k | 1 |
| e-i | b-i | g-k | b-g | b-d | a-i | d-g | bc | A | 2 |
| jk | jk | i-k | kl | hi | ej | d-g | bc | a-d | 4 |
| b-g | f-j | c-j | ab | bc | b-j | f-j | d-i | d-k | 5 |
| b-e | c-i | a-e | b-e | b-d | a-j | f-j | b-e | d-l | 6 |
| b-g | h-j | a-d | ab | d-h | a-d | i-n | b-e | a-d | 7 |
| g-k | a-g | h-k | d-j | d-i | a-i | mn | d-i | g-l | 8 |
| d-i | i-k | a-h | b-i | c-f | ab | ab | b-d | a-g | 9 |
| b-f | b-i | g-k | d-j | d-i | a-c | e-h | IJK | g-l | 10 |
| a | b-h | a-c | a | bc | c-j | e-h | d-j | f-l | 11 |
| b-d | a-f | a-g | ab | b-d | a | b-e | b-d | b-k | 12 |
| d-i | a-e | e-j | b-f | b-d | g-j | ab | b | b-h | 13 |
| h-k | ab | kl | c-j | ab | a-d | mn | k | M | 14 |
| i-k | g-j | e-j | h-l | i | f-j | k-n | g-k | i-m | 15 |
| f-k | a-c | b-j | c-i | c-g | a-g | l-n | f-k | f-l | 16 |
| f-k | c-j | i-k | i-l | d-i | a-f | k-n | h-k | lm | 17 |
| d-i | b-i | a-c | b-i | d-h | d-j | a-c | c-h | f-l | 18 |
| d-i | c-i | j-l | g-l | f-i | ab | e-h | f-k | e-l | 19 |
| f-i | h-j | a-d | b-e | bc | c-j | c-f | b-e | a-g | 20 |
| g-k | e-j | d-j | h-l | d-i | g-j | h-m | jk | h-l | 22 |
| f-j | jk | a-f | g-l | e-i | a-f | a | a | a-c | 23 |
| f-j | c-j | c-j | c-j | c-f | j | a-d | b-f | j-m | 24 |
| f-i | k | c-j | g-l | g-i | a-h | g-l | c-h | ab | 25 |
| f-k | c-j | e-j | e-k | c-g | a-j | g-k | b-f | a-d | 26 |
| e-i | b-i | a-g | b-g | c-f | f-j | m-n | d-i | b-i | 27 |
| bc | a-f | ab | b-d | c-g | a-f | k-n | b-g | a-f | 28 |
| d-i | a-f | a-h | d-j | b-e | a-j | j-n | d-j | b-j | 29 |
| b-g | d-j | a-e | b-g | d-i | a-f | f-i | b-f | d-k | 30 |
| i-k | g-j | lm | j-l | c-f | e-j | n | g-k | f-l | KDC370 |
| b | b-h | c-j | a-c | a | c-j | g-k | i-k | k-m | KSC250 |
| b-g | a-d | c-j | b-e | ab | h-j | k-n | jk | g-l | KSC302 |
| b-d | a-f | g-k | b-i | b-d | a-h | k-n | k | h-l | KSC400 |
| k | c-i | m | l | c-f | e-j | g-k | b-f | a-e | KSC500 |
| c-h | a | a | b-h | b-d | ab | c-f | b-g | a-g | KSC704 |

ÿ

ÿÿ

()

ÿ

ÿ

ÿ

()

()

()

()

ÿ

ÿ

ÿÿ

(*Zea mays* L.)

.....

.

.

ÿ

.()

.()

.

.

.

.

.

.

.()

- / / /
1. Abde Mishani, S. and A.A. Shahnejat Boushehri. 1997. Advanced plant breeding. Vol. 2. University of Tehran Press. p. 321. (In Persian).
 2. Abo-El-Kheir, M.S.A. and B.B. Mekki. 2007. Response of maize single cross to water deficits during silking and grain filling stages. World Journal of Agricultural Sciences 3(3): 269-272. ISSI. 1817-3047.
 3. Agrama, H.A.S. 1996. Sequential path analysis of grain yield and its components in maize. Plant Breeding 115: 343-346.
 4. Ahmadzade, A. 1990. Determination of the best drought stress indices in selective corn lines. Msc thesis, Agricultural faculty of University of Tehran. p. 130. (In Persian).
 5. Andrade, F.H., L. Echarte., R. Rizzalli., A. Della Maggiora., M. Casanoves. 2002. kernel number prediction in maize under nitrogen stress. Crop Sci., 42: 1173-1179.
 6. Arraudeau, M.A. 1989. Breeding Strategies for drought resistance. In: Proceedings of Baker, F.W.G. (Ed). Drought resistance in cereals. CAB International. 222 pp.
 7. Boyer, J.S. 2006. Relationship of water potential to growth of leaves plant. Physiol 43: 1056-1062.
 8. Caker, R. 2004. Effect of water stress at different development stage on vegetative and reproductive growth of corn. Field Crops Research. 89(1): 1-16
 9. Campose, H., M. Cooper., J.E. Habben and J.R. Schussler. 2004. Improving drought tolerance in maize: A view from Industry. Field Crops Research 89: 1-16.
 10. Denmead, O.T. and R.H. Shaw. 1990. The effects of soil moisture stress at different stage of growth on the development and yield of corn. Agron., J. 52: 272-274.
 11. Ehdaei, B. 1993. Selection for drought tolerance in wheat. Proceedings of 1st Iranian Agronomy and Plant Breedig Congress. University of Tehran, Karaj, Iran. p. 105. (In Persian).
 12. F.A.O. Production year book. 2005. Food and Agricultural Organization of United Nation, Rome, Italy, 51: 209 pp.
 13. Fazel Najaf Abadi, M., M.R. Bihamta, H.R. Nikkhah and S.A Peighambari. 2009. A Study of barley (*Hordeum vulgare* L.) Yield Determining Traits in Stress and Non-Stress Conditions. Iranian J Field Crop Sci., 40(1): 55-65. (In Persian).
 14. Ghahfarrokhi, A.R., N. Khodabandeh, A. Ahmadi and A. Bankehsaz. 2004. Study on effect of drought stress in different growth stages on yield, yield components and quality of grain maize. Proceeding of the 8th Iranian Congress of Agronomy and Plant Breeding. College of Agriculture, University of Guilan, Rasht. p. 239. (In Persian).
 15. Golbashy, M., M. Ebrahimi, S. Khavari Khorasani and R. Choucan. 2010. Evaluation of drought tolerance of some corn (*Zea mays* L.) hybrids in Iran. African Journal of Agricultural Research Vol., 5(19), pp: 2714-2719.
 16. Jaafari, P. and M.R. Imani. 2004. Study of drought stress and plant density on yield and some agronomical traits of maize KSC 301. Proceeding of the 8th. Iranian Congress of Crop Sciences. College of Agriculture, Universty of Guilan, Rasht, Iran. p. 235. (In Persian).
 17. Jazaeri, M.R. and E. Rezaei. 2007. Evaluation of drought tolerant of oat cultivars in Isfahan condition. Olom va fonone keshavarzi va manabe tabiei. 10 (3). pp: 393-404. (In Persian).

18. Mohammadi, S.A., B.M. Prasanna and N.N. Singh. 2003. Sequential Path Model for Determining Interrelationships among Grain Yield and Related Characters in Maize. *Crop Sci.*, 43: 1690-1697
19. Monneveux, P., C. Sanchez, D. Beck and G.O. Edmeds. 2006. Drought tolerance improvement in topical maize source populations: evidence of progress. *Crop Sci.*, 46: 180-191.
20. Normohamadi, Gh. A. Siadat and A. Kashani. 1997. *Agronomy (Cereal)*. Shahid Chamran University Publisher. p. 540. (In Persian).
21. Osborne, S.L., J.S. Scheppers, D.D. Francis and M.R. Schlemmer. 2002. Use of spectral radiance to in season biomass and grain yield in nitrogen and water-stressed corn. *Crop Sci.*, 42: 165-171.
22. Ouatter, S.R., J. Jones and K. Crookson. 1987. Effect of water deficit during grain filling on the pattern of maize kernel growth and development. *Crop Science*. 27: 720-730.
23. Sarmadnia, Gh. and A.R. Koochaki. 1992. *Physiological Prospects of dryland Farming*. thirth publish., mashad jahat publisher. p. 23-79. (In Persian).
24. Sepehri, E., S.E. Modares Sanavi, B. Ghareyazi and E. Yamini. 2003. Effect of drought stress and different nitrogen levels on growth stages, yield and yield component of corn. *Oloom zeraie iran*. 4(3). p: 184-201. (In Persian).
25. Shalygina, O.A. 1990. Correlation of yield in maize plants with its yield components and biological characters under irrigation in the lower Volga area. p. 433. *Maize Abstract*, 7: 43.
26. Shaozhong, K., W. Shi and J. Zhang. 2000. An improved water use efficiency for maize grown under regulated deficit irrigation. *Field Crop Research*. 67: 207-214.
27. Shiri, M.R. 2000. The investigation of yield and yield component in wheat variety under water stress. M. Sc Thesis. Islamic Azad University, Ardabil Branch. p: 143. (In Persian).
28. Shirinzade, E., R. Zarghami and M.R. Shiri. 2009. Evaluation of drought tolerant in corn hybrids using drought tolerance indices. *Oloom zeraei Iran*. 10(4). (In Persian).
29. Shoaehosseini, M.M. Golbashy, M. Farsi, S. Khavari Khorasani and M. Ashofte Beiragi. 2009. Evaluation of correlation between yield and its dependent trait in single cross corn hybrids under drought stress. *islamic azad university, khozestan*. 19 Nov. Abstract book of 1st regional conference on tropical crops production under environmental stresses condition. p. 72. (In Persian).
30. Shoaehosseini, SM., M. Farsi and S. Khavari Khorasani. 2008. Investigation of Water Deficit Stress Effects on Yield and Yield Components Using Path Analysis in Some Corn Hybrids. *danesh keshavarzi*. 18(1): 71-85. (In Persian).
31. Tavakoli, H., S. Karimi and F. Mosavi. 1999. The effect of irrigation different regims on vegetative and reproductive growth of corn, *Journal of Iran Agronomy Science*. 20(3): 100-105. (In Persian).
32. Traore, S.B., R.E. Carlson, C.D. Pllcher and M.E. Rice. 2000. Bt and non Bt maize growth and development as affected by temperature and drought stress. *Agron. J*. 92: 1027-1035.
33. Wang, G., M.S. Kang and O. Moreno. 1999. Genetic analyses of grain-filling rate and duration in maize. *Field Crop Res.*, 61: 211-222.
34. Wasson, J., J. R. Schumacher and T.E. Wicks. 2000. Maize water content and solute potential at three stages of development. University of Illinois. Dept. of Crop Sciences. *Maydica*. 45(1):67-72.

- / / /
35. Xiao, Y.N., X.H. Li, M.L. Geotge, M.S. Li, S.H. Zhang and Y.L. Zheng. 2005. Quantitative trait locus analysis of drought tolerance and yield in maize in china. *Plant Molecular Biology Reporter*. 23: 155-165.
 36. Yazdan doost, M. and A. Rezai. 2001. A Study of Morphological and Physiological Basis of corn Yield through Path Analysis. *Iranian J. Agric. Sci.*, 32(3): 671-680. (In Persian).

A Study of Corn (*Zea mays* L.) Yield Determining Traits in Normal Condition and Low-Irrigation

M. Golbashy¹, M. Ebrahimi², S. Khavari Khorasani³ and R. Choukan⁴

Abstract

In order to study effect of drought stress on morphologic traits, yield and yield components of 28 new hybrids of corn to heat and drought stress in addition 6 commercial hybrid (as control), an experiment was carried out on based of complete randomized block design with three replication under normal irrigation and drought stress in Khorasan Razavi Agricultural Research and Natural Resources Institute Mashhad, Iran on 2010. Results of analysis of variance showed that in both condition there are significant different between all hybrids for all traits. Results of hybrid means comparison with Duncan's multiple range test showed that in normal irrigation condition S.C500 hybrid and in stress condition N.11 hybrid was better than others in yield trait (13.79 and 5.69 respectively). Genetic correlation between traits under stress condition showed that number of kernel in row was the highest correlation with yield and in normal irrigation ear diameter was higher than other traits correlated. The results showed that under no stress conditions, hybrids with the mean number of ear per plants that have more thick ear, heavier and more kernel per row and the same time have a lower percentage of wood, will be higher in total yield. Generally, according to results of path analysis, review and compare traits affecting grain yield in two environments can be concluded that plant traits in maize, kernel weight per ear, ear weight and percentage of kernel, deficit quickly affected and determining the limitations of plant production. Breeding for these traits can be obstacles on the path taken from the performance and the ultimate goal of increasing performance in low-Irrigation conditions.

Keywords: Corn, Path analysis, Simple Correlation, Stepwise Regression

1- Ph.D. Student, University of Tehran

2- Assistant Professore, Abouraihan Campus, University of Tehran

3-Assistant Professore of Khorasan Razavi Agricultural Research and Natural Resources Institute

4- Associate Professore of Seed and Plant Improvement Institute, Karadj