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1. Abbasi H. and M. Esfahani. 2007. Effects of nitrogen levels and its splits on ripening stage of rice. *J. of Agriculture*. Vol 30. No. 2: 25-36.
2. Akhgari H. 2006. Dtermination of the ratoon yield in different rice varieties. MSc. dissertation. Azad university. 121 pp.
3. Babazade S. 2006. Effects of nitrogen level and its application on yield and yield components of hybrid rice. MSc. dissertation . Azad university. 106 pp.
4. Belder P., J.H.J. Spiertz, B.A.M. Bouman, G. Lu and T.P. Tuong. 2005. Nitrogen economy and water productivity of lowland rice under water-saving irrigation *Field Crops Research*. 93: 169-185.
5. Boling A., T.P. Tuong, S.Y. Jatmiko and M.A. Burac. 2004. Yield constraints of rainfed lowland rice in Central Java, Indonesia. *Field Crops Research* 90: 351-360.
6. Bollich, C.N. and F.T. Turner. 1989. Commercial ratoon rice production in Texas, USA. Pages 257-264 in: *Rice ratooning*. International rice research Institute, Manila, Philippines.
7. Castillo, E.G., R.J. Buresh and K.T. Ingram. 1992. Low land rice yield as affected by timing of water deficit and nitrogen fertilization. *Agronomy Journal*. 84: 152-159.
8. Emam E. and M. Niknejad. 2004. An introduction on crop yield physiology. 595 pp.
9. Guillard, K., D.W. Griffin Allison, M.M. Rafey, W.R. Yamartino and S.W. Pietrzyk. 1995. Nitrogen utilization of selected cropping systems in the U.S. Northeast: I. Dry matter yield, N uptake, apparent N recovery and use efficiency. *Agron, J.* 87: 193-199.
10. Haghparast Tanha M.R. 1992. Plant nutrition and metabolisems. Azad university. Rasht branch. 194 pp.
11. Hong, K.P., G.M. Shone, J.Y. Kim, K.B. Choi, Y.S. Lee and Z.K. Choe. 1984. Productivity of herbag yield of ratoon in rice plants in the southern region. *Research Rerorts of the Rural Development*. 33(1): 74-78.
12. Ichii, M. 1988. Some factors influencing the growth of rice ratoon. Kawaga University. Japan. p. 41-46.
13. Karbalai M.T., R. Erfain and N Nematzade. 1997. Ratoon as a procedure to increase rice yield potential: reviewing researches. *Rice research Inst. of Iran*. 8 pp.
14. Kasturi, K. and D. Lenka. 1993. Varietal and Fertilizer responses of ratoon rice. *India Journal of Agronomy*. 3. 565-566.
15. Kazemi p., H.H. Pirdashti, M. Bahmainyar and M. Nasiri. 2007. Study of the effects of nitrogen fertilizer rates and split application on yield and yield components of different rice cultivars. *Pajouhesh & Sazandegi* No: 75, p. 68-77.
16. Khavarinejad, R.E. Photosynthesis. Tehran university. 370 pp.
17. Mahadvappa, M. 1988. Rice ratooning practice in India. Department of seed Science and Technology. Workshop on Rice Ratooning, Bangalore (India), 21-25 Apr 1986. p. 69-78.
18. Nasiri, M. 2001. Promising and improved varieties ratooning ability . *Rice research Inst. Of Iran*. 11 pp.
19. Okhovat, S. and D. Vakili. 2007. Rice (planting, Cultural and harvesting. Farabi press 212 pp.
20. Pampolino M.F., I.J. Manguiat, S. Ramanathan, H.C. Gines, P.S. Tan, T.T.N. Chi, R. Rajendran and R.J. Buresh. 2007. Environmental impact and economic benefits

- of site-specific nutrient management (SSNM) in irrigated rice systems *Agricultural Systems* 93: 1-24.
21. Parash, K.S., K. Krishnamurthy, Y.C. Panchal and B.G. Parakash. 1988. Production practices for ratoon rice in Tungabhadra River Project. 97-103.
  22. Pirdashti, H. 1999. Studying dry matter transition and determination growth indices of rice in different planting date. MSc. dissertation . Tarbiatmodares university. 158 pp.
  23. Rahimian, J. and M. Banaian. 1997. Basics of plant breeding. Jihad daneshgahi press. 320 pp.
  24. Rezaei, M., H. Shokri Vahed, E. Amiri, M.K. Motamed and E. Azarpour. 2009. Effects of irrigation and nitrogen management on yield and water productivity of rice. *World Applied Sciences Journal* 7(2): 203-210.
  25. Sadati, N. 2002. Effects of potassium source and timing on rice yield. *Rice research Inst. of Iran*. 21 pp.
  26. Salardini, E.M. 1987. Soil fertility. Tehran university. 434 pp.
  27. Setty, T.K.P., N.S. Parameshwar and M. Mahadvappa. 1995. Response ratoon to nutrition in coastal Karnataka. 18: 42-43.
  28. Shao, S. and D. Lenka. 1992. Effects of fertility level, cutting height and beoshan operation on ratooning of rice. *Indian and Journal of Agricultural Science*. 62(6): 395-396.
  29. Sharafi, N. 1996. Effects of cutting height and nitrogen levels on ratoon yield (Hasani Vr.). *Rice research Inst. of Iran*. 13 pp.
  30. Shirani, A.H. 2000. Crop physiology. Dibagarne Tehran. 360 pp.
  31. Subramina, M. and A. Ramalingam. 1988. Association of rice ratooning ability and vigor with grain yield. 7-15.
  32. Su, C.T. 1993. The introduction of ratoon cultivation of rice. 16: 46-49.
  33. Turner, E.T. and W.O. Mcilrath. 1987. N fertilizer managements for maximum ratoon crop. In: *Rice Ratooning*. IRRI. 187-194.
  34. Wade, L.J., S.T. Amarante, A. Olea, D. Harnpichitvitaya, K. Naklang, A. Wihardjaka, S.S. Sengar, M.A. Mazid, G. Singh and C.G. McLaren. 1999. Nutrient requirements in rainfed lowland rice. *Field Crops Res.*, 64: 91-107.

## **Influence of Different Levels of Nitrogen and Potassium on Yield and Its Correlated Traits In Rice**

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### **Abstract**

Ratooning means regrowing of rice plant after harvesting of first product which is specific physiologic characteristic of rice plant. It is an effective method for increasing of efficiency of production along with less investment and also lack of necessity for increasing of the field of rice plant. Ratooning more over, affects on the optimal usage of agricultural field. In order to achieve this goal, the use of important and effective fertilizer elements will be useful. In order to investigate of the effects of different level of nitrogen and potassium on ratooning of rice, an experiment was conducted in Guilan Province (Amlash) during 2003. The experiment was carried out using factorial in a complete randomized block design with eight treatments and three replications. Treatments were included 0, 50, 100 and 150 kg N/ha from source urea and 0 and 100 kg K/ha from source chloral of potassium (KCL). In this experiment grain yield, yield components, harvest index, biological yield and straw dry weight were investigated. According to results effect of nitrogen was significant on grain yield, percentage of filled, grain number panicle in m<sup>2</sup> and harvest index (HI) at 1% and on 1000 grain weight and biological yield at 5%. Effect of potassium was significant on biological yield, percentage of filled grain and number of panicle in m<sup>2</sup> at 5%. Interaction between nitrogen and potassium was significant on, grain yield at 1% and on number of panicle in m<sup>2</sup>, biological yield and harvest index (HI) at 5%. In conclusion, it can be said that the effect of fertilizer on ratoon yield is significant and positive in comparison to lack of usage of it.

**Keywords:** Ratoon, Nitrogen, Potassium, Yield, Rice

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