

RESPONSE OF SORGHUM [*SORGHUM BICOLOR* (L.) MEONCH] GENOTYPES TO DIFFERENT FERTILITY LEVELS ON NUTRIENT UPTAKE, AVAILABLE SOIL NUTRIENTS AFTER HARVEST AND YIELDS

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Abstract: An experiment was conducted at the Instructional Farm, Rajasthan College of Agriculture, during *kharif* 2012. To study the effect of different fertility levels on nutrient uptake and nutrient status in soil nutrients after the harvest and yields of crop. Four fertility levels *i.e.* control, 50, 75 and 100% RDF (recommended dose of fertilizers; 80 kg N+40kg P₂O₅ +40kg K₂O ha⁻¹) and 6 elite sorghum genotypes (SPH 1674, SPH 1680, SPV 2083, CSH 16, CSH 25 and CSV 23) were compared in a factorial randomized block design. Maximum nitrogen uptake by grain, maximum protein uptake by grain, as well as fodder, with genotype SPH 1674. CSV 23 recorded maximum phosphorus uptake (22.66 ha⁻¹) by fodder. Results showed that application of 100 % RDF gave significantly higher grain, fodder and biological yields over 50 % and control. Significantly increased available N, P & K contents in soil after harvest the sorghum crop over control. CSV 23 and SPV 2083 recorded significantly maximum available N, P and K in soil after harvest over rest of the genotypes. SPH 1674 recorded significantly higher grain yield (61.94 q ha⁻¹) and harvest index (34.48 %) than other genotypes.

Keywords: Fertility levels, Genotypes, Nutrient uptake, Available soil after harvest, Yield

REFERENCES

- Chandravanshi, P. Chandrappa, H. Hugar, A. Y. Danaraddi, V. S. ., Kumar, N. B. T. and Pasha, A. (2014). Effect of integrated nutrient management on soil fertility and productivity for sustainable production in rice-maize cropping system under bhadra command area of karnataka *The Ecoscan; An International Quarterly Journal Of Environmental Sciences* VI:385-390
- Das, M. S., Patel, J., Patel, K.H. and Patel, P.F. (2000). Effect of graded level of nitrogen and phosphorus on yield and nutrient uptake by hybrid fodder sorghum under rainfed situation. *Annals of Arid Zone* 39: 163-168.
- Dhaker, R.C. (2010). Influence of fertility levels and plant population on productivity of elite genotypes of sorghum. M.Sc. Thesis, Department of Agronomy, RCA, Udaipur, MPUAT, Udaipur.
- Dixit, A.K., Singh, O.P., Kachroo, Dileep and S. Bali, Amarjit (2005). Response of promising rainy season sorghum (*S. bicolor*) genotypes to nitrogen and phosphorus fertilization. *Indian Journal of Agronomy* 50: 206-209.
- Donald, C.M. and Hamblin, J. (1976). The biological yield and harvest index in cereals, a agronomic and plant breeding criteria. *Advance Agronomy* 28: 361-405.
- Jat, S.L., Sumeriya, H.K. and Mehta, Y.K. (2003). Influence of integrated nutrient management on content and uptake of nutrients of sorghum (*Sorghum bicolor* L. Moench). *Crop Research* 26: 390-394.
- Kaushik, M.K. (2000). Effect of row spacing, nitrogen and weed control on sorghum (*Sorghum bicolor* L. Moench) production. Ph.D. Thesis. Deptt. of Agronomy, Rajasthan College of Agriculture, Agricultural University, Udaipur.
- Kumar, S., Pandey, A. C. and Mardi, G. (2008). Evaluation of high yielding genotypes of sorghum (*Sorghum bicolor* L. Moench) under rainfed condition in east Singhbhum, Jharkhand. *International Journal of Tropical Agriculture* 26: 427-429.
- Kumawat, P. (2013). Effect of nitrogen and phosphorous fertilization of sweet corn [*Zea mays* (L.) saccharata] varieties. M.Sc. Thesis, Department of Agronomy, RCA, Udaipur, MPUAT, Udaipur.
- Kushwaha, B.B. and Thakur, N.S. (2006). Response of sorghum (*Sorghum bicolor* L.) genotypes to fertility levels under rainfed conditions. Extended summaries in National symposium on conservation Agriculture and Environment held at BHU, Varanasi, Oct. 26-28, pp. 248.
- Mawliya, M.K. (2012). Performance of sorghum [*Sorghum bicolor* (L.) Moench] genotypes at varying sowing dates in southern rajasthan. M.Sc. Thesis, Department of Agronomy, RCA, Udaipur, MPUAT, Udaipur.
- Panwar, D., Singh, P. and Sumeriya, H. K. (2014). Growth, dry matter partitioning and yield of sorghum [*Sorghum bicolor* (L.) Moench] genotypes as influenced by different fertility levels. *Annals of biology* 30: 491-494
- Panwar, D., Singh, P., Sumeriya, H.K., Jat, N. and Verma, S.N. (2015). Response of sorghum [*Sorghum bicolor* (L.) Moench] genotypes to different Fertility levels on yield and nutrient content. *Progressive Research – An International Journal*, 10(1): 164-166
- Patil, R.B. and Varde, P.A. (1998). Microbial populations in rhizosphere as influenced by high input

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rates of application to sorghum on a vertisol. *Journal of Indian Society of Soil Science* **46**: 223-227.

Singh, P. and Sumeriya, H.K. (2006). Effect of fertility levels on productivity of sorghum (*Sorghum bicolor* L. Moench) genotypes. Extended summaries in National symposium on conservation Agriculture and Environment held at BHU, Varanasi, Oct. 26-28, pp. 225-226.

Singh, A. K., Singh, A. K., Jaiswal, A., Singh, A. Upadhyay, P. K. and Choudhary, A.K. (2014). Effect of irrigations and phosphorus fertilization on productivity, water use efficiency, and soil health of summer mungbean (*Vigna radiata* L.), *The Ecoscan; An International Quarterly Journal Of Environmental Sciences* **8**(1&2): 185-191.

Sumeriya, H. K. and Singh, P. (2008). Effect of geometry and fertility levels on yield attributes, yield, protein content and yield of promising sorghum (*Sorghum bicolor* L. Moench) genotypes under rainfed condition. *International Journal of Tropical Agriculture* **26**: 403-408.

Sumeriya, H.K. (2010). Influence of plant geometry and fertility levels on yield, nutrient content and uptake, available nutrient status in soil and economics of various elite sorghum genotypes. *International Journal of Tropical Agriculture* **28**: 37-43.

Sumeriya, H.K., Singh, P. and Mali, A.L. (2005). Effect of fertility level on growth and productivity of sorghum [*Sorghum bicolor* (L.) Moench.]. *Crop Research* **30**:6-9.

Thiruna, V. M., Balaji, T., and Vinoth, R. (2014). Influence of inm on available nutrients, npk uptake, yield and quality parameters of bhendi *The Ecoscan; An International Quarterly Journal of Environmental Sciences* **8**(3&4): 333-337.

Vadiya, P.H. and Gabhane, V.V. (1998). Availability of nutrient in vertisol as influenced by sorghum sorghum-wheat cropping squence. *Journal of soil Erts* **8**: 70-72.