

THE EFFECT OF PHOSPHOROUS AND POTASSIUM ON ARSENIC STRESS MITIGATION IN MUSTARD

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Executive Summary

A pot experiment was conducted at the rain- shelter of the Department of Agronomy, Sher-e-Bangla Agricultural University, Dhaka to find out the arsenic stress tolerance in five mustard varieties as influenced by phosphorous and potassium. The experiment was consisted with three treatment factors as factor-A: variety (V_1 = BARI sarisha- 14 as check variety (as in a previous experiment conducted with BARI sarisha- 11, BARI sarisha- 12, BARI sarisha- 14 and BARI sarisha- 15 under arsenic stress and gave lower percentage of yield reduction compared to non- arsenic condition), V_2 = BARI sarisha- 9, V_3 = BARI sarisha- 18, V_4 = BARI sarisha- 16 and V_5 = BARI sarisha- 15), factor- B: arsenic level (A_0 = no arsenic and A_{100} = 100 mg/kg soil As) and factor- C: PK level (F_1 = recommended dose PK ($P= 35.08 \text{ kg ha}^{-1}$ and $K = 42.33 \text{ kg ha}^{-1}$), F_2 = 125% recommended of PK and F_3 = 150% recommended dose of PK). The experiment was laid- out in completely randomized design with four replications. Comparing the check variety BARI sarisha-14 (V_1), all the mustard varieties studied were arsenic stress tolerance. Among the five varieties studied, BARI sarisha- 18 (V_3 , 0.09 ppm) and BARI sarisha- 15 (V_5 , 0.05 ppm) are comparatively more safe to consume as accumulate significantly lower amount of arsenic in seed. Application of PK at 125% of recommended dose reduced seed arsenic content in BARI sarisha- 14 (58.1%), BARI sarisha- 16 (58.1%) and BARI sarisha- 15 (33.3%) whereas increased in BARI sarisha- 9 (10.5%) and kept unchanged in BARI sarisha- 18. Again, Application of PK at 150% of recommended dose reduced seed arsenic content in BARI sarisha- 14 (23.3%), in BARI sarisha- 9 (61.9%), BARI sarisha- 16 (29.0%) and BARI sarisha- 15 (58.3%) whereas increased in BARI sarisha- 18 (50%). Therefore, concluded that BARI sarisha- 18 and BARI sarisha- 15 are safe to consume as they contain much lower amount of arsenic in seed and increasing PK application upto 150% recommended dose except BARI sarisha- 18 can reduced arsenic accumulation in seed in mustard varieties which accumulate much more arsenic in seed under arsenic stress.

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