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Research Notes

Effect of seed harvesting and pelleting in sorghum under rainfed conditions

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In rainfed cultivation, sorghum seeds are sown as premonsoon sowing, where in seeds must emerge out with the available moisture. Thus, to impart drought resistance to young plants seed hardening is given as presowing management technique which is a boon for dryland agriculture. Short term hydration of seed before planting, greatly benefits stand establishment, but use of chemicals in water like potassium or sodium phosphate will give additional advantage (Basu and Pal, 1980). Apart from seed hardening, pelleting with nutrients or leaf powders is recommended, for absorbing and regulating the soil moisture and to enhance the better seed soil relationship under stress conditions. With this in view, the present investigation was carried out to study the effect of hardening combined with DAP pelleting on productivity and the storability of hardened seeds of sorghum var. APK 1 under rainfed cultivation.

The field experiment was laidout in randomized block design with six treatments and four replications. The treatments were (T₁) control, (T₂) hardening with 2% KH₂PO₄, (T₃) 2% KH₂PO₄ hardening + pelleting with DAP 100g / kg, (T₄) pelleting with DAP 100 g / kg of seeds, (T₅) hardening with 2% KH₂PO₄ and stored for 15 days, (T₆) hardening with 2% KH₂PO₄ and stored for 30 days. Seeds of APK 1 sorghum soaked for 16h and dried back to its original moisture content before pelleting. For pelleting, DAP was powdered and rice gruel was used as a sticker and pelleting was done one day before sowing. Hardened seeds were stored for 15 and 30 days as per the treatments in cloth bags. The germination percentage was assessed in laboratory conditions as per ISTA, (1999). The results were subjected to analysis of variance and tested for significant differences (P=0.05) as described by Panse and Sukhatme (1967). Percentage values were transformed to arcsine value prior to statistical analysis.

The data recorded on the influence of seed hardening treatments were presented in Table 1. The germination percentage was further improved not affected by the hardening / pelleting treatments except the hardened seeds stored for 30 days. Seeds stored for 30 days recorded only 47 per cent germination. This might be due to the vigour loss. The yield parameters like length and weight of the earheads not significantly different with the treatments T₂, T₃, T₄ and T₅. But length and weight were significantly higher than the control and the hardened seeds stored for 30 days. The hardened seeds due to its longer storage period might have lost its vigour and hence recorded the lowest values. Yield data revealed that seeds hardened with 2% KH₂PO₄ followed by pelleting with DAP @ 100 g/kg of seeds recorded the highest yield of 2306 kg/ha and it was on par with the seeds hardened along with 2% KH₂PO₄ and the 'K' element which might have improved the water use efficiency and helped to maintain the crop yield under the stress conditions (Saxena, 1985). As water stress developed, 'K' helped to maintain higher activity of the enzyme nitrate reductase (NR). During the recovery from moisture stress, 'K' helped the plant to maintain higher leaf expansion rate, higher chlorophyll content and stomatal resistance (Khanna and

Chopra, 1980). Alexander and Misra (1972) also confirmed the wheat crop's drought tolerance, when seeds were soaked in 2.5% potash solution before sowing. The present investigation explained that seeds hardened with 2% KH₂PO₄ for 16 hrs. prior to sowing increased productivity in sorghum under rainfed cropping system.

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