

External Link: <https://www.banglajol.info/index.php/SJA/article/view/63581>

Phosphorus dose and potassium source on yield and export quality of potato

- **Tuhin Suvra Roy** Department of Agronomy, Faculty of Agriculture, Sher-e-Bangla Agricultural University, Dhaka-1207, Bangladesh
- **Sujan Chandra Roy** Department of Agronomy, Faculty of Agriculture, Sher-e-Bangla Agricultural University, Dhaka, Bangladesh
- **Rajesh Chakraborty** Department of Agronomy, Faculty of Agriculture, Sher-e-Bangla Agricultural University, Dhaka-1207, Bangladesh
- **Maruf Mostofa** Tuber Crops Research Centre, Bangladesh Agricultural Research Institute, Gazipur-1701, Bangladesh
- **Bimal Chandra Kundu** Tuber Crops Research Centre, Bangladesh Agricultural Research Institute, Gazipur-1701, Bangladesh

DOI:

<https://doi.org/10.3329/sja.v20i2.63581>

Keywords:

Chips, Dry matter, French fries, Potato, Processing quality, Specific gravity

Abstract

In Bangladesh, potato (*Solanum tuberosum* L.) lacks optimum quality for export or processing industries. Optimum utilization of specific plant nutrients can improve quality. The experiment was conducted to evaluate the best dose(s) of phosphorus in combination with potassium sources as they affect potato tuber quality. The experiment consisted the factors: phosphorus dose(4); P1 = 200 kg ha⁻¹ TSP @ 42.55 kg ha⁻¹ P; P2 = 220 kg ha⁻¹ TSP @ 46.81 kg ha⁻¹ P, P3 = 240 kg ha⁻¹ TSP @ 51.06 kg ha⁻¹ P and P4 = 260 kg ha⁻¹ TSP @ 55.32 kg ha⁻¹ P, and potassium sources (3); K1= KCl (250 kg ha⁻¹ KCl @130 kg ha⁻¹ K), K2 = KH₂PO₄ (452.19 kg ha⁻¹ KH₂PO₄ @130 kg ha⁻¹ K) and K3 = K₂SO₄ (288.6 kg ha⁻¹ K₂SO₄ @130 kg ha⁻¹ K). The interaction of phosphorus doses and potassium sources affected most parameters studied. The highest yield (35.35 t ha⁻¹), caned (10.35 t ha⁻¹), chips (28.06 t ha⁻¹), and French fry (0.367 t ha⁻¹) were from P3K2, P4K2, P3K2, P3K1 respectively; the lowest yield (30.90 t ha⁻¹), caned (5.59 t ha⁻¹) and chips (20.01 t ha⁻¹) were from P1K3, P4K1, P1K3 respectively. The highest dry matter (22.85%), starch (17.936%), antioxidant (630.12 Trolox μMol/100 g FW), and polyphenol (92.994 GA mg/100 g FW) were from P1K3; the lowest reducing sugar (0.1713 mg g⁻¹ FW) and non-reducing sugar (0.3290 mg g⁻¹ FW) were from P1K3. It appeared that 200 kg ha⁻¹ TSP @ 42.55 kg ha⁻¹ P as a dose of phosphorus and K₂SO₄ as sources of potassium may be a suitable combination to produce export and processing quality potato.

SAARC J. Agric., 20(2): 199-210 (2022)