

Name of the Project	Assessment of POLY-4 (polyhalite) for productivity, quality of potato and K, S use efficiency in soils of western plain zone of Uttar Pradesh
Funding Agency	Sirius Minerals Plc, London
Year of Start	2017-18
Year of Completion	2020-21
Name of PI and Co PI	Dr. U.P. Shahi and Dr. B.P. Dhyani, Dr. Ashok Kumar, Dr. Sanjay Rawal ICAR-CPRI, Dr Ramji Singh, Dr. Shiv Singh, Dr. Ashok K Yadav and Dr. Deepak Sisodia
Total budget	30.41 Lakhs

Significant Achievements:

- POLY-4 (Polyhalite) for productivity, quality of potato and K, S use efficiency in soils of western plain zone of Uttar Pradesh was assessed. Three-year observations on growth yield and quality revealed that the polyhalite, a multi-nutrients mineral may be a better source of potassium for potato. It also supplements the calcium, magnesium and sulphur. It has a substantial residual effect on soil fertility. Application of 100% recommended dose of potassium through polyhalite and with combination of MOP (75% POLY+25%MOP) recorded significant effect on growth yield and quality of potato varieties namely Kufri chipsona-1 and Kufribahar.
- Residual effect of POLY-4 (Polyhalite) was assessed on spring maize and was found that residual effect varied due to source of potassium application. Polyhalite was found better than MOP. Secondary, super optional application of K to preceding crop resulted in more residual effect.
- Among the tested treatments higher potato yield at Bulandshar (Kufribahar) and Meerut (Chipsona-1) was noted with application of 100 recommended K through POLY-4. The compound leaves per plant after 90 DAP was maximum in each trial under Poly-4 applied treatment and this decided the higher yield because more leaves means more accumulation of photosynthates. Positive effect on SPAD value, which is related with chlorophyll content, was noted with the application of POLY-4.
- The supplementation of 75% K through POLY-4 recorded higher yield as compared to 25 and 50% for both the cultivars. It showed that POLY-4 is better source of potassium than MOP. Marketable potato yield increased with the application of POLY-4 while non marketable potato yield declined.
- Among the soil properties soil organic carbon and residual potassium in soil increased with POLY-4 application. This residual potassium may benefit succeeding crop which is evidenced by higher maize yield in the treatments receiving optimal, super optimal level or 75% of potassium substitution through POLY-4 in previous crops. Divalent cation (Ca+Mg) also increased in POLY-4 treated soil.



Hon'ble Vice-Chancellor visiting Research plot



View of Experimental Field at CRC, Chirori Farm

Recommendations:

- Nutrient management should be considered on cropping sequence basis rather than single crop. Polyhalite may be a good source for potassium.