

True Potato Seed – Improving food security in Afghan Badakhshan

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A promising alternative to the traditional method of growing potatoes is emerging in developing countries. The traditional method involves growing new potato plants from actual potatoes, known as seed potatoes or seed tubers. The potato plant however does produce an actual seed, or True Potato Seed, inside the potato flower. True potato seeds are the botanical seeds formed as a result of fertilisation of ovules inside the hermaphroditic potato flower. The fertilised ovules develop into tiny potato seeds inside the potato fruit, which have the potential to develop into full grown potato plants and to form tubers.

Traditionally farmers propagate potato plants from seed tubers rather than from actual potato seeds because they are easy to plant. Plant growth is quick and vigorous, producing a high yield and uniform tuber size.

In poor countries, however, using seed potatoes has a number of disadvantages. They are often imported from developed countries, so they are expensive – often up to almost half the cost of production. They are perishable, bulky and difficult to transport to remote areas and require costly storage facilities to prevent them from rotting in storage before the next sowing season. In addition, seed potatoes often carry diseases.

Because of these drawbacks, the International Potato Centre, near Lima, Peru, and other research organisations are working to develop alternative methods for potato production using the actual potato seed. Using true seed reduces the risk of spreading potato disease, and true seeds can be easily stored for several years. They are easy to transport and cheaper to use as planting material. Planting one hectare of land requires 3000 kg of seed potatoes, but only 100 grams of true potato seed.

Trial plot

AKF's Natural Resource Management (NRM) team decided to test this new technique of potato seed production for the first time in Afghanistan. A small trial plot was established at Ganjabad Government Research Station at Ishkashim, Badakhshan, in May 2009. Basic training was provided by Dr. Carlo Carli, an advisor from the International Potato Centre, based in Tashkent, Uzbekistan.



Three plots of 15 square metres each were selected and prepared with fresh, sterilised soil and animal manure from a nearby farm as fertiliser. The true potato seeds were sown under protective plastic tunnels on 14 May. Only 10 grams of seed from the International Potato Centre was required for the three plots – a very small quantity, compared with what would have been required if seed potatoes had been used. The seeds germinated on 10 June, nearly one month after sowing. Germination took longer than expected because of an unexpected cold spell up till the end of June with temperatures below 25 degrees Celsius. The potato plants were defoliated on 25 September to prepare them for harvest. A month later the true potato seed tubers were harvested. The three trial plots produced a total of 133 kg of potato tubers.

Results of TPS Trial Plots Ganjabad Research Station Ishkashim

TPS Plot #	TPS Plot Size sq. meter	Tuber yield in Kg
Plot 1	15m x 1m	46
Plot 2	15m x 1m	52
Plot 3	15m x 1m	35
Total	45 sq. m	133 kg



The 133 kg of seed potatoes produced from 10 grams of true potato seed will be further multiplied in the research station in 2010. They will be supplied initially to farmers in the nearby border districts of Badakhshan and later to farmers in surrounding districts. The final outcome of this trial will be a source of high-quality seed potatoes produced locally in this remote corner of Badakhshan. Producing seed potatoes in this way will be more efficient and cost effective than importing a large quantity of expensive and bulky seed potatoes from a foreign source.

True potato seed production was a new initiative for AKF's NRM team in Badakhshan. The trial was carried out successfully in a difficult environment and demonstrated that seed potatoes can be produced locally from true potato seeds for potato growers in Badakhshan. This will enable them to increase their production per unit area.

The NRM team has been encouraged by this small experiment and its potential for improving local food security and the rural economy, while contributing to the livelihoods of poor and marginalised farmers in Badakhshan.