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Short Communication

Low cost potato warehouse facility for Karnataka: A success story

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ABSTRACT

Karnataka is one of the important potato growing states in peninsular India. Potato is mainly cultivated in Hassan, Belgaum, Chikkaballapur, Chickmagalur, Kolar, Bangalore Rural and Dharwad districts. It is grown as rain-fed *kharif* crop in Hassan, Belgaum, Chickmagalur and Dharwad districts and as *rabi* crop in Chickmagalur, Chikkaballapur, Kolar and Bangalore Rural districts under protective irrigation. Due to non-availability of quality planting material to Karnataka farmers, potato productivity is limited. Seed imported from North India (Punjab) is very expensive and incur about 50% of total production cost and small and marginal farmers cannot afford to procure quality seed every year as no certified seed is being produced locally. International Potato Center (CIP) has recommended an innovative low cost ware house facility as a model during 2014 and 2016 to retain farmers' seed for subsequent planting seasons saving their seed input cost by 40%.

Key words: Warehouse, potato, low cost technology, CIP

Karnataka produces 5,89,120 MTof potato cultivated in an area of 44,160 ha with productivity of 15.73 tons per ha (Anonymous, 2015) and has a ready market within and neighboring states. The potato grown in southern peninsular region gets high market price as this potato is used by processing industry. Due to lack of cold storage facility in the state, potato growers are compelled to sell off their produce at throw away prices and this is one of the reason the acreage under potato cultivation has been drastically reduced during last decade. However, the traditional and non-scientific storage practice like heaps and pits usually result in significant loss up to 40% by soil radiation, pests/ diseases, undesirable and early sprouting (Mehta *et al*. 2007).

The objective of this study was to demonstrate the use of low cost warehouse in Karnataka by CIP store fresh harvested table potatoes for short time and seed potatoes for long time storage in the hill zone of Karnataka.

Two low cost diffused light wooden potato ware houses were constructed with the structure size of 8X8X10 and 10X10X10 ft by using locally available areca logs with thatched roofing and racks are made with low cost forest wood planks atKerkepete village and Krishi Vigyan Kendra (KVK), Mudigere of Chickmagalur district (Fig 1&2). The storage capacity of the warehouses are 3.0 and 4.5 tones and total construction cost incurred was Rs. 25,000/ and Rs. 30700/ respectively.

The breeder (certified) seed of Kufri Jyoti variety procured from Central Potato Research Institute (CPRI), Shimla was planted in June, 2014 and harvested during September in*kharif* 2014 in Kerkepete village. It was sorted/graded and treated with 3 per cent boric acid for 30 minutes and tubers were stored in the potato warehouse after shade drying covered with the chopped dried leaves of *Lantana camara* to avoid the infestation of storage pests like potato tuber moth (Singh *et al*, 2009).

Potato ware houses at Kerkepete village and KVK, Mudigere, Chickmagalur

Fig.1. Front view of the ware houses

Fig.2. Potato Seed kept in three tiers in the ware houses

After three months of storage the well sprouted medium sized tubers of variety K. Jyoti were planted in small plots of 500m^2 as an experiment in the Chickmagalur and Chikkaballapur areas during subsequent *rabi* season (2014-15) and 20-25 per cent more yield over the farmers' seed procured from the APMC was recorded. The productivity in Chickmagalur was little lower (19.4 t/ha) than the Chikkaballapur (25.6 t/ha). The trials were undertaken in the farmers' fields to educate and encourage small and marginal potato growers for using seed stored in the country potato warehouse in Chickmagalur disrict. The field day was also organized by CIP and about 120 potato growers were trained on seed potato production and short time table and seed potato low cost storage technology at Kerkepete village of Chickmagalur district.

The *rabi* season (2014-15) seed harvested from Chickmagalur and Chikkaballapur was sorted/graded and treated with 3 per cent boric acid and well dried seed was stored back in the ware houses in month of March, 2015 covered with chopped Lantana leaves and same seed was planted at College of Horticulture campus, Mudigere in ½ an acre during *kharif* 2015 under rain-fed condition.

The crop was planted during June, 2015 and harvested during September, 2015. The yield of K. Jyoti was recoded 25t/ha which is significantly higher than the Karnataka state average of 15.73 t/ha. The seed harvested from College of Horticulture campus was stored in the ware house at Kerkepete village and distributed to the potato growers during ensuing season in Chickmagalur and Tarikere Taluks of Chickmagalur districts for further multiplication gave satisfactory yields.

The breeder seed of varieties K.Jyoti and K. Himalini was procured from CPRI, Modipuram, U.P. during 2016 was stored at KVK, Mudigere for sprouting and well sprouted tubers were planted at College of Horticulture campus during *kharif* and harvested in September 2016. The yield of K.Jyoti and K. Himalini was recorded 24.2 t/ha and 18.6 t/ha respectively which was significantly higher than the state productivity .The harvested tubers were sorted/ graded and treated with 3 per cent boric acid and well dried seed was stored in the ware house at KVK, Mudigere. The seed harvested in September 2016 was stored in the warehouse at KVK, Mudigere for quite a long time to see the physiology when stored more than six months. The well sprouted tubers of both the variety was planted at College of Horticulture on 19'th June, 2017 and a good germination and crop growth is recorded.

With this innovative technology the farmers can afford to store their fresh harvest up to three months on their farms in low cost ware house and sell when market situation becomes favorable.The potato seed can be retained and used for at least three subsequent seasons without any seed replacement. By using this low-cost ware house facility, Karnataka farmers will be able to retain good quality farm seed potato thereby saving approximately40 percent of potato seed cost every year. There is an ample scope to promote short time storage structure at farm level made-out of locally available material for augmenting small and marginal farmers' income and food security. The Farmers can store their seed potato up to six months without any significant loss and the same stock can be used as planting material for subsequent seasons saving their seed input cost.

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