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RESEARCH PAPER

Design and development of an improved on-farm potato storage system suitable for climatic conditions of southern Karnataka

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SUMMARY : An improved on-farm potato storage system was designed and developed. The new system was basically an improvement over traditional heap storage in which a tubular natural convection aeration system was incorporated. The aeration system consisted of a perforated PVC pipe with vertical raisers at one meter intervals laid along the length of the heap. Potato storage study was conducted for 90 days with one tonne of fresh, suberized tubers using improved potato storage system at ambient conditions of ARS, Madenur, Hassan during *Kharif* season. For comparison, identical traditional heap storage was also laid out.

Key Words : Natural convection, Aeration, Heap, Suberized tubers

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Potato (*Solanum tuberosum* L.) is one of the world's most important food crops, only being surpassed by wheat, rice and maize in total production. Potato is the main source of carbohydrate in human diet. It also has substantial amount of proteins, vitamins, minerals and traces of other elements. Hence, potato is known as "poor man's crop". Potatoes are generally stored in different conditions in order to make their availability throughout the year for table purpose and processing (Salunkhe *et al.,* 1991). This helps to prevent seasonal glut and thus fetches better prices to the farmers. Most important thing for storage of potatoes is to maintain them in marketable condition by preventing moisture loss, spoilage by pathogens, etc. (Jadhav and Kadam, 1998).

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After harvest, the potato tubers are usually stored in a traditional on-farm storage system (in pit or over ground) covered with straw and other plant residues for about 2-3 weeks in Hassan district during *Kharif* season and up to 3 months in Bangalore Rural district during *Rabi* season (Karnic, 1996). Though there are several constraints in these storage practices, the farmers still have little alternative to this age-old practices since, availability of cold storage facilities are limited.

In Karnataka, the potatoes are stored in pits and also indoors. In pit storage, the pits of varying dimension usually 50 cm to 60 cm deep are dug in shady place. The open pits are soaked with water and allowed to dry for 4-5 days, the sides of the pits are lined with neem leaves and tubers are heaped 2 to 5 ft above ground level. Sometimes, a ditch is dug around the pits and filled with water to bring down the temperature. The heap is covered with straw or bamboo mats. Whereas in case of indoor storage, the storage practices include spreading potatoes on floor and heaping, storing in gunny bags and storing in small or big baskets of bamboo. The storage period under above methods ranges from 15 to 60 days. As much as 10 to 30 per cent rottage occur during storage. Large farmers in Kolar and Bangalore districts use pit method to store for more than 60 days (Grewal, 1991).