PERFORMANCE EVALUVATION OF PEPPER STEAM STERILIZATION MACHINE

H.H. Padma Kumara[1], T.M.R. Dissanayaka[2], and G.V.T.V. Weerasooriya[1]

[1] *Department of Agricultural Systems, Faculty of Agriculture, Rajarata University of Sri Lanka, Puliyankulama, Anuradhapura, Sri Lanka.*

[2] *Institute of Post Harvest Technology (IPHT), Jayanthi Mawatha, Anuradhapura, Sri Lanka.*

Pepper (*Pepper nigrum),* is a widely used spice in the world. Producing of good quality pepper is one of the requirements of the country due to the increase in the export potential of pepper. A major problem faced by the pepper exporting industry in Sri Lanka is high percentage of microbial contamination such as total plate count, yeast and mould, Coliforms. A steam sterilization machine was developed by Institute of Post Harvest Technology (IPHT) to enhance the quality of pepper which consists of; "U" trough, screw, steam union, hopper. The rotation of screw pushes pepper along the through. Steam was applied to pepper when product was moving from whole of screw. There is a separate boiler for preparation of super heated steam. Performance of the machine was evaluated in terms of microbial count, color, moisture content of sterilized dried pepper, cost of production, power consumption and capacity of the machine with a view of recommending it to the pepper producers. Evaluation was conducted by changing exposure time and auger speed. During the test steam pressure kept at constant.

Results indicate that irrespective of the treatment, reduction of microbial count was zero. Breakage percentage was calculated for three treatments where one pass time, two pass time, three pass time with values of 2.30%, 2.80% and 3.36% respectively. Moisture content of dried pepper was increased up to 20-22% due to sterilization and after four hours it came back to initial level by open yard drying. Capacity was calculated for three treatments where one pass time, two pass time, three pass time with values of 121kg/hr, 171kg/hr and 181kg/hr respectively. Maximum machine efficiency and high quality black pepper can be achieved by one pass time. Further, it is suggested this would be suitable for commercial level.

Key words: *Pepper nigrum*, Steam sterilization, Quality characters of pepper, Microbial count