

DEVELOPMENT OF AN INFRARED-ASSISTED DRIED AIR DRYER FOR DRYING OF FRESH PEPPER

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Dried black pepper (*Piper nigrum* L.) is the fourth most exported agricultural produce in Sri Lanka. Its contribution to the economy of the country is significant. There are no proper dryers developed to dry fresh berries at small and medium scale level. Presently, drying yards and mats are extensively used for drying fresh berries and as a result, dried black pepper contains dust, fecal matters and impurities. This low quality and unhygienic dried products receive low demand at export markets. Therefore improving drying method of fresh berries is important. The main objective of this study was to develop an infrared assisted air dryer for drying fresh berries with high quality, cost effective manner. Newly developed dryer consists of refrigerated air dryer, infrared heaters and cabinet type dryer. Refrigerated air dryer reduces moisture content and temperature of air up to 24% and 25°C respectively. This refrigerated air is sent through infrared heaters of 3x1000 W. The heated air at 42°C enters to the cabinet type dryer which comprises of three trays with the capacity of 1kg of flesh berries. The evaluation of developed dryer was done in terms of moisture content, time taken to drying and quality. Dryer reduced the moisture content from 70.1% to 12% and took 6 hours for drying up to 12% moisture content, where sun drying of same fresh berries took 30 hours. Dried pepper was brown to black in color, 0.04% extraneous matter, zero mouldy berries, 7.3% light berries, 0.7% pin heads at 12% moisture content. Results shows that dried product could be categorized at 2nd grade as per the ISO 105, due to high amount of light berries. This could be overcome by harvesting at correct maturity. Hence, it can be concluded that developed dryer is highly suitable for drying pepper.

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