

EDITORIAL CORNER

GREEN TECHNOLOGY FOR DRYING OF HERB, FOOD, AND AGRICULTURAL INDUSTRY

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Solar energy is free and environmentally compatible source of energy. Conversion to clean energy sources such as solar energy would enable the world to improve the quality of life throughout the planet Earth, not only for humans, but also for its flora and fauna as well. Most agricultural produce that are intended to be stored must be dried first in an effort to preserve the quality of the final product. Most of the agricultural produce has dried under the open sun (conventional) drying. There is requires large open space area, and very much dependent on the availability of sunshine, susceptible to contamination with foreign materials such as litters, dusts and are exposed to rodents, birds and insect. As an alternative to open sun drying, solar drying technology is one of the most attractive and promising applications of solar energy technology. It is renewable and environmentally friendly (green) technology, also economically viable in most developing countries. Drying is one of the oldest and most important preservation methods for reduction of moisture content of foods or other heat sensitive, biologically active products. Beside removal of water the quality of the dried product must be taken into consideration. The quality of the products depends on many factors including the drying temperature and duration of drying time. Some product such as medicinal herbs requires low temperature to prevent the active volatile essential ingredient from being removed during conventional high temperature drying. The technical directions in the R&D of solar drying technologies are high efficiency, compact collector design, and integrated storage. Solar drying technology consist of two major components; solar collector and drying chamber to effectively increase drying air temperature compared to surrounding air, thus facilitating faster moisture removal process. Air based solar collectors are not the only available systems. Water based collectors can also be used whereby water to air heat exchanger can be used. The hot air for drying of agricultural produce can be forced to flow in the water to air heat exchanger. The hot water tank acts as heat storage of the solar drying technology. Heat pump drying system can be effective use for as part of solar drying technologies. Moreover, innovative applications of photovoltaic/thermal (PV/T) system for simultaneous production of heat and electricity are suitable as standalone applications and totally operated on solar energy. To date, green technology such as PV/T system, solar-heat pump system, fluidized bed system and hybrid drying systems are used for drying of agricultural produce, including vegetable, fruits, herbs and marine products.



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