

*Abstract*

# Low Cost Protective Structures Providing Suitable Growing Conditions for Vegetable Crops Year-Round in the Tropics <sup>†</sup>

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**Abstract:** Vegetable production is an important activity, source of food and income for farmers. Vegetables are grown in many regions in Lao PDR. There is a large range of agro-climatic conditions between the two seasons - wet and dry. The dry season is suitable and favourable for vegetable production. However, the wet season has high temperature, high relative humidity, high soil moisture content and heavy rain. These conditions cause several negative impacts for vegetable production such as, low vegetable productivity and poor quality. Higher application of pesticides can also lead to food safety issues and high input cost of cultivation. These challenges could impact to inadequate domestic supply of vegetables in rainy season, low economic returns from vegetable production, and increased imports of vegetable from other countries. NAFRI and ACIAR have cooperated to research and develop a design of greenhouse structure that is economical and provides suitable growing conditions in the wet season to help farmers to mitigate the multiple constraints and successfully grow vegetables year-round. The new design was constructed and tested with several types of vegetable crops including coriander, lettuce, spring onion and tomato during 2015–2018. Evaluation was made against ambient conditions, crop needs and also a comparison with several other protected cropping designs was conducted. The new design provides improved, cooler and more suitable growing conditions for a range of crops, increasing productivity and quality of vegetable in the wet season.

**Keywords:** productivity; vegetable; greenhouse structure; Lao PDR



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