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Structural Challenges of Greenhouses in Iran

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In recent years, greenhouses are developing in Iran because of a high productivity technology due to the possibility of controlling environmental factors for agricultural production such as temperature, prevention of frostbite and heat exhaustion phenomena, efficient use of water and soil resources, appropriate use of fertilizers and pesticides and off-season production. Generally, commercial greenhouses are used for high economical and physical production of ornamental plants, vegetables, and fruits. Proper location, type of structure, covering and equipment as well as management and operation are very important to achieve proper environmental conditions inside greenhouses. Some of the main issues of greenhouses in Iran are greenhouses size, geographic orientation, greenhouse height, improper ratio of height to width (H/W) and length to width (L/W), poor ventilation areas, location for ventilation systems, substandard materials and coverings, structural strength against environmental factors such as wind and snow loads, and depreciation of structures. This paper presents technical parameters analysis which required in greenhouse to achieve the minimum standards. Then based on a case study in three provinces include Khuzestan, Bushehr, and Fars, these parameters were investigated during 2014. The results showed greenhouses which were constructed in Khuzestan province generally are not standard and related engineering principles and indices are not considered properly. More than half of the studied greenhouse structures in Bushehr had weakness in structures. The structural and equipment differences which observed in the greenhouses of this province were low and not statistically significant. During last few years, nursery activities for exporting vegetables and fruits propagation to other provinces are expanding in Bushehr. These activities moderated the structural and equipment weakness in this province. The structural and equipment differences which observed in Fars province green houses were low and not statistically significant while weakness in technical indicators in about half of the greenhouses was evident due to climatic diversity in this province.

Key Words: Energy productivity, Greenhouse standards, Technical indices, Water productivity.

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