

Design of intermittent mist with bottom heat system

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In the propagation of plant by leafy cuttings, one of the chief problems is to maintain the cuttings without wilting until roots are produced. This can be accomplished by keeping the relative humidity of the air surrounding the cuttings at a high level, the foliage, benches, and floors being sprinkled by hand several times a day during the rooting period. Such procedures are cumbersome, however, and do not avoid heat build-up problems under the necessary glass or plastic covers. An intermittent mist water spray over the cuttings in the rooting bed is a very effective aid in rooting leafy cuttings of a many kinds of plants. Such sprays provide a film of water over the leaves and cuttings; this film lowers their temperature and increases the humidity around the leaves thus reducing transpiration and respiration. This mist technique makes possible the rooting of cuttings of plant previously considered very difficult or impossible to root. In such addition, intermittent mist keeps slow-rooting cuttings alive for a long period of time, giving them a chance to root before they die from desiccation. Bed and frame were built as a small glasshouse with 1.3m³. There was a photo cell which cutomatically starting with incereasing light intensity in the early morning and sending signals to the mist system to start producing mist based on timers which already calibrated. In addition, in this system, there was a pump for making pressure on water inside of the tubers and also bottom heat for producing suitable temeperature in the bed. It is nescessary to remember that all functions were working automatically.

technology in horticultural research with the emphasis on obtaining precise and applicable results. For this purpose, following examples will discuss based on various experiments carried out on fruit trees under field and well controlled environmental conditions using simple and sophisticated equipments:

1- This is necessary to select and use suitable rootstock for fruit trees that well adapted to Iranian environmental conditions. Analysis of the results from the experiment on mature and young apricot trees under field and controlled environment and studying on physiological and hormonal aspects showed that we are not able to use a model from the other countries without carrying appropriate researches under climatic conditions of Iran.

2- The role of using various types of equipments such as rotary evaporator and Vacuum Concentrator (Savant) for estimation of ABA hormone in shoot tips of apricot plants via using Enzyme-Linked-Immunosorbent Assay (ELISA) technique is discussed. In this experiment 3 H-ABA (radioactive hormone) was used as internal standard to determine hormone recovery using various equipments. Results of Rotary evaporator showed that recovery of ABA hormone molecules were decreased to 40-50%, although such recovery was increased up to 99% when Savant was replaced.

3- The physiological responses of apricot trees to water stress will be discussed based on the results obtained from the experiments were carried out using Image analysis, Wescor, Thermometer and Locor-6400 and other advanced equipments such as measurement of leaf and cell water potential.

In conclusion, results from researches carried out using advanced technology in the field and laboratory showed that the role of advanced equipment in horticultural research and development is obvious and important. Paying attention to the principle of centralization of horticultural research in the main research centers in Iran is a key factor of Iranian Horticultural Research.