bed should be level or slightly graded. Otherwise, low areas will receive too much water and high areas will be too dry. Further, low areas will accumulate water that can then become runoff.

When pots are initially placed on the mat, the mat should be wet and the pots should be thoroughly watered using an overhead system to allow for the establishment of capillarity. For subsequent irrigations using the capillary mat, enough water should be applied through the polyethylene drip tubes to fully saturate the mat but not enough to allow runoff, unless catch troughs have been constructed to collect and recirculate any runoff. The mat should not be allowed to dry. This may require frequent water applications during the day depending on evaporation and crop use. If drying occurs, the mat must be re-wet and the plants must be overhead irrigated again to re-establish capillarity. When mats are used outside or under saran, heavy rains can leach fertilizer salts from the pots. Therefore, when used outside, the mat system cannot always guarantee that no fertilizer-containing water will run off.

The growing medium should be heavy enough to establish good pot-to-mat contact. If the medium has large pore spaces, good water movement through the medium may be inhibited. Further, footed pots should be avoided because they can also cause problems with water movement from the mat into the pot.

An appropriate amount of a slow-release fertilizer should be incorporated into the potting mix. Generally, with this type of irrigation system, fertilizer use is more efficient and applications can be reduced since leaching of fertilizer salts does not occur. It is important to remember that water and fertilizer management are closely related. Therefore, the proper method and amount of fertilizer application must be selected based on the needs of the crop, the cultural conditions and the irrigation system. There is no standard rule to determine how much to reduce the fertilizer. This is an area that requires grower trials. It is easier to add additional fertilizer than to deal with a high salt problem. If additional fertilization is required, it can be provided by low volume top watering. Fertilizer should not be fed through the mat system since algae and root growth into the mats can become a problem.

In summary, capillary mat irrigation systems offer a simple and lower cost alternative to spaghetti tubes or ebb-and-flow systems. The system can result in as much as a 90% water savings as compared to overhead watering. In addition, this system will, particularly if used in a covered production structure, eliminate runoff. The problems with this system include potential clogging of water delivery tubes, minimal flexibility in the fertilization program, and limited ability to prevent runoff in outside systems.

Sources of additional information

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