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## RAINFALL HARVESTING TO ENHANCE DRYLAND PRODUCTION EFFICIENCY AND/OR TO REDUCE SUPPLEMENTAL WATER NEEDS OF MELONS

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**Background.** Although East Texas watermelons are produced under dryland conditions, they respond to supplemental water during critical demand periods. Insufficient moisture during the growing season often results in blossom end rot, bottling neck and undersize fruit. Growers have been reluctant to use supplemental water due to costs of irrigation systems and limited water supplies. Therefore, production systems which improve the efficiency of use of rainfall and/or reduce the supplemental water needs are required to lessen melon production risk in East Texas.

**Research Findings.** A rainfall capture system (RFCS) was developed by scientists at the Texas A&M University Agricultural Research and Extension Center at Uvalde. This system was found to reduce the total supplemental water needs of cantaloupe produced in the Texas Winter Garden. Seven tons +/-acre of marketable yield were produced with approximately 4 inches of rainfall (Grade size 18-22's). These results suggest 1-2 timely irrigations could have adequately sized these fruits to enable grade out in the 9-15's size range. Similar findings were reported by scientists at the Texas A&M University Agricultural Research and Extension Center at Lubbock. The research at Overton is designed to determine the critical water demand period of melons produced with the RFCS in order to schedule 1-2 timely irrigations. In addition, the Overton research will determine the merits of adapting such a system to enhance the yield and quality of dryland watermelon production in East Texas.

**Application.** The implementation of RFCS in East Texas watermelon production fields should improve the efficiency of naturally occurring rainfall. By so doing, many of the production problems related to moisture stress will be alleviated. Because plastic mulch is an essential feature of RFCS, additional benefits will be derived; better weed control, earlier harvest, more concentrated harvest, and increased yield and quality of dryland produced watermelons.

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