USDA-CSREES 2007 National Water Quality Conference

Capture and Recycle Runoff: Water Quality Assessment

The nursery, greenhouse and sod industry has been the fastest growing segment of New Jersey agriculture in the last five years. Many growers utilize large quantities of nutrients and water to produce high quality container-grown plants. Nutrient runoff from nurseries is considered a potential source of surface and ground water pollution. Capturing and recycling of runoff provide opportunities to reduce environmental pollutions. Capture and recycle systems (also known as tail-water recovery systems) are considered an alternative water source for crop production and reduce the potential for nitrate and phosphorus contamination of ground and surface water. However, they remain costly and unattractive to many growers. Few nurserymen in New Jersey have considered the use of capture and recycle system, as a management practice, to collect runoff and leachates from containers and reuse the captured water to irrigate their nursery plants. Monitoring studies were conducted at nursery operations to assess the water quality of the captured water throughout the growing season of nursery crops and determine its suitability for irrigation. Water samples were collected from tail water recovery systems biweekly. Although the recycled water had acceptable levels of electrical conductivity, the pH ranged from 8.2-9.3, well above the acceptable levels for surface water quality criteria in New Jersey and for irrigation of nursery crops. Nitrate and ammonium concentrations in captured and recycled water were within the acceptable levels for drinking water, however, the water had high total P and ortho-P and ranged from 0.04 to 1.1 ppm and 0.02 to 0.8ppm, respectively. These levels were above the allowable levels of phosphorus for ponds and streams by NJDEP. The water had acceptable levels of K, Mg, Ca, B, Zn, Cu and Cl. Sodium levels fluctuated during the growing season and among nurseries and sometimes exceeded the acceptable levels recommended for irrigation water quality.

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