Water Quality and Quantity Issues in New Jersey

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Water Quantity Needs

100 acre farm x 1.4 inches per week x 3½ months (less the rainy days) = 50 million gallons per year
Water Quantity - Rainfall

100 acre farm x 45 inches per year = 122.5 million gallons per year

Approximately 65% infiltrates = 80 million gallons per year

Approximately 15% runs off = 18 million gallons per year
Solutions

- Water conservation – drip irrigation
- Collect stormwater and irrigation water runoff and reuse it
- Wastewater reuse
- Coordinate groundwater withdraws
- Other sources – Inter-basin or desalination
Solutions

Stormwater as a Resource:
122.5 million gallons of rainwater comes down on a 100 acre parcel of land

Wastewater Reuse:
Cape May County Municipal Utilities Authority is permitted to discharge 37 million gallons per day into the Atlantic Ocean = 13.5 billion gallons per year
Water Quality

Collect, treat, and reuse runoff/tailwater recovery:

- Potentially high nutrients, pesticide and herbicide concentrations in reuse water
- Salt build up
- Pathogens (phytophthora, pythium)
- Build up of algae in tailwater recovery ponds
- Water quality impacts to local surface water and aquifers
Possible Solutions

- Nutrient management plans
- Treatment of runoff prior to entering tailwater recovery system
• Treatment of water prior to reuse (chlorine or bromine disinfection)
Other Options

• Treatment of pond overflows
Impervious Cover Regulations

- Arbitrary limits on impervious cover at local level and at state level
- Reduces ability to install greenhouses or other controlled environments
- Restricts use of preserved farmland
**Impervious Cover Working Group**

*Our Charge:* To verify the environmental impact of impervious cover on agricultural lands and to identify, develop and demonstrate cost effective practices to reduce the environmental impact of impervious cover on agricultural lands. Also, quantify the contributions made to statewide agricultural productivity by structures, which create impervious cover.
Any surface, greater than three feet wide, that is highly resistant to infiltration by water. This includes paved roadways, paved parking areas, residential buildings, agricultural buildings, and other structures including permanent greenhouses, silos, bins and manure holding tanks. It also includes porous paving, paver blocks, gravel, woven and non-woven geotextile fabrics, patios and packed soils that are determined to be highly resistant to infiltration by water.

Temporary coverings that are removed for at least one season per year would not be included in the impervious cover calculations. This includes woven and non-woven geotextile fabrics and seasonally covered greenhouse structures.
Important Consideration

Total Impervious Area (TIA) vs. Effective Impervious Area (EIA)

Connected vs. Disconnected
1 acre directly connected impervious cover CN = 98

2 acres pervious cover CN = 65

Total drainage area = 3 acres

Runoff Direction

For 1.25 inch storm, 3,811 cubic feet of runoff = 28,500 gallons.
1 acre directly connected
impervious cover
CN = 98

2 acres
pervious cover

Total drainage area = 3 acres

Runoff

For 1.25 inch storm, 581 cubic feet of runoff = 4,360 gallons.
Comparing Connected Impervious Surfaces to Disconnected Impervious Surfaces
Recommendations

Our recommendation is that an evaluation of each farm on a site-by-site basis should be conducted to determine the impacts from the agricultural operation on water quality and stream health. Effective impervious area should be the basis for limits on impervious cover, not total impervious area.
What is RCRE doing?

- Monitoring impact of runoff from nursery operations
- Working with local SCDs to develop watershed plans to target easy fixes
- Evaluating effectiveness of natural systems to treat discharge from tailwater recovery pond
- Developing cost effective BMPs
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