Irrigation and Drainage System Management Preparation for Hurricane Isaias in Eastern North Carolina

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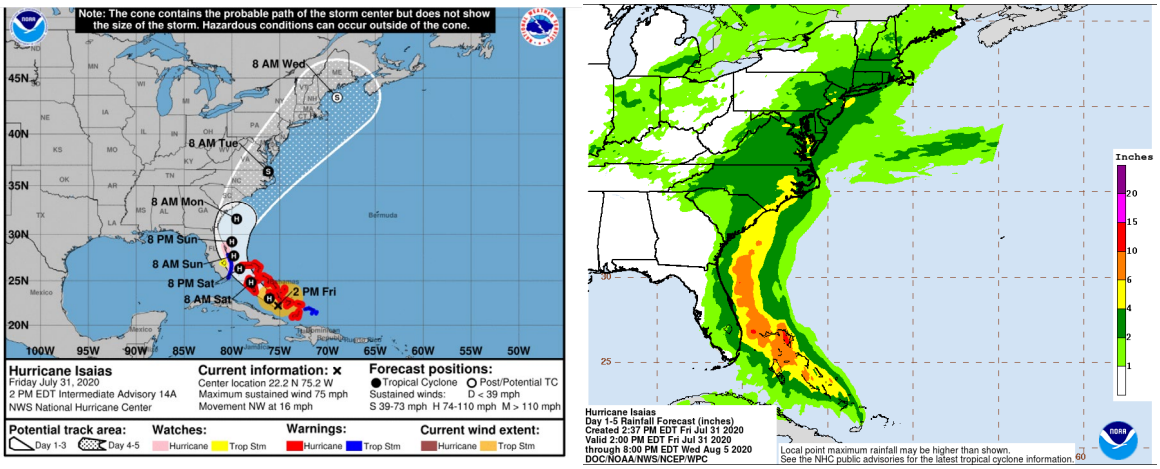
It is becoming very probable that Eastern North Carolina will experience impacts from Hurricane Isaias early next week (Figure 1).

Figure 1. Potential Hurricane Isaias storm track and precipitation as predicted by the National Hurricane Center at 2 PM on July 31, 2020.



Most of eastern NC has experianced very dry conditions in the past couple of weeks. Much of our agriculture and forestry land currently has deep water tables due to dry conditions. This is good news for handling the precipitation expected from the storm. Our water tables for the most part are deep and crops have been experiancing high water demand for several weeks now. As a result, eastern NC is positioned to take advantage of the precipitation from the storm. Depleted soil water conditions and deep in-field water tables have left the majority of our soils in a position to store a considerabe amount of this rainfall. In anticipation of impacts from Isaias, producers and land owners can prepare ahead of time by doing the following with their drainage and irrigaiton systems:

1. **If you are dry, utilize drainage structures and on farm storage ponds by:**
   A. Placing boards in these structures to maximize infiltration and help soils reach field capacity.
   B. Storing runoff water in our drainage and pond systems.
      - This water can be utilized later for irrigation as our crops finish out their reproductive and maturity periods.
      - In addition, storing this water in our agriculture and forestry land can help to reduce runoff and downstream flooding in the river systems.
   C. Manage drainage structure levels to prevent crop stress. Managing systems at typical levels of 18-30” from the soil surface will greatly reduce runoff and encourage infiltration during the storm. (Keep in mind that these structures are designed to carry

the required ouflow above the boards if we receive more water than the soil and system can hold)

D. Make adjustments to the systems after the storm. If field water tables are within 12" of the soil surface, then pull boards to release the water slowly (1 board per 24 hr period) until field water tables are 24-30" below the soil surface.

2. If you are wet and field water tables are high:

A. Manage drainage systems ahead of the storms.
- Consider pumping outlets down and slowly lower control boards to increase soil storage
- Once system has drained, replace some of the boards prior to the storm to acceptable levels to capture runoff and refill your systems. This will keep water available for later use.

B. Manage drainage systems after the storm
- Evaluate soil water status and manage system appropriately for the crop.

3. Managing for salt water intrusion:

A. Manage control structures and check flood gates for functionality.
- Manage boards levels and flood gates appropriately to limited the amount of salt water intrusion.

B. After the storm, assess the impact of flooding.
- Collect soil samples and have them analyzed for salts.
- Check irrigation water supplies for salts.

4. Irrigation system management:

A. Prior to the storm:
- Only irrigate if your crop has obvious signs of dry stress.
- Limit application amounts prior to the storm to the daily expected evapotranspiration minus rainfall received in the next few days: Approximate ET (0.2-0.3") for most crops per day – Daily Rainfall (in)
- Don't over irrigate because this will reduce soil storage, waste energy, water, and make the crop more likely to experience wet stress with excessive storm precipitation.
-Make sure your linear move and center pivot systems are properly secured and out of the way of trees or other potential hazards if high winds are immenient.

B. After the storm:
- Assess soil water status and predicted future precipitation
- Assess irrigation water supplies for contaminants if flooding occurred.
- Irrigate if needed.