

# INORTH CAROLINA INTERAGENCY NUTRIENT MANAGEMENT COMMITTEE

- ◆ North Carolina Cooperative Extension Service (NC CES) and North Carolina State University – Soils Department, Crop Science Department (NCSU); J. Havlin, D. Osmond, K. Shaffer, J. Green
- ◆ North Carolina Department of Environment & Natural Resources - Division of Soil and Water Conservation (DENR-DSWC); C. Pierce, V. Cox
- ◆ North Carolina Department of Agriculture and Consumer Services – Agronomic Division (NCDACS); R. Reich, B. Walls, D. Hardy
- ◆ United State Department of Agriculture - Natural Resources Conservation Service (USDA-NRCS); L. Price, R. Hansard

4405 Bland Road, Suite 205, Raleigh, North Carolina 27609

(919) 873-2105 FAX (919) 873-2156

---

DRAFT --- DRAFT --- DRAFT

## MINUTES Special Session on Realistic Yield Estimates April 14, 2003

### Attendees:

John Havlin, NCSU	Richard Reich, NCDACS	Carroll Pierce, DSWC	Roger Hansard, NRCS
Deanna Osmond, NCSU	Bobby Walls, NCDACS	Vernon Cox, DSWC	Roy Vick, NRCS
David Crouse, NCSU			Lane Price, NRCS
Jim Green, NCSU			

### Discussion/Actions:

1. Options were discussed on the most scientifically-sound method to handle soil inclusions, as well as soil complexes, in finalizing the North Carolina RYE database. It was agreed that the identified RYE in the database should not be adjusted to accommodate all the potential inclusions that might occur in a given soil mapping unit. Inclusions are identified in the soil mapping unit description to recognize other soils that might *potentially* be included within a given map unit, depending upon site-specific conditions. All soils listed as potential inclusions do not exist in all polygons, so adjusting yields would not likely lead to a more accurate RYE.

Conversely, soil complexes are map units with two or more soils that exist in such an intricate pattern that it is impractical to separate at currently used map scales and conventions. The pattern and proportion of the soils are somewhat similar in all areas. For these reasons, it was agreed that the RYE should be weighted based on the proportion of each soil listed in the complex, as defined in the soils database. This weighted average should not include various other soils listed in the map unit description that are not identified in the soil complex name.

2. Options were discussed on how to address adjustments to RYEs based on slope and eroded conditions. The USDA-NRCS Soil Survey Manual recognizes the impact that slope and soil erosion have on potential yields, and provides some guidance to soil scientists for identifying adjustments to realistic yields. Such reductions are the result of decreased infiltration and water holding capacity, an increased tendency toward surface crusting, reduced nutrient availability, and similar factors that result from the physical differences in steeper or eroded soils. There is; however, no nationally established criteria for making these adjustments.

In addition, it is recognized that the effects on a crop yield due to past erosion and slope are cleared intertwined, and adequate data does not exist to quantify, or even clearly distinguish, cause and effect. There are, however, numerous studies that exist that demonstrate yield

reductions on steeper or eroded soils. Such studies have demonstrated that the effect on yields is not necessarily linear as slope increases, nor is the effect consistent between soils.

In order to address these concerns, the Committee approved the following yield reductions to be applied when estimating yields in North Carolina:

Slope Range	Yield Multiplication Factor (that incorporates reductions due to erosion)
0-2 %	1.00
3-4 %	0.98
5-6 %	0.95
7-8 %	0.92
9-10 %	0.87
11-15 %	0.80
> 15%	0.70

These numbers were derived through a consensus of the Committee members, by adjusting the multiplication factors identified through a 1994 effort that assessed yield data from the NRCS SIR-5 database. Adjustments were made to integrate the reductions for slope and eroded phase soils, per the discussion above.

It is also recognized by the Committee that a substantial gap exists in available data to more accurately quantify yield reductions due to slope and erosion. The estimates approved above shall be used until needed data or research has been conducted. It should also be noted that for the purposes of nutrient management planning, producers may use their actual yields as documented in lieu of RYEs when available.