Evaluating Seeding Dates for Cover Crops in Massachusetts

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High concentrations of animals and off-farm feed purchase have resulted in the typical dairy farm in the Northeast accumulating nitrogen and phosphorus in excess of crop needs. This leads to heavy applications of manure resulting in leaching of nutrients, particularly in fall and winter months. The use of fall-seeded cover crops can minimize these adverse environmental impacts from manure, but to be effective, the cover crop must be planted early enough to have a sufficiently developed root system for nutrient recovery and erosion control.

Most farmers and extension and UDSA-NRCS staff may know the appropriate date for seeding cover crops, but this is based on achieving 30% cover prior to winter for control of soil erosion. In the Deerfield area of the Connecticut River Valley the seeding date has been taken to be September 15. However, the seeding dates for cover crops have been determined only for controlling water and wind erosion. Thus, they were based on plant canopy cover, not on root development or their nutrient uptake ability.

Our research study in 2004 indicated the seeding date for maximum nitrogen uptake was two to three weeks earlier than the date for adequate soil erosion control (Figure 1). Based on these results many cover crops planted by farmers are not effective in taking up end-of-season nitrogen. If nitrogen, for example, is not taken up by a cover crop it will be lost during the fall as indicated by the lower soil N values for the no cover treatment and for the soil in rye cover crop plots in Figure 2 with later sampling dates.

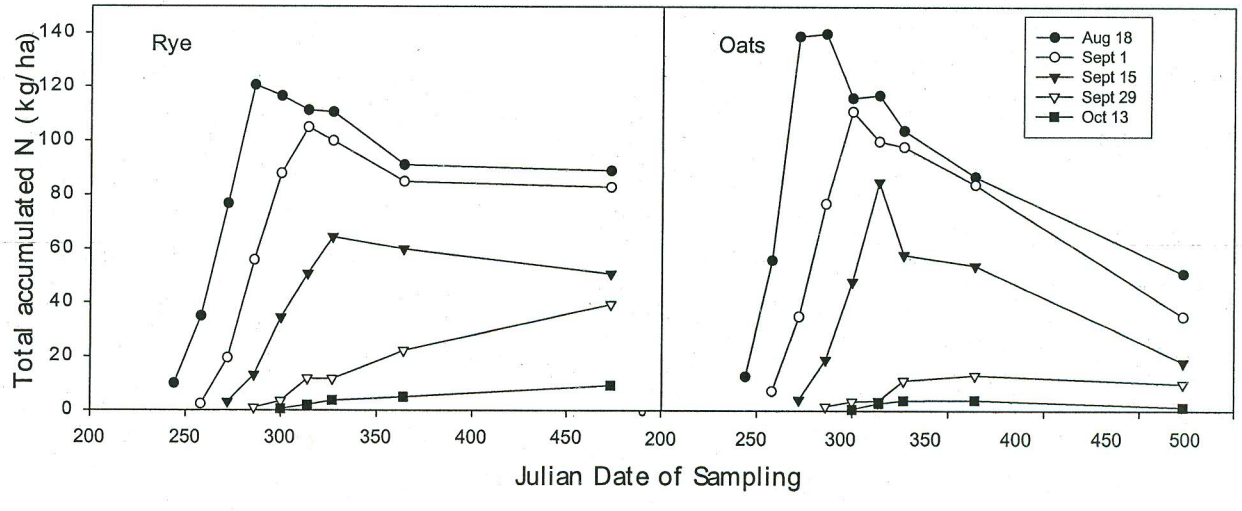

Figure 1. Cover Crops on December 31, 2004; seeded on dates.

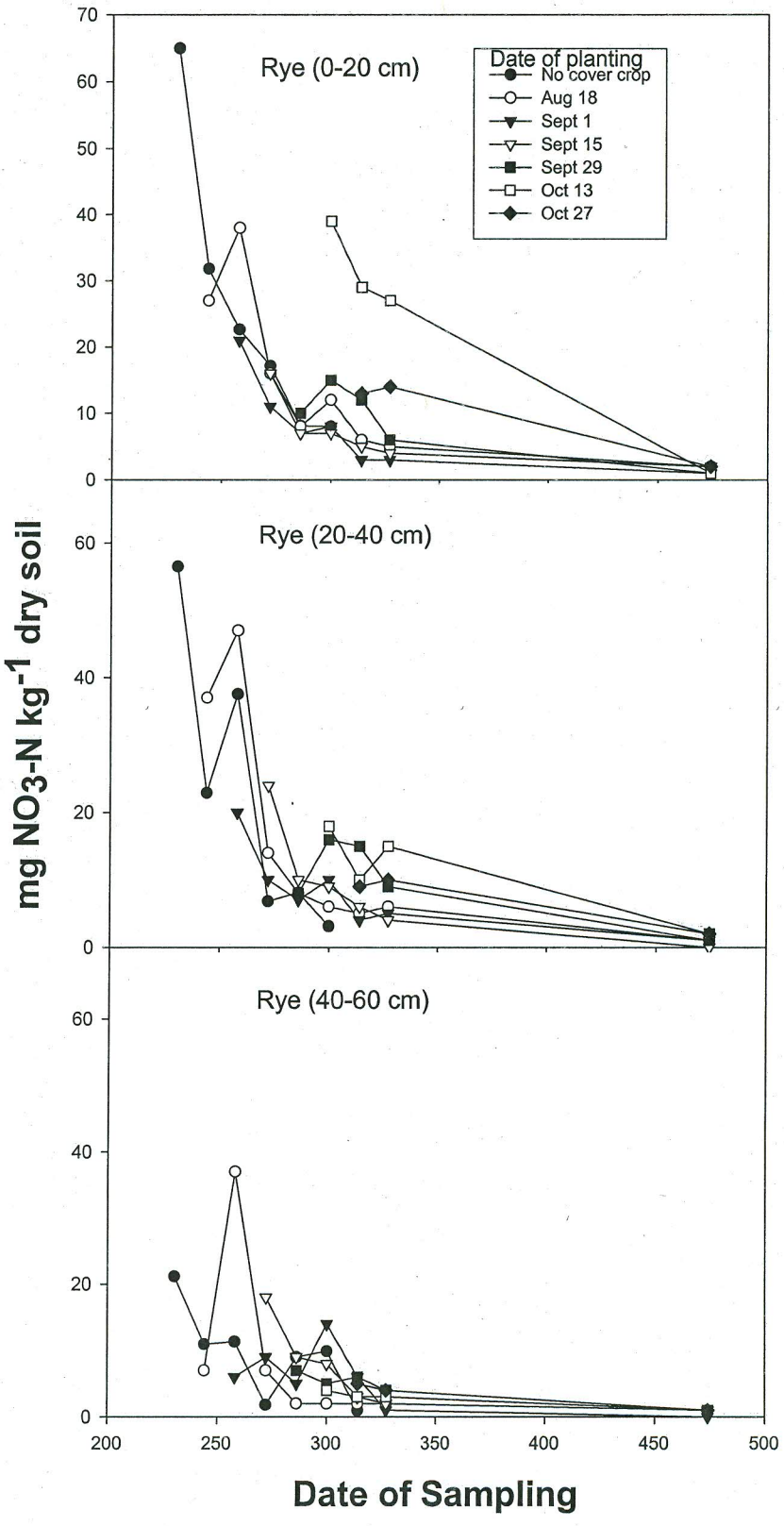

Figure 2. Soil nitrate-N levels in fall of 2004 and in April 2005 with and without cover crops.

A visual description of cover crop growth can be seen in Figure 3.

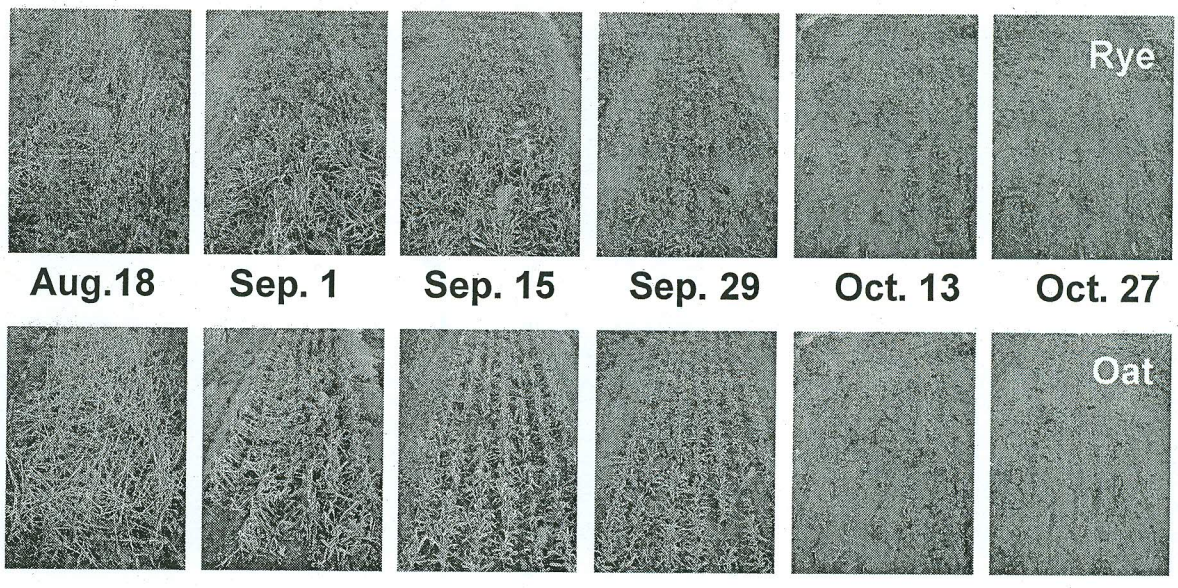

Figure 3. Cover Crops on December 31, 2004; seeded on dates shown.