

2011 State Resource Assessment – NRCS New Jersey

NRCS NJ staff and conservation partners contributed data, information and professional judgment to the State resource Assessment effort. We assessed 20 of the Natural Resource Concerns. NJ does not have any range land and zeros are entered in the SRA spreadsheet for all range land use. We did not assess *Excessive Bank Erosion* due to the lack of any statewide, or even local data, on stream bank erosion, therefore zeros are entered for that Natural Resource Concern. Excessive stream bank erosion is a concern but we do not currently have tools to assess the concern. *Concentrations of Salts* is not a resource concern in NJ and zeros are entered. *Inefficient Moisture Management* is not a resource concern in NJ and zeros are entered. *Excessive Salts in Surface and Ground Waters* is not a resource concern in NJ and zeros are entered. *Petroleum, Heavy Metals, and Other Pollutants* is not a resource concern related to agriculture in NJ and zeros are entered. We did not assess *Inadequate Plant Structure and Composition*, again due to a lack of any statewide or local data availability. While air quality in NJ is an environmental issue, it is not normally due to agriculture or can concerns be addressed by conservation practices. We did address the *Emissions of Particulate Matter* concern and zeros are entered for the other three Air Quality concerns.

When mapping resource concerns and targeting priority treatment areas, we decided to combine several Natural Resource Concerns, under the larger Major Resource Concerns category, due to data similarities. Below is a brief narrative description of the Natural Resource Concerns we assessed and the data sources used during the assessment.

Members of the NJ State Technical Committee provided numerous data sources used to complete this assessment. In addition, an online survey was developed and completed by 34 members of the committee. Results of the survey were used to develop both the priority resource concerns by land use as well as geographic priority areas.

Soil Erosion

Sheet, Rill and Wind – Highly erodible land and potentially highly erodible land were mapped along with soils subject to wind erosion to identify 464,275 acres of cropland and 5,801 acres of pasture potentially at risk. IDEA and PRS data from the period 2008-2010 identified acres treated by NRCS in the last 3 years. 394,859 acres of cropland and 5,158 acres of pasture require treatment.

Concentrated Flow – all soils with a capability subclass of “e” for erosion were mapped and 290,171 acres of cropland, 1,865 acres of pasture, 321,701 acres of forest and 431 acres of other associated ag land were identified as potentially at risk. IDEA and PRS data from the period 2008-2010 identified acres treated by NRCS in the last 3 years. 394,859 acres of cropland and 5,158 acres of pasture require treatment. 230,516 acres of cropland, 1456 acres of pasture, 310,723 acres of forest land and 334 acres of other associated ag land need treatment.

Soil Quality Degradation

Subsidence – all organic soils, and soils with thick organic horizons, that occur on cropland or pasture were mapped and 7,267 acres of cropland and 6,807 acres of pasture were identified as potentially at risk for subsidence. IDEA and PRS data from the period 2008-2010 identified acres treated by NRCS in the last 3 years. 5,462 acres of cropland and 6,793 acres of pasture require treatment.

Compaction- all cropland and pasture, on soils with capability class I-IV, were mapped and 551,658 acres of cropland and 9,480 acres of pasture were identified as potentially at risk for compaction. IDEA and PRS data from the period 2008-2010 identified acres treated by NRCS in the last 3 years. Acres in no-till and acres of organic farming were estimated and assumed not to be at risk for compaction. 422,840 acres of cropland and 9,264 acres of pasture require treatment.

Organic Matter Depletion- all cropland and pasture soils, with organic matter below 2.37% were mapped and 371,115 acres of cropland and 4,350 acres of pasture were identified as potentially at risk for organic matter depletion. IDEA and PRS data from the period 2008-2010 identified acres treated by NRCS in the last 3 years. 316,758 acres of cropland and 4,180 acres of pasture require treatment.

Excess/Inefficient Water

Ponding, Flooding – all cropland and pasture soils with flooding frequency limitations , drainage classes of poorly and very poorly drained, or a soils with a seasonal high water table were mapped and 97,054 acres of cropland and 23,868 acres of pasture were identified as potentially at risk. IDEA and PRS data from the period 2008-2010 identified acres treated by NRCS in the last 3 years. 54,861 acres of cropland and 23,747 acres of pasture require treatment.

Inefficient Use of Irrigation Water – a list of authorized ag water users, that withdraw over 100,000 gallons per day, was consulted and we used professional judgment to estimate additional acres for users under that threshold. 150,000 acres of cropland are potentially at risk. IDEA and PRS data from the period 2008-2010 identified acres treated by NRCS in the last 3 years. 109,637 acres of cropland need treatment.

Water Quality Degradation

Excess Nutrients – we examined EPA Clean Water Act 303d geospatial data provided by NRCS national headquarters and local USGS nitrate data for NJ and identified 452,756 acres of cropland, 14,315 acres of pasture, 767,067 acres of forest and 2025 acres of other associated ag land as potentially at risk for excess nutrients in surface and ground water. IDEA and PRS data from the period 2008-2010 identified acres treated by NRCS in the last 3 years. 375,170 acres of cropland and 13,319 acres of pasture, 7558 acres of forest and 1,878 acres of other associated ag land require treatment.

Excess Pesticides – we mapped soils with moderate and severe leaching limitations and identified 581,612 acres of cropland, 24,075 acres of pasture, 1,971,739 acres of forest and 3,001 acres of other associated ag land as potentially at risk for pesticides transported to surface and ground water. IDEA and PRS data from the period 2008-2010 identified acres treated by NRCS in the last 3 years. 522,865 acres of cropland and 23,267 acres of pasture, 980,271 acres of forest and 2,870 acres of other associated ag land require treatment.

Excess Pathogens – we examined EPA Clean Water Act 303d geospatial data provided by NRCS national headquarters and NJ DEP recreational use water quality assessment data and identified 462,981 acres of cropland, 18,559 acres of pasture, 1,444,362 acres of forest and 2,329 acres of other associated ag land as potentially at risk for excess pathogens and chemicals from manure, biosolids or compost applications. IDEA and PRS data from the period 2008-2010 identified acres treated by NRCS in the last 3 years. 410,810 acres of cropland and 17,605 acres of pasture, 143,500 acres of forest and 2,196 acres of other associated ag land require treatment.

Excessive Sediment - we examined EPA Clean Water Act 303d geospatial data provided by NRCS national headquarters and NJ DEP AMNET Biological Monitoring data and identified 461,797 acres of cropland, 15,210 acres of pasture, 994,331 acres of forest and 1,932 acres of other associated ag land as potentially at risk for excessive sediments in surface waters. IDEA and PRS data from the period 2008-2010 identified acres treated by NRCS in the last 3 years. 404,211 acres of cropland and 13,959 acres of pasture, 195,970 acres of forest and 1,868 acres of other associated ag land require treatment.

Elevated Temperature - we examined NJ DEP Clean Water Act 303d data and assumed most of the degradation was on cropland and pasture. Degraded areas of forests were assumed to be degraded mostly from other upstream land uses, not forest management practices in NJ's diverse landscapes. We identified 97,974 acres of cropland, 2,414 acres of pasture, 267,733 acres of forest and 338 acres of other associated ag land as potentially at risk for elevated water temperature. IDEA and PRS data from the period 2008-2010 identified acres treated by NRCS in the last 3 years. 86,700 acres of cropland and 1,243 acres of pasture, 27,236 acres of forest and 337 acres of other associated ag land require treatment.

Degraded Plant Condition

Undesirable Plant Productivity and Health – we mapped cropland and pasture soils with available water capacity of .15 cm/cm at 12" depth and mapped forest soils with available water capacity of .15 cm/cm at 80" depth and identified 200,604 acres of cropland, 1,685 acres of pasture, 1,871,308 acres of forest potentially at risk for undesirable plant productivity and health. IDEA and PRS data from the period 2008-2010 identified acres treated by NRCS in the last 3 years. 115,163 acres of cropland and 1,013 acres of pasture, and 1,854,942 acres of forest require treatment.

Excessive Plant Pest Pressure- we identified all NJ cropland and pasture as at risk. NJ Forest Service data from the 2010 Statewide Forest Resource Assessment and Strategies was used to evaluate the type and

extent of pest pressures in NJ woodlands. The final totals were based on a summation and professional estimation of overlap for acreage data affected by gypsy moth, emerald ash borer, hemlock wooly adelgid, sudden oak death, gouty oak gall, and southern pine beetle. There were 1,805,000 of forest land identified. IDEA and PRS data from the period 2008-2010 identified only a very few acres treated by NRCS in the last 3 years, as we have only just begun work in forested landscapes. We also subtracted from this acreage woodland currently under forest management plans, completed by private forestry consultants in NJ, about 230,000 acres. This gives 1,515,916 acres, or 79% of NJ woodland still potentially at risk. 595,691 acres of cropland and 25,923 acres of pasture need treatment.

Wildfire Hazard- NJ Forest Service data from the 2010 Statewide Forest Resource Assessment and Strategies was used to pinpoint acreages that are under high risk from wildfire based on forest and fuel characteristics. This consists primarily of forest stands with a dominant pine population. 855,325 acres were identified as potentially at risk. IDEA and PRS data from the period 2008-2010 identified only a very few acres treated by NRCS in the last 3 years, as we have only just begun work in forested landscapes. NJ Forest Fire Service has treated large acreage in the NJ Pinelands leaving 427,334 acres of woodland needing treatment.

Inadequate Habitat for Fish & Wildlife

Habitat Degradation – NJ Division of Fish and Wildlife’s “Landscape Project” mapping of at-risk species habitat for grasslands, emergent wetlands, forests and forested wetlands was analyzed. US Fish & Wildlife Service Region 5 fisheries resource data were examined. 492,548 acres of cropland, 14,586 acres of pasture, 1,591,787 acres of forest and 803 acres of other associated ag land were identified as potentially at risk. IDEA and PRS data from the period 2008-2010 identified acres treated by NRCS in the last 3 years. In addition the NJ Landowner Incentives Program (LIP) data identified lands treated by the state and US Fish & Wildlife Service have treated lands through the *Partners for Fish & Wildlife* program. Professional judgment from NRCS NJ biologists and partner biologists also helped to evaluate the acres needing treatment. 414,557 acres of cropland, 11,828 acres of pasture, 1,561,309 acres of forest and 767 acres of other associated ag land need treatment.

Livestock Production Limitation

Inadequate Feed and Forage – The NJ NRCS Grazing Specialist utilized NJ NASS data for this resource concern. The NASS data for 2010 showed 8,000 acres of silage and 85,000 hay acres (minus alfalfa). To calculate crop acres at risk we took 75% of the total hay acres (minus alfalfa), which totaled 63,750 acres, and added that to the total silage acres. This resulted in a total of 71,750 crop acres potentially at risk. We calculated the total acreage of pasture in the state and assumed an average production of 3 tons/acre. The total number of pastured livestock in the state is 99,711 AU. With average production, the pasture acres are only providing 15% of the dry matter requirements for the state’s livestock. With this information we identified that all pasture acres, 26,520, are potentially at risk. IDEA and PRS data

from the period 2008-2010 identified acres treated by NRCS in the last 3 years. 25,949 acres need treatment.

Inefficient Energy Use

Equipment and Facilities- Information on the number and type of irrigation pumps, greenhouses and other energy-consuming types of equipment and facilities was identified through Agricultural Census data for New Jersey and New Jersey Department of Agriculture sources. We used the US Census of Agriculture (2007) and identified 3092 acres of areas with farmsteads, livestock buildings, greenhouses and other agricultural facilities as potential at risk acres in New Jersey. IDEA and PRS reports indicate that approximately 320 acres (only 5%) have been treated. 2,772 acres need treatment.

Farming Practices and Field Operations - Professional judgment was used to determine that approximately 80 percent of NJ's total cropland, 20 percent of pasture and 10 percent of forest cover is in need of improved energy efficiency. The cropland acreage was based a no-till acreage of approximately 15 percent of total cropland acreage. 656,731 acres of cropland, 26,520 acres of pasture, 2,146,270 acres of forest are potentially at risk. 525,385 acres of cropland, 5,304 acres of pasture and 214,627 acres of forest need treatment.

Air Quality Impacts

Emissions of Particulate Matter and PM Precursors- In New Jersey, the primary air quality parameter that potentially can be impacted by agriculture is particulate matter, as PM2.5 and PM10. This particulate matter would be the product of suspension of fine soil particles, primarily from field operations for crop production. Cropland and soil texture layers were combined, with soil textures chosen from the NRCS wind erodibility groups of greatest risk (WEG 1,2,7). Consultation with Rutgers University and EPA was done, and NJ DEP data were analyzed. Professional judgment was also utilized in this assessment. 124,656 acres of cropland were identified as potentially at risk for emissions of particulate matter. IDEA and PRS data from the period 2008-2010 identified acres treated by NRCS in the last 3 years. 82,316 acres of cropland need treatment.