

“The Plant Materials Program and its cooperators have contributed the bulk of the material and technology now used in ecosystem restoration and are our foundation for meeting conservation challenges of the future.”

-- D.T. Booth and T.A. Jones, *Native Plants Journal*

Plant Applications for Improving Air Quality

Air quality affects each of us every day, but is often given little thought unless it is noticeably poor. Dismal air quality is observed when smog looms over large metropolitan areas, soil blows off a farm field or newly constructed subdivision, or a foul odor escapes a factory or animal feeding operation.



Wind erosion can cause serious air quality problems.

Under the Clean Air Act (CAA), ambient air quality standards are set by the U.S. Environmental Protection Agency (EPA) for the following six major criteria air pollutants: particulate matter (PM), ground level ozone, nitrogen dioxide, sulfur dioxide, carbon monoxide, and lead, with particulate matter and ground level ozone as the criteria air pollutants of greatest concern for agricultural operations.

The need to address these air pollutants is more critical than ever. Air quality can be improved by using plants to:

- Reduce particulate matter from wind erosion,
- Manage particulate matter, ammonia, and odor coming from concentrated animal facilities, and
- Increase carbon sequestration.

Grasses and other vegetation help to hold soil in place and reduce airborne particulate matter in areas that may be subject to wind erosion. Long-term plantings can provide high rates of carbon sequestration in soil. Windbreaks and shelterbelts are useful in reducing wind speeds; the management of PM emissions from field operations; and the management, interception, and dispersion of PM, odor, and ammonia emissions from animal facilities. Windbreaks and shelterbelts also provide a great means to sequester carbon and provide wildlife habitat.



Trees are used to buffer emissions from poultry operations.

The NRCS Plant Materials Centers located throughout the country provide effective plant solutions for air quality concerns.

The Cape May Plant Materials Center in New Jersey continues to test native grasses to stabilize sand dunes along the eastern states coastline to lessen the impact of extreme coastal winds. This helps improve air quality by reducing wind-driven particulate matter in coastal communities.



The Colorado Plant Materials Center tests and maintains foundation seed for 'Arriba' western wheatgrass (*Pascopyrum smithii*). 'Arriba' has been used in seed mixtures on hundreds of thousands of Conservation Reserve Program (CRP) acres since the mid to late 1980s to control blowing soil in eastern Colorado. NRCS National Resources Inventory (NRI) data indicates evidence that tens of millions of tons of soil were prevented from entering the atmosphere as fugitive dust because of the ground cover that western wheatgrass and other plant materials released by the NRCS Plant Materials Program provided these CRP acres.



The Big Flats (NY) Plant Materials Center is cooperating with a Pennsylvania windbreak working group studying trees and shrubs to be planted near poultry production facilities to mitigate odor and particulate matter.

The Kansas Plant Materials Center is evaluating hackberry (*Celtis spp.*) and oak (*Quercus spp.*) tree species for windbreaks to protect highways, crop fields, and subdivisions from wind erosion. The Idaho Plant Materials Center is conducting similar studies. Windbreaks can provide protection to adjacent fields, structures, and roads for up to 15 times the height of the tallest tree in the windbreak.



A plant specialist at the New Mexico Plant Materials Center measures big sacaton (*Sporobolus wrightii*) for use in arid climates as a tall, herbaceous grass barrier to trap abrasive soil particles that are transported by wind. Herbaceous wind barriers provide producers an economical means to protect fragile or specialty crop seedlings.



About Us

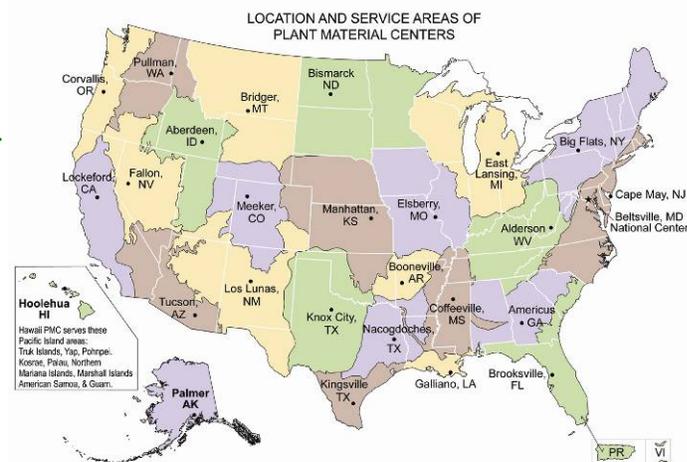
The USDA NRCS Plant Materials Program consists of a network of 27 Plant Materials Centers (PMCs) and Plant Materials Specialists located throughout the United States. For over 70 years, PMCs and Specialists have provided essential and effective plant solutions for critical habitats, environmental concerns, management practices, and key farm and ranch programs.

For more information, visit:

<http://Plant-Materials.nrcs.usda.gov>

<http://www.nrcs.usda.gov>

Helping People Help the Land...



The USDA is an equal opportunity provider and employer.

August 2007