“Tree planting in the Great Plains is a team effort,” says Joe Cervantes, Resource Conservationist with the USDA Natural Resources Conservation Service (NRCS) in Alliance, Nebraska. It takes an interested landowner, resource professionals with technical and program expertise, and professional tree planters.

Jim Jelinek, a farmer from western Nebraska, is one of those interested landowners. He says, “When the dirt blows, it’s disgusting. The trees planted in the 1930’s and 1940’s are dying and there just aren’t the trees out there that there used to be.” While talking about planting trees through the Continuous Conservation Reserve Program (CCRP) Jim said, “It was easy, Joe sat down and explained

 Alley Cropping System Buffers Water Table

Kimberly Stuhr
Technology Transfer Specialist,
NAC, Lincoln, Nebraska

Deep in the Mesilla Valley near Las Cruces, New Mexico you’ll find over 25,000 acres of pecan trees. At first glance this just looks like a lot of pecan trees, but after closer inspection and a visit with NRCS Soil Conservationist Rudy Garcia of the Las Cruces Field Office, you’ll find that some of the plantings are an interesting and productive

alley cropping / buffer system of pecan trees, orchard grass (like Bermuda grass), and dairy waste nutrient management.

According to Garcia, “This alley cropping system buffers excess nitrate leaching into the water table. Here in the desert we have a shallow water table that is only about seven to nine feet below the surface.”

The Mesilla Valley is home to 22 large dairy operations that produce manure in need

see ALLEY CROPPING on page 2
Buffers: More Relevant Today Than Ever!

Agroforestry buffers utilize trees and/or shrubs to protect things that are important. They protect waterways from non-point source pollution, prevent soil from eroding, and moderate dust and odors. Fields, homes, communities, and roadways can be sheltered from the adverse affects of harsh climates and strong winds. Buffers can also provide social benefits, like wildlife habitat, visual beauty, recreation opportunities, and carbon storage. The economic profitability of a farm or ranch can often be improved when agroforestry buffers are properly planned and installed.

Former Secretary of Agriculture, Dan Glickman, once said, “When combined with conservation tillage and nutrient and pest management, buffers can all but eliminate serious water pollution and related environmental problems from farms.”

This issue of Inside Agroforestry focuses on several types of agroforestry buffers. Local stories are used to illustrate how alley cropping, riparian forest buffers, field windbreaks, living snowfences, and planted pivot corners are being used throughout the country. Unfortunately, many existing buffers have reached the end of their service life and are in dire need of renovation or replacement. This is especially true for field windbreaks that were planted in the Great Plains to combat the “dust bowl” of the 1930’s.

Don’t underestimate the benefits of agroforestry buffers. These strategically placed “linear forests” can work for you, they can work for your neighbors, and they can work for watersheds and the entire nation.

Alley Cropping continued from page 1

Alley cropping provides annual income from forage and pecans while buffering the groundwater from excess nitrates.

This alley cropping system in New Mexico provides annual income from forage and pecans while buffering the groundwater from excess nitrates.

of disposal, or more appropriately, “utilization.” Typically 10 to 15 tons of dairy manure is applied per acre every three to four years on a pecan orchard. By applying “waste” to the grass and trees, nutrients are readily available that improve forage and pecan production. Obviously, what used to be considered waste can alternatively be seen as a valuable component of a productive agroforestry alley cropping system and efficient disposal means of a sure supply of manure.

The grass is planted between pecan trees, which are planted at a 40-foot by 40-foot spacing. It is harvested about two times per year and often sold to local farmers for feed or bedding. Many landowners consider the grass an excellent soil conditioner (i.e., the grass is mowed between rotations) that improves soil quality properties, which beneficially influence yield and quality. When sold, the Bermuda grass provides an annual income for the landowner throughout the summer growing season. Then, in late autumn the pecans are harvested for another source of income. Garcia says, “Several landowners who have recently converted to this system really like it. They maximize the use of their fields and are generating greater income through increased yield and quality of both the pecans and the grass crop.”

For more information about this unique alley cropping / buffer system, contact Rudy Garcia by phone: 505-522-8775 or e-mail him at: Rudy.Garcia@nm.usda.gov
New York City draws its water from a network of rivers, streams, and reservoirs in the watersheds of the Hudson and Delaware rivers. Hundreds of streams feed the systems 18 collecting reservoirs and three lakes that hold about 548 billion gallons. The system watersheds cover 1,969 square miles, with the outer edges lying 125 miles from Manhattan.

A filtration plant could cost as much $6 billion. Not surprisingly, New York City has decided it would rather spend $1.5 billion over 10 years to implement a watershed management strategy.
“We all know that cost sharing will never be sufficient enough to meet the need; therefore, we must show a less expensive way that is attractive to landowners.”

With money from the grant, North Dakota held four windbreak renovation workshops across the state with over 200 people attending. As a result, several conservation districts have purchased some of the innovative equipment demonstrated for use by local landowners.

Part of the EQIP educational grant is supporting development of a windbreak renovation video. The video project is a cooperative effort among the USDA Natural Resources Conservation Service, North Dakota State University Cooperative Extension Service, North Dakota Forest Service, several soil conservation districts, and several dedicated landowners. The video will document a variety of windbreak renovation techniques and is slated to be completed later this year. For more information on the video, contact: Marcus Jackson at mjackson@ndsuext.nodak.edu or phone him at: 701-231-8478.

People living on the plains and prairies of North America have long appreciated the buffering capability of windbreaks and their many benefits. Now is the time to develop effective windbreak renovation techniques. This job will require help from conservation partners in both the private and public sector.

Bruce Wight
NRCS Lead Agroforester,
NAC, Lincoln, Nebraska

Much like the “baby boomer” generation, most of the windbreaks in the Great Plains began life in the 1940’s, 50’s and 60’s and are now reaching maturity. According to Craig Stange, NRCS Forester in North Dakota, an estimated 70 to 80 percent of these windbreaks need some type of renovation ranging from reducing competition between trees and encroaching grass to complete tree removal and replacement. Similar renovation needs exist in the other states in the Northern Great Plains.

With $50 per 100 feet as the going rate for tree and stump removal, the potential cost of rotating to second generation windbreaks is staggering. This cost can be reduced to $20 per 100 feet if trees are removed with a hydraulic sheer or saw and the stump is left in the ground. Stange and other resource professionals in North Dakota are exploring alternatives like the tree sheer to find cost-effective renovation approaches for landowners.

According to the 1992 National Resource Inventory, there are over 150,000 miles of windbreaks nationwide with about 90 percent occurring in 15 states making up the Northern Great Plains and Midwest. Estimates ranging from 50 to 60 percent of these windbreaks need some form of renovation.

Craig Stange is experimenting with new renovation ideas and sharing the lessons learned through an educational grant from the Environmental Quality Incentives Program (EQIP). One goal of the project is to find a way to reduce renovation costs to 30 percent of the present costs. Stange says, “We all know that cost sharing will never be sufficient enough to meet the need; therefore, we must show a less expensive way that is attractive to landowners.” With money from the grant, North Dakota held four windbreak renovation workshops across the state with over 200 people attending. As a result, several conservation districts have purchased some of the innovative equipment demonstrated for use by local landowners.

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the natural environment. According to Stroud Director Bern Sweeney, “This project fits well with our mission because it applies basic research science to a real world problem.”

The overall aim of the three-year project is to establish a system to monitor the amount of contaminants in the water and the sources of contamination in the watersheds.

The system must also be able to measure and predict future changes in water quality as land uses change. Most importantly, for the long run, the information provided by the Stroud Center must lead to land and water management practices that will prevent further contamination.

For more information about the Stroud Center, the New York City project, and other water quality projects visit their website at: www.stroudcenter.org or call Claire Birney, Development Director, at 610-268-2153 ext. 230.
Talk about word-of-mouth advertising! Word about windbreaks is spreading fast in Idaho. According to Dennis Hadley, District Conservationist, for the USDA Natural Resources Conservation Service (NRCS) in eastern Idaho, “Word is getting out. When you’ve got a good buffer practice and a good program to support it, you can talk about good things to people.”

With the great incentives that the Continuous Conservation Reserve Program (CCRP) offers and a first-rate buffer practice like windbreaks, it’s no wonder that the High Country RC&D and the East and West Side Soil Conservation Districts (SCDs) are installing increasing numbers of new windbreaks per year. According to Hadley, landowners are extremely pleased with their windbreaks and CCRP’s incentives. The cost share plus the sign-up bonus for buffer practices is fantastic. After you add in the annual rental payments, CCRP is the best conservation tree planting program that’s been available in a long time. Cooperators won’t find a better opportunity to apply a conservation planting to their land. Hadley continues, “In fact, landowners can hardly believe it. Sometimes I almost need to pinch them!”

Windbreak buffers of all types are important in this part of the country. A lot of the cropland is irrigated and is very erodible due to high winds. Furthermore, many parts of Idaho experience blowing and drifting snow each win-

These seedlings installed by the Idaho Department of Transportation will eventually protect the adjacent highway from drifting snow and blowing soil. The land was purchased from willing landowners.
Living Snowfences

Dan Gullickson
Forester, Minnesota Department of Transportation, Office of Environmental Services, St. Paul, Minnesota

Living snowfences are plantings of trees, shrubs, native grasses and sometimes standing rows of corn that trap blowing and drifting snow. These barriers help keep roadways clear and prevent big drifts that lead to stranded motorists.

Living snow fences save lives.

According to the Federal Emergency Management Administration the number one natural disaster that claims the most lives in Minnesota is winter weather. Between 1990 and 2000, in the Mankato-Windom area alone, there were 1,411 vehicle crashes due to snow, 917 crashes due to blowing snow, and 86 crashes resulting from cross winds. With living snowfences, driver visibility is improved and these vehicle accidents are reduced.

Living snow fences save money.

According to Standard and Poor’s financial information services, economic disruption of having to shut down the highways for one day in Minnesota would cost $66 million in lost wages and $27 million in lost sales. Living snow fences help keep roads open and reduce shipping delays for goods and services. They also help us make better use of the public’s money because the need for plowing snow is reduced.

Living snow fences look good.

These barriers are natural, live materials that are aesthetically pleasing year round. They provide visual cues, or land marks, to help drivers find their way. Living snow fences are an environmentally sound solution to improve snow management. Less salt, fewer plow and truck trips, and less fuel are required to keep the roadways clear.

As a result, the Minnesota Department of Transportation (MnDOT) has acquired a $2.5 million grant from FEMA and participation of landowners and local governments in the Living Snowfence program. We are in the middle of planting 100 living snowfences that will be completed by June, 2001.

For more information, contact me by phone: 651-284-3763, or e-mail: Daniel.gullickson@dot.state.mn.us
A half-day technical workshop on how to plan and design silvopasture systems for the Southeastern United States will be offered during the annual meeting of the Soil and Water Conservation Society. The target audience are resource planners that provide information on how to incorporate long-term timber production into pasture and livestock management operations that provide both an annual income and a long-term cash flow.