International Agricultural Development

Working through a MOU with the World Agroforestry Centre, based in Nairobi, Kenya, I have collaborated on rainwater harvesting, garden production, and food security in Rwanda. We are jointly developing proposals for agroforestry projects in the Sahel of West Africa for human and animal nutrition, soil fertility improvement, and water conservation through a more efficient use of tree/shrub resources in the agro-silvo-pastoral systems in the face of climate variation and climate change.

US Peace Corps Collaboration

As the coordinator of 2 Peace Corps programs in the College of Agricultural, Consumer and Environmental Sciences, I work with students interested in the Fellows/USA and Master’s International Programs. This provides a mechanism to attract high quality graduate students wishing to couple their academic program with their Peace Corps experience.

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Extension Plant Sciences
Four Corners Region
Crop Sciences

Mick O’Neill, Ph. D.
New Mexico State University
ASC Farmington, Agronomist
PES, Professor and Jose Fernandez
Memorial Chair in Crop Production
Extension Plant Sciences 25% Appointment

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Hybrid Poplar Production in the Four Corners

Hybrid poplars are fast-growing trees capable of producing merchantable material in as short as 3-15 year. They are suited toward a wide range of end-use products including solid wood products, pulp for paper production, and excelsior for cooling pads, bedding, packing, and erosion control blankets. On short rotations, it can be used as a biofuel.

Hybrid poplar research began at the Center in 2002 with the planting of a 0.5 ha trial in which 10 varieties were entered to identify hybrid poplar clones adapted to the region, tolerant of high pH soils and associated nutrient deficiencies, determine water-use and growth rate in the semi-arid Four Corners area, and identify potential post-harvest markets for poplar products. Since beginning poplar research we have installed 5 trials on 12 acres at the center.

Phytoremediation

In cooperation with the US Department of Energy, Diné College, and oil/gas companies, we are exploring the use of both hybrid poplar and native cottonwoods in the remediation of groundwater contaminants that are the result of uranium mining and petroleum processing in the Four Corners region.

Biofuel Development

The Farmington Agricultural Science Center is currently working with several regional power companies as well as federal and state agencies to look into co-firing wood chips in coal burning power plants. A cooperative study begun in 2005 with Greenwood Resources of Oregon, is evaluating 66 clones for used as biofuel source.

Oilseed Crops for Biodiesel Production

Over the last 15 years, canola acreage and production have increased over 700% in the United States, and oil sunflower production has increased nearly 200%. In addition, over a dozen states have policies that support biodiesel development. At our research center, we conduct ongoing trials of available genetic material to determine which varieties are best suited to this area.

A spring canola trial in 2006, including 18 varieties, produced an average yield of 1500 pounds per acre; the top line produced over 2000 pounds per acre. The same year, a sunflower trial produced a mean yield of 2300 pounds per acre with the top three lines approaching 3000 pounds per acre. Camelina, which has been identified as an oilseed crop for marginal environments, had mean yields around 1200 pounds per acre. ASC-Farmington has consistently had one of the highest mean yields in the National Winter Canola Variety Trial during 2008-2010.

We also investigate weed management and cultural practices involved in raising these crops. Sunflower weed control studies conducted at the Center have produced mean seed yields around 3000 pounds per acre. A trial of 5 glyphosate tolerant canola lines was carried out to evaluate yield and weed control, as well as a test to determine the effect of planting date and variety on camelina yield.