Breaking wind with willows (et al)

by Hugh Maynard

Six feet of growth in one year is not bad considering that's starting at ground level from a mere cutting. Such growth rates auger well for farmers interested in establishing windbreaks as a means of conserving soil.

The results of REAP-Canada's experimental windbreak plantings was the focal point of the REAP field day at the farm of Harry Wilhelm near Tavistock, Ontario at the end of July. Lead by Joe Omielan, REAP research manager for south-western Ontario, the tour group visited a number of sites where plantings of different species had achieved a 98% establishment rate during the first year.

The windbreak plantings were designed to measure a number of other components as well - performance of species combinations, aesthetics, and the biomass yield as a potential for an on-farm fuel source. Some were planted in the two-row system developed in New Zealand, where every other tree is cut, or coppiced, to produce denser foliage close to the ground at crop level and less resistance higher up.

The objective of this windbreak design is to prevent ÒcrashingÓ - wind forced up high by solid and very tall windbreaks, that then descends down almost vertically flattening crops on the immediate leeward side of the windbreak.

Omielan said that the most popular windbreak species in Ontario is the white cedar, mostly because the trees remain green year round and don't require much attention in the early stages, such as with mice and rabbit damage. But they are slow growing to start and take much longer to reach an effective windbreak height. Cedars also make a solid wall which blocks the natural flow of air and promotes crashing.

Porosity - the amount of sky that can be seen through the windbreak - should be around 40%, Omielan noted, in order to slow down the wind but still maintain the positive aspects from air movement, such as crop drying. He added that Norway spruce was the best conifer because it offers ideal porosity at 20 foot spacing, which is also economical for planting.

Cultivation was carried out between the rows of trees and Dutch clover was broadcast as a cover crop for the sapling trees. The clover not only helps to keep weeds down but is also low-growing to reduce maintenance requirements as well as fixing nitrogen in the soil for the trees.

Diversity

Omielan pointed out that one windbreak made up of just one species of tree is not necessarily beneficial and that farmers should think towards smaller sized units made up of different combinations of species depending on conditions.

Don't try to do everything with one type of windbreak. It's the cumulative effect of many windbreaks in an area that works best, he said.

In the REAP trials, DN2 poplars from Holland have been mixed with a cloned species of willow from Iowa, with the willows being coppiced. But Norway spruce has also been mixed with black locus trees on a low fertility site, a combination Omielan believes is well suited for light soils or eroded areas that require stabilizing. The locus trees have the added benefit of fixing nitrogen but also require a higher density at planting due to the locus borer which will kill 50% of the trees in the first few years. The good news is that the remainder become immune to the effects of the borer and continue to grow in good shape.

The Austree, a cloned hybrid of the Asian willow, is another suitable alternative for the willow itself, which has a bad habit of sending runners into tile drains if located anywhere near the windbreak. The Austree will perform as well as the willow but does not send runners out into the field in search of moisture. It can also be coppiced.

Windbreak location is also an important consideration in the choice of tree species. Jim Thompson, who operates a nursery and mixed farm near Seaforth, Ontario, was guest speaker during the lunch-break. He noted that the direction of the prevailing winds should be taken into account when choosing windbreak trees. Deciduous species do a better job of slowing east/west winds, while the same applies to conifers with north/south winds.

Grass Nursery

Most nurseries are to make sure that little kiddies (of all kinds) get a good start in life, and the little bunches of grasses at the REAP-Canada research site near Tavistock, Ontario is no exception. One of the more interesting varieties being examined is Gammagrass, which yields 20-25 tonnes/hectare of dry matter from multiple cuts. Trials are also underway at Cornell University with gammagrass as a silage replacement for corn, which is hard on land and has fostered triazine resistance in many weeds. Gammagrass also has potential as a feedstock for ethanol production.

The variety is less prone to winterkill than alfalfa because it has no crown, growing from the leafstem. There are, however, two sides to every coin; the variety is difficult to manage at seeding, requiring seed to be dampened before planting into a moist seedbed for successful germination. Current breeding trials are aimed at getting rid of this dormancy problem.

Pasture with Medic

A weed is a weed only when it grows where it is not wanted. But take the attributes of that weed and perhaps it has the potential to be regarded in a more positive light as a productive crop.

Such are the possibilities for medic, a low-growing plant that home owners often curse for invading path and driveways. In southern Australia, however, medic has been utilized as a combination pasture/cover crop in rotation with grain cereals. The medic grows well in dry conditions and provides suitable pasture for sheep. Cereals are then over-seeded after the medic has been grazed down, laying Òdormant Ó in the second year before regenerating in the third year to be grazed again.

Medic varieties have proven themselves to be more productive with less water and their year-round cover helps maintain soil moisture for the cereals as well as keep weeds down. Medics also fix up to 50 pounds of nitrogen per acre. Eastern Canada's humid climate may not be conducive to elevating the medic up from weed status, but REAP-Canada's research is targeted to find out where the plant might have a more productive role.

A garden worth eating

A garden doesn't just have to be good looking but can also be good tasting as well. That is the philosophy behind Òthe edible landscape."

Human nature has demonstrated a fetish for putting order into every part of the habitat, including parts of the garden to look at and other parts that produce something to eat. There are, however, many fruits and vegetables that are not merely functional in the production of food but are also aesthetic as well.

Asparagus, carrots, parsley, lettuce, onions, beets, leeks, Swiss chard and many types of herbs can be included as part of the 'visual' garden. Fruit bearing shrubs can be just as appealing as many ornamental types. Instituting an edible landscape provides more alternatives for companion planting, thus reducing potential damage from harmful insects and weeds.