

Indianfarm Creek Watershed News

Fall 2008

Nutrient Beneficial Management Practices Evaluation Project

At the first meeting of the Indianfarm Creek Watershed Group, participants were asked what they felt were issues in the watershed. Streambank erosion was identified as a concern by several participants. As a result this issue of the Indianfarm Creek Watershed News focuses on the use of soil bioengineering techniques for erosion control.

What is soil bioengineering?

Soil bioengineering integrates sound engineering practices and ecological principles by assisting the natural healing of a disturbed or damaged site. It uses plants that are called pioneering species (ones that naturally colonize site after a disturbance). These could be herbaceous or woody plants. When vegetation is successfully established, it improves ecosystems, creates and protects wildlife habitat, and improves aesthetic value. The process of soil bioengineering involves the placing living plant materials (e.g. stem cuttings, sod, rooted stock, seed) on an inclined soil surface to form structures and perform some engineering functions such as soil erosion control and stream bank

stabilization. Soil bioengineering is primarily applied to sites that have been damaged or highly disturbed such as eroded and slumped streambanks, highway landslides, or site restoration after construction or industrial activity. The extensive plant root network increases the soil's resistance to erosion and the interception of rainfall by foliage minimizes the damaging impact of raindrops on bare soil. Soil bioengineering is most successful when combined with conventional engineering technology. For example, in streambank stabilization, at the toe of the slope a stone riprap can be combined with live plant stakes and above it soil bioengineering techniques can be applied.



Bioengineering field school



Lyndon Creek bioengineering project

You're Invited!

Indianfarm Creek Watershed Group Meeting

November 6, 2008 at 9:30am

Municipal District Office – 753 Kettles St., Pincher Creek

Open to all producers in the watershed. – Refreshments will be served.

Guest speaker – Mr. Jeff Porter. Jeff is a Conservation Coordinator with the Southwestern Alberta Conservation Partnership. He works with the MDs of Pincher Creek, Ranchlands, and Willow Creek. Jeff has considerable experience in the area of soil bioengineering and working with watershed groups.

For more information contact Janelle Villeneuve, 403-381-5867

Bioengineering in Indianfarm Creek: A Challenge! (but worth a try!!)

One province in Canada that has used bioengineering very successfully is British Columbia. The high rainfall and mild climate probably contribute to the success. Soil bioengineering in Indianfarm Creek would require a careful study of the techniques that would work best under the dry, windy climate in southern Alberta. In addition, soil bioengineering is best applied soon after a disturbance has stabilized. Indianfarm Creek has areas of active erosion with fresh slumping of steep banks being a common occurrence making stabilization difficult. There are banks with vertical cliffs as well as steep slopes devoid of vegetation. These slopes are ideal to start with, but will be challenging for soil bioengineering because erosion has stripped the surface of the fine soil particles that are important in moisture retention and plant establishment. A combination of soil bioengineering and conventional engineering techniques might be a good option. Modifications of soil bioengineering techniques might be required to ensure sufficient moisture is trapped from precipitation, or supplied to and retained by plants especially during the initial stage of implementation.

The graph presents some data collected as part of the BMP Evaluation Study being conducted by Alberta Agriculture and Rural Development in the Indianfarm Creek watershed. The amount of sediment in water leaving the watershed is much greater than the amount of sediment in the headwaters. The difference, while most obvious during spring snowmelt in March and rainfall runoff in June, can also be seen during flows sampled during non-runoff times. This gives an indication of the amount of sediment the water picks up as it flows through the watershed. Soil bioengineering may be able to reduce the sediment in the creek.

