

How Green is My Valley?

Riparian 101

Why do I need to know this stuff? Good question! An understanding of how riparian areas are formed and how they function is the first step in figuring out how to successfully maintain their productive nature for your farm or ranch. Think of this section as a shop manual for riparian areas.

Water Horsepower

Streams and rivers flowing through riparian areas have three common elements:

- ◆ the water in their channels has mass (or weight);
- ◆ the mass of water is dragged downhill under the influence of gravity; and
- ◆ the water flows at some speed (or velocity).

The stream's engine is the mass of water moving downhill. How much horsepower the stream's engine has depends on slope, amount of flow and resistance along the bank and channel. Horsepower, whether measured in a car, a tractor or a stream tells us how much work can be done.



The work of a stream is to erode material from its banks or bed and then to transport that material downstream. Streams meander in order to balance the work they do with the energy they have and the material they carry.

If the engine idles, not much horsepower is generated; the stream isn't doing much work. However, when the engine races its horsepower is unleashed, allowing the stream to work harder at eroding and transporting.

A simple doubling of the speed of a stream's flow allows it to erode four times as much and to carry 64 times the amount of material. That's power! Too much power can translate into things like the loss of productive bottomland pastures to erosion.

Producers need to understand these simple physics, to avoid unleashing a problem, without knowing how it happened.



Streams erode the outside of meander bends and deposit material downstream on the inside of meanders.



Eroded material is transported downstream either suspended in water or by rolling on the stream bottom.



Stream channels are seldom straight. Streams meander to balance water speed, valley slope and the amount of sediment to be transported.