Sustainable Canadian Agricultural Partnership

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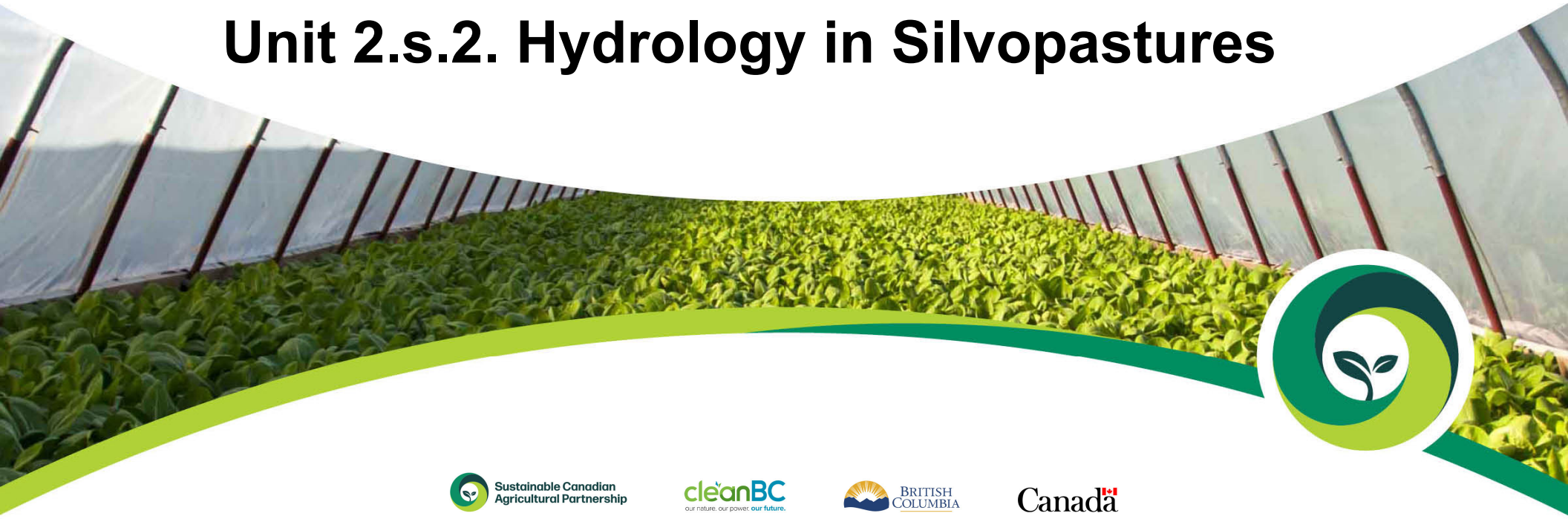
Silvopasture In British Columbia Information Series

Unit 2.s.2. Hydrology in Silvopastures



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Silvopasture in BC Information Series Content Guide

Core Units	Case Studies	Supplemental Units
0. Series Overview		
1. Introduction		1.s. History of SP in BC
2. Science Behind SP	2.c.1 Production Synergies: Kootenay Tree Farms	2.s.1. Light & Microclimate
	2.c.2 Riparian Silvopasture: Silver Hills Ranch	**2.s.2. Hydrology**
3.1. SP BMPs - part 1	3.c.1 Small-lot SP: Just Another Weed Patch Farm	3.s. Managing Damage
3.2. SP BMPs - part 2	3.c.2 Mature Forest to SP: Indian Gardens Ranch	
4. SP Planning	4.c.1 Planning on Crown Land: SP Pilot Project	
	4.c.2 Adaptive Management at Aveley Ranch	

Unit 2.s.2. Hydrology in Silvopastures

Goal

Provide a deeper understanding of the science behind silvopasture design and management, specific to hydrology.

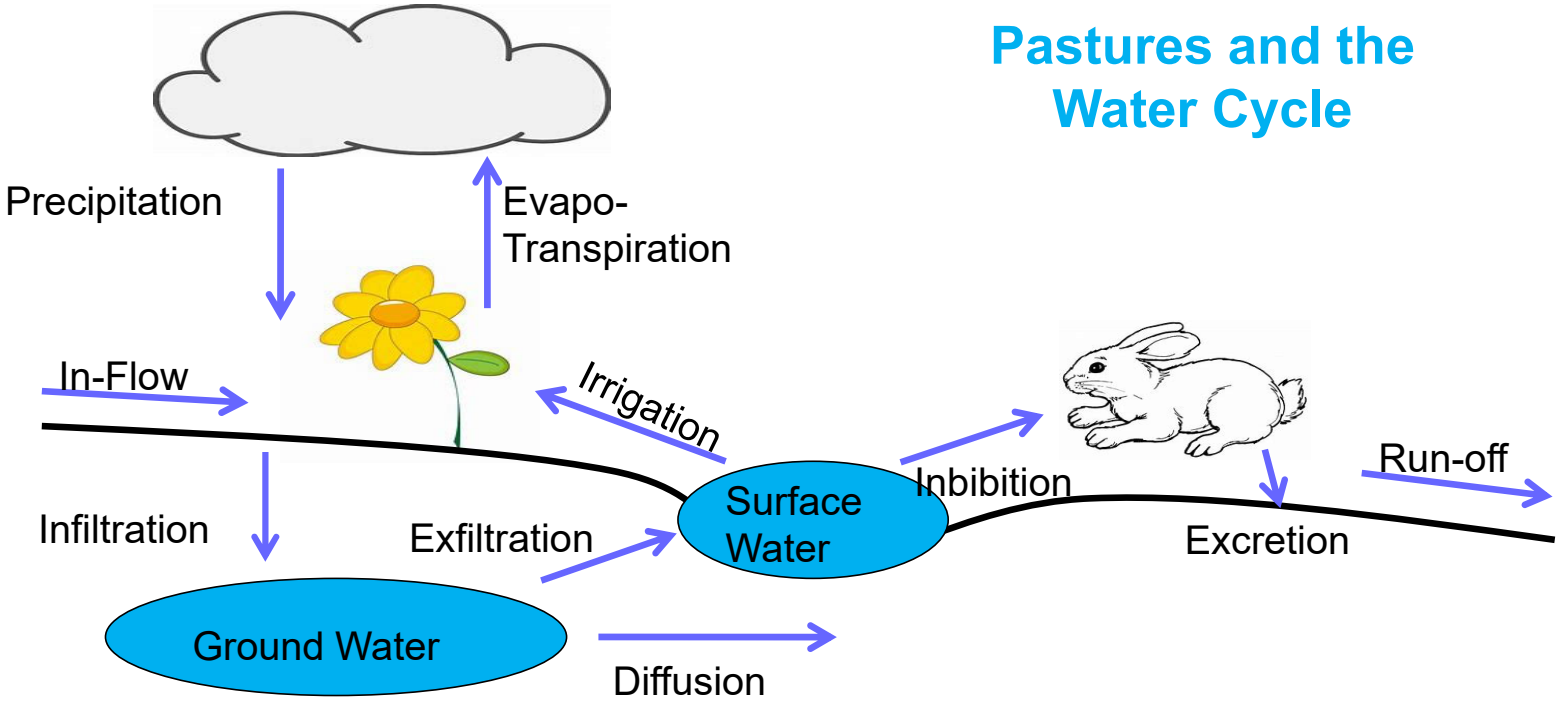
Prerequisites

Unit 2: Science Behind Silvopasture.

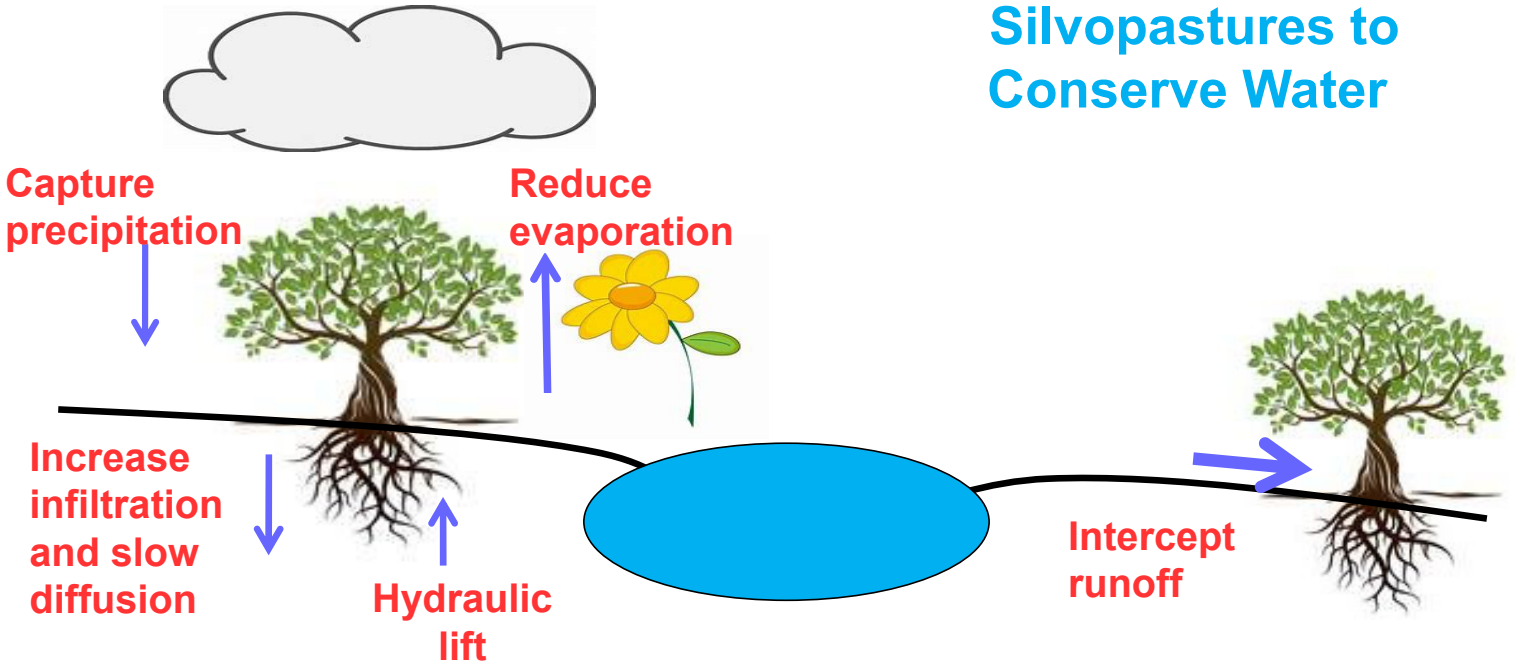
Content

1. Silvopasture and the Water Cycle
2. Tree and Shrub Effects on Hydrology

Pastures and the Water Cycle



Silvopastures and the Water Cycle



Silvopastures to Conserve Water

Silvopasture Hydrology

Precipitation Inputs

Site-level

- Rainfall intercepted by trees.
- Large trees contribute to a rain shadow around the canopy.

Landscape-level

- Trees and shrubs interrupt thermal up-wells. More rainfall events occur.

Silvopasture Hydrology

Evapotranspiration

Water Conserved

- Trees and shrubs block air-flow and cool the air. This reduces evaporation from the surface.

Water Used

- Trees and shrubs are large plants that draw water for their own needs and transpire it into the atmosphere.

Silvopasture Hydrology

Interception

Trees and shrubs are a barrier to water movement.

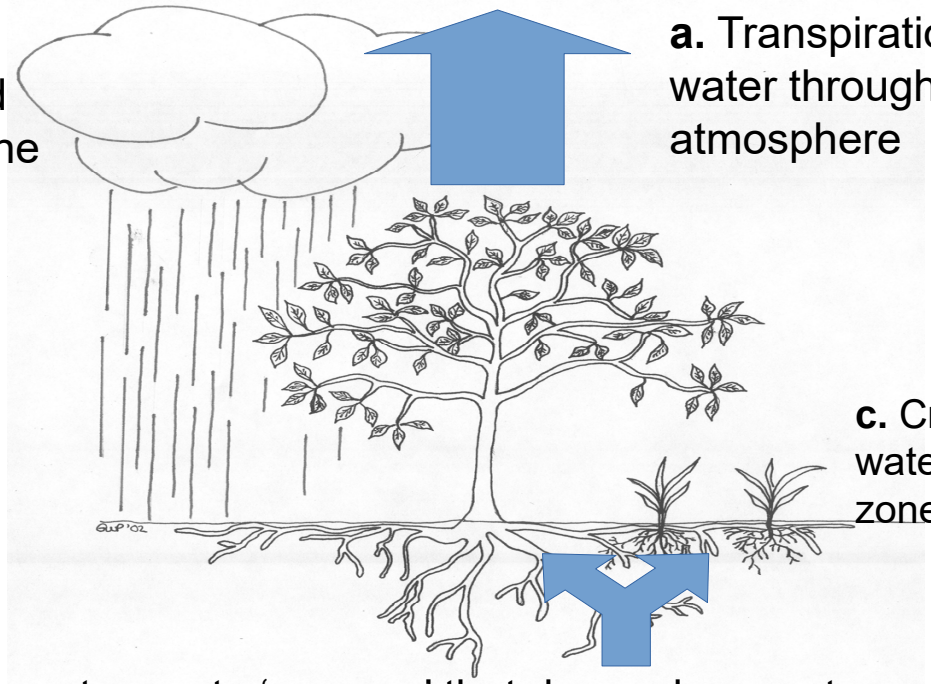
Infiltration

Greater portion of water inputs (precipitation, irrigation, overland flow) moves into the ground with tree and shrub presence.

Silvopasture Hydrology

Hydraulic Lift

Deep-rooted trees and shrubs ‘pull’ water to the surface soil layers



a. Transpiration ‘pulls’ water through tree into atmosphere

c. Crops benefit from extra water pulled into their root zone

b. Tree roots create ‘vacuum’ that draws deep water upward

Questions and Discussion