



Trees and Flood Prevention

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Trees and water

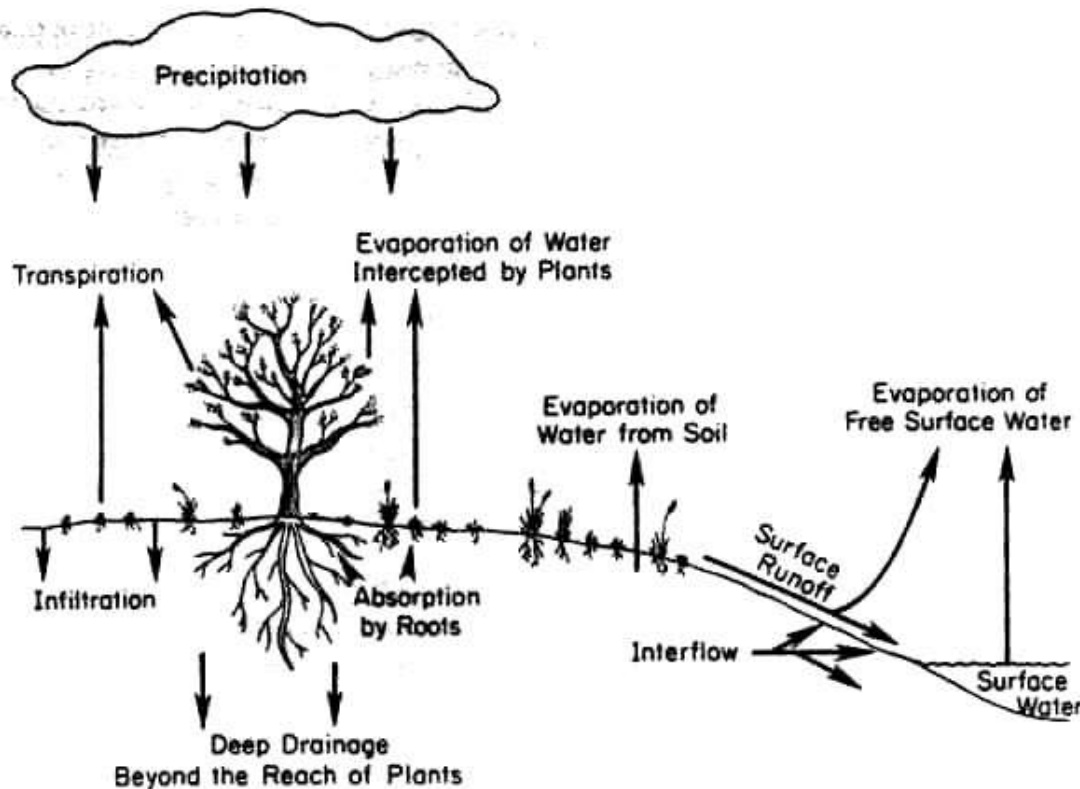


Figure 6.1. The water cycle showing major processes and pathways of water movement through a watershed. Water inflow = water outflow ± storage.

Trees and water

- Canopy reduces speed at which rain reaches ground
- Evapotranspiration
- Over-ground flow vastly reduced
- Water infiltration to soil 60 times greater in woodland than pasture
- Water follows live tree roots, reaching deeper into soil than pasture
- 90% roots in top 60cm soil

Trees and Water



- Peak flow reduced by up to 40%
- Sediment trapping
- Effects achieved only two years after planting
- Pontbren study, Wales

Creating Woodlands

- Planting of shelter belts across slopes
- Broadleaves or mixed
- Minimum width 20m
- Target improved land



Trees and Riverbanks



- Soil stabilisation...to a point
- Not immune to erosion or under-cutting



FARM
ADVISORY
SERVICE





FARM
ADVISORY
SERVICE



Trees and Riverbanks

Trees/woodland on riverbanks:

- Will exclude livestock
- Will increase soil drainage and evapotranspiration
- Will improve soil structure
- Do need to be managed
 - Large lever force from mature trees
 - Coppicing

Trees and Riverbanks



Trees on Floodplains

- Creates a 'leaky barrier'
- Stores water and reduces speed of flow



Benefits of Woods

- Shelter
- Source of firewood / chipwood for on-site boiler
- Alternative income stream, both grants and timber
- Reduction of diffuse pollution
- Sporting



Shelter Woods - Benefits



Crops:

- Reduced wind speeds
 - reduced evapotranspiration
 - greater soil moisture retention
 - soil protection
 - reduced physical damage of crops
 - greatest benefit to root/vegetable crops
- Leaf fall
 - increased soil organic content, leading to:
 - improved soil water retention and nitrogen availability

Shelter Woods - Benefits



Livestock and pasture:

- Reduced wind speeds
 - reduced evapotranspiration
 - reduced evaporative chilling of livestock
 - improved lamb survival
 - reduced ewe mortality after shearing
 - improved weight gain
 - improved milk yields
 - reduced feed costs

Shelter Woods - Benefits

- Animal health
 - Separation of herds
 - Fluke reduction



Thank You

