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# Shelter and riparian belts on farms

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# Trees on Farms provide many services

- » Shelterbelts
- » Boundaries e.g. riparian, neighbor, road noise
- » Slope protection from erosion
- » Shelter woods for stock at key times
- » Shade trees
- » Biodiversity havens
- » Water purification
- » Nutrient management
- » Income stream

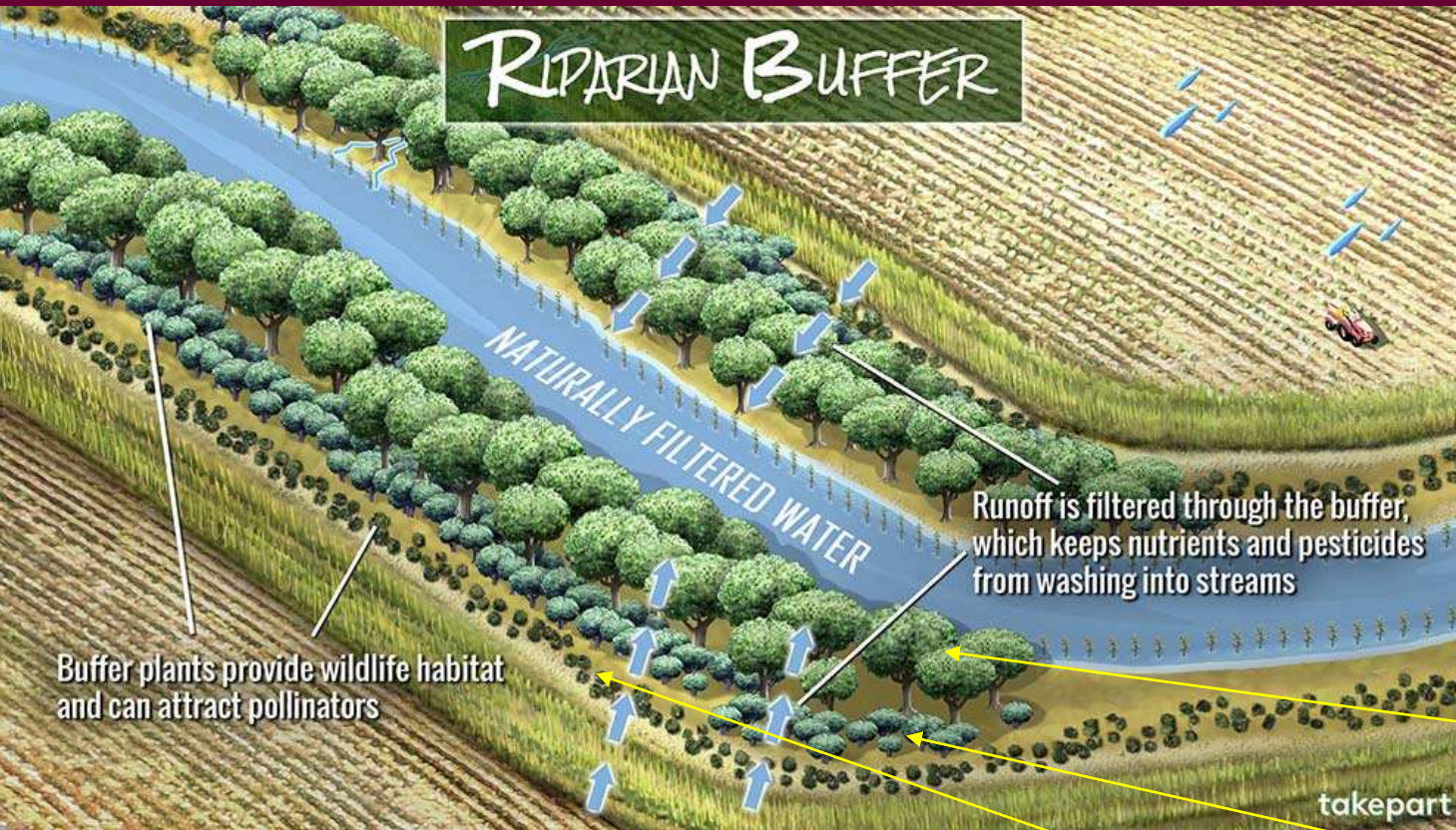


# Definitions

- » A **riparian buffer** is land next to streams, lakes, and wetlands that is managed for perennial vegetation (grass, shrubs, and/or trees) to enhance and protect aquatic resources from adverse impacts of agricultural practices
- » A **shelterbelt**(windbreak) is a plantation usually made up of one or more rows of trees or shrubs planted in such a manner as to provide shelter from the wind and to protect soil from erosion. They are commonly planted in hedgerows around the edges of fields on farms



# Roles of riparian vegetation belts



- Enhance water quality
- Reducing runoff
  - Intercepting nutrients, sediment, pesticides
  - Improving stream habitat

Carbon storage

Barrier to domestic livestock

Zone 1 bank stabilization

Zone 2 absorption

Zone 3 interception, absorption

# Riparian plantings

- » Bare stream banks result from our farming practices
- » Riparian protection has progressed where incentives operate.
- » Environmental costs of declining water quality outweigh productive land loss
- » Zone 3 has been shown in a number of studies to be more effective in filtering nutrients than zones 1 and 2.
- » We are implementing practices that are supported by international studies
- » Effectiveness varies with the width of the zones (time), e.g. more width needed to filter clay than silt.

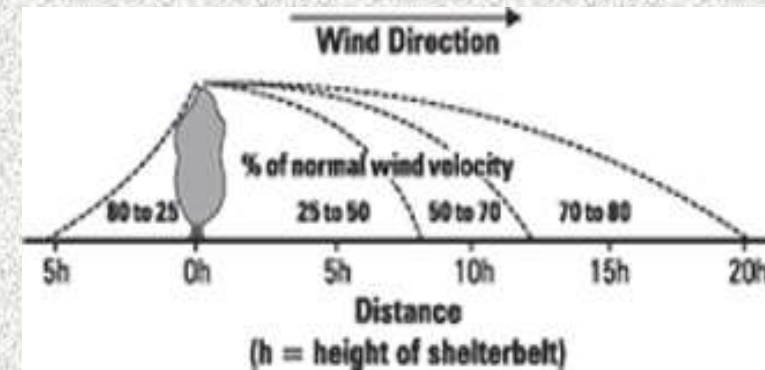
# Shelterbelts

## » Why have a shelterbelt?

- » Wind reduction / reduce evapotranspiration / enhance stock welfare / enhance crop or pasture production / increase property values / store carbon / fodder resource / increase biodiversity / biosecurity

## » What are effects of shelter?

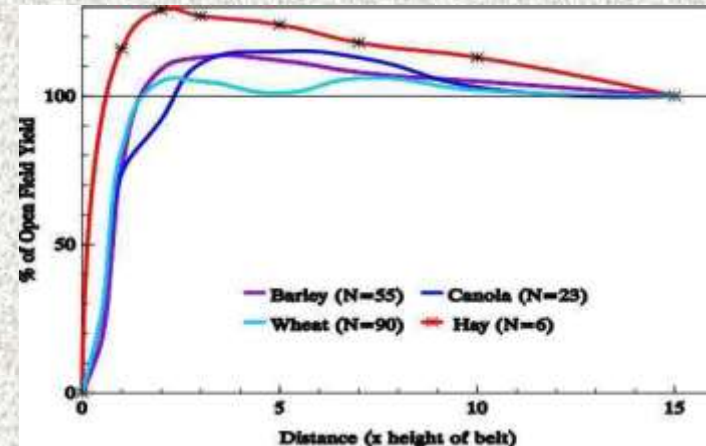
- » Reduce the cooling effect of wind
- » Reduce the force of the wind
- » Reduce physical damage to plants
- » Habitat for pest controllers (and pests)
- » Reduce soil erosion, seed dispersal



*Shelterbelts shelter on both windward and leeward sides*

# Shelterbelt plantation pros and cons

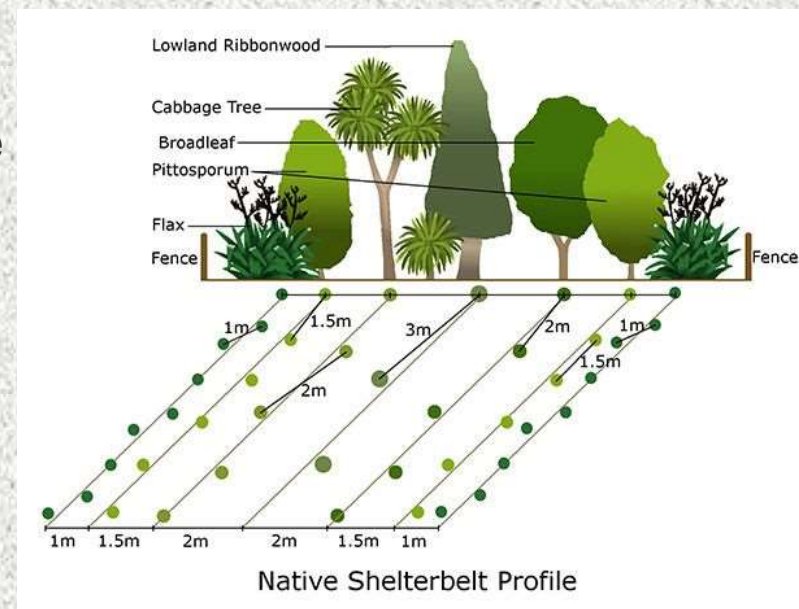
- » + lifts crop yields, feed availability
- » + lifts milk production, animal weight gain, herd fertility
- » + protects stock in extreme events (heat, wind, cold, wet)
- » + improves the working environment
- » + long lasting
- » + pollinators can do their work easier
- » - takes time to become effective
- » - requires tree maintenance
- » - wastes land
- » - adds complexity to farm operation
- » - can be subject to wind throw



# What to plant?



- » Single species vs two or more species
  - » 2+ provide a more compact foliage, 1 porous, 1 dense
  - » Fast growing and slow growing e.g. willow/poplar c.f. conifer
- » Evergreen vs deciduous
  - » Deciduous will have a higher porosity
  - » Porosity is needed to avoid turbulence
- » Flax vs no flax
  - » Flax establishes very well, makes a difference early, and offers protection to growing trees



See what works for your neighbours



# How to plant – google for guidelines

- » Shelterbelts don't have to be straight lines.
- » A stand of trees may be more appropriate for some purposes e.g. lambing, winter shearing.
- » Find an area to plant that combines effective protection from wind with functional design possibilities to increase aesthetic value.
- » Use an aerial photograph to draw a map for the design (Google Earth).
- » Once the mapping is complete, collect as much information as possible on soil type, drainage, slope, prevailing winds, sunlight exposure, property lines, power and other utility lines, buildings, and roads,
- » Work out establishment costs – preparation, fencing, plants, weed control
- » When the site assessment is complete, choose tree and shrub species.
- » Purchase quality plants



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