Windbreak design & management

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Introduction

- Windbreaks (if designed correctly) can greatly reduce windspeed on farm
- The degree and distribution of shelter depends on height & permeability of W/B
- Windbreaks will protect stock and can decrease lambing mortality 50-75%
- Shelter will increase agricultural production
- Shown that if 10% of farm planted to W/B, reduces windspeed by 33-50%
- Consider “Cow comfort” – shade, wind

Factors reqd. for good design

1. Permeability or porosity
2. Height
3. Length
4. Species
5. Orientation
6. How many rows?

Tree height and orientation

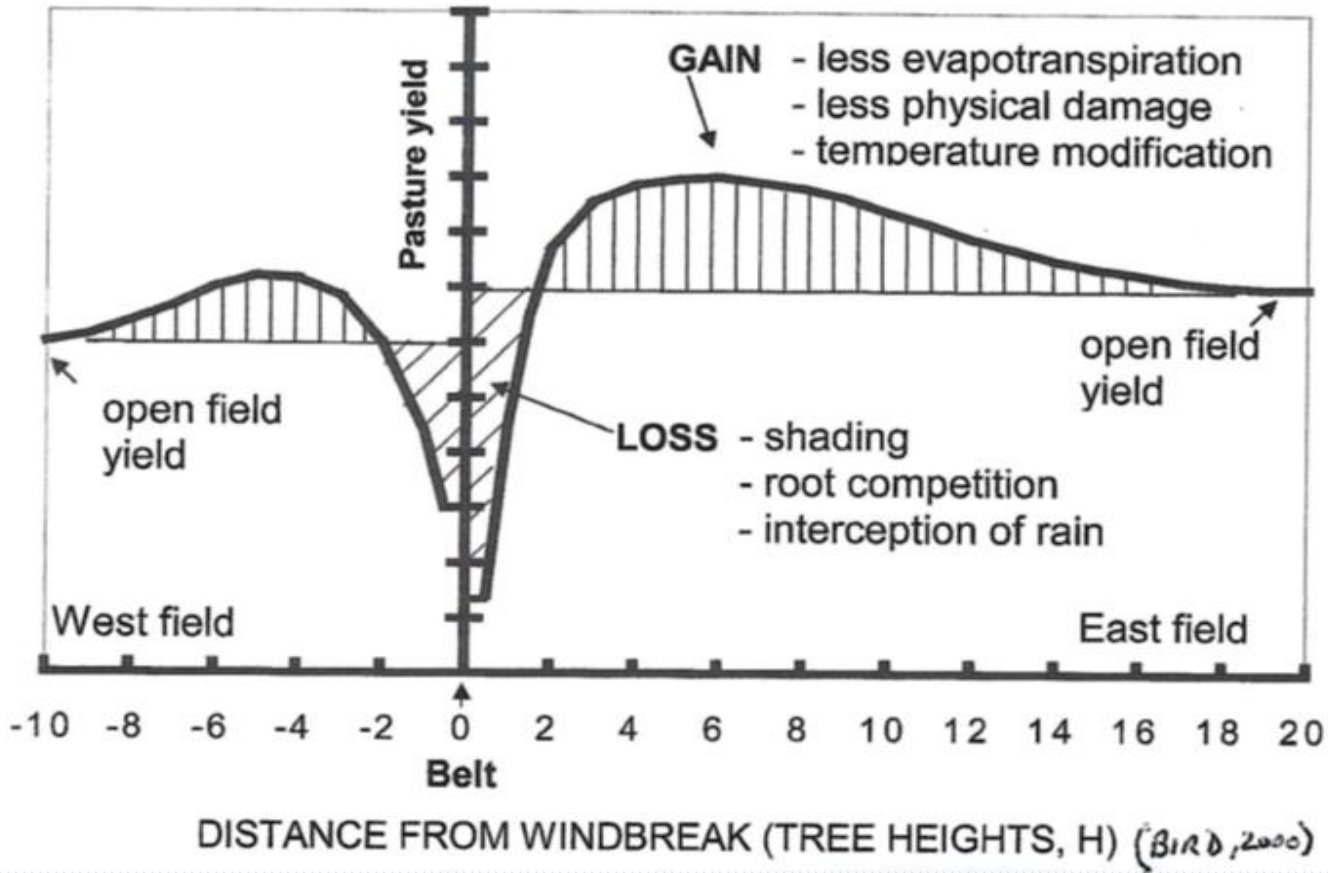
Shelter benefits to 18-20 x tree height in paddock

Design by age 10 to determine ~ distance in paddock
But…get estabmt. right yr 1!!
(weed control, roos, rabbits, insects etc)

North/south belts best if grazing or cropping

The sheltered zone

Figure 3.1 **Generalised representation of possible shelter effects on plant growth, indicating factors that influence losses in the competitive zone and gains in the shelter zone.**



How many rows?

1. Depends on your objectives, paddock layout
2. One row <u>not best.</u> poor survival leads to wind tunnel effect

3. 4-5 rows optimal or 16-20 metres wide

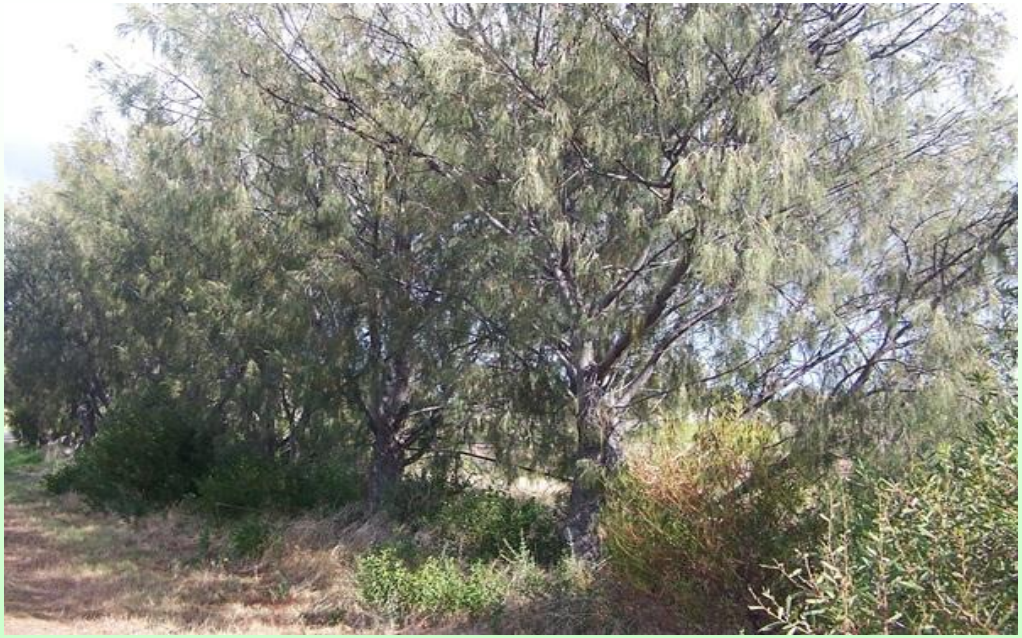
Multi-species

Combination of:

a.) talls

b.) medium

c.) smalls or ‘pretty's’



Example of species

See notes…..

(high rainfall zone - >600mm)

Tall (>20 metres)

Species	Ht.	Width
Euc. globulus or var. *compacta*	30/15	25
E. maculata	30	15
E. melliodora	20	15
E. nicholli	20	15
E. saligna.	35	20
E. botryoides	25	20
E. grandis	35	20
Casuarina cunninghamiana	20	20

Spacing: 4 x 3 metres

Medium (6 - 20 metres)

Mel. rhaphiophylla	15	8
Agonis flexuosa	8	5
Melaleuca leucadendron	9	3
Mel. armillaris	7	5
Mel. lanceolata	6	5
Casuarina obesa	15	8
Banksia prionotes	8	6

Spacing: 4 x 3 metres

Small (<6 metres)

Melaleuca nesophylla	5	6
Mel. incana	2	3
Hakea laurina	5	4
Hakea multilineata	4	3
Kunzea baxteri	2	2
Acacia microbotrya	5	3
Ac. rostellifera	4	4
Euc. macrocarpa	3	2
Callistemon citrinus	3	4
Calistemon phoenicious	3	3
Cal. Kings Park special	5	3
Grevillea Robin Gordon	3	3
Calothamnus quadrifidus	2	3
Euc. leucoxylon var rosea	6	4

Spacing: 4 x 2 metres

Note: 1.) Mixing species will result in competition from faster growing species causing suppression and losses. 2.) Match species to soil type 3.) Growth habit is

Types of windbreaks “non-commercial”

Types of windbreaks

“non-commercial”

Types of windbreaks "non-commercial"

East/west shelterbelt

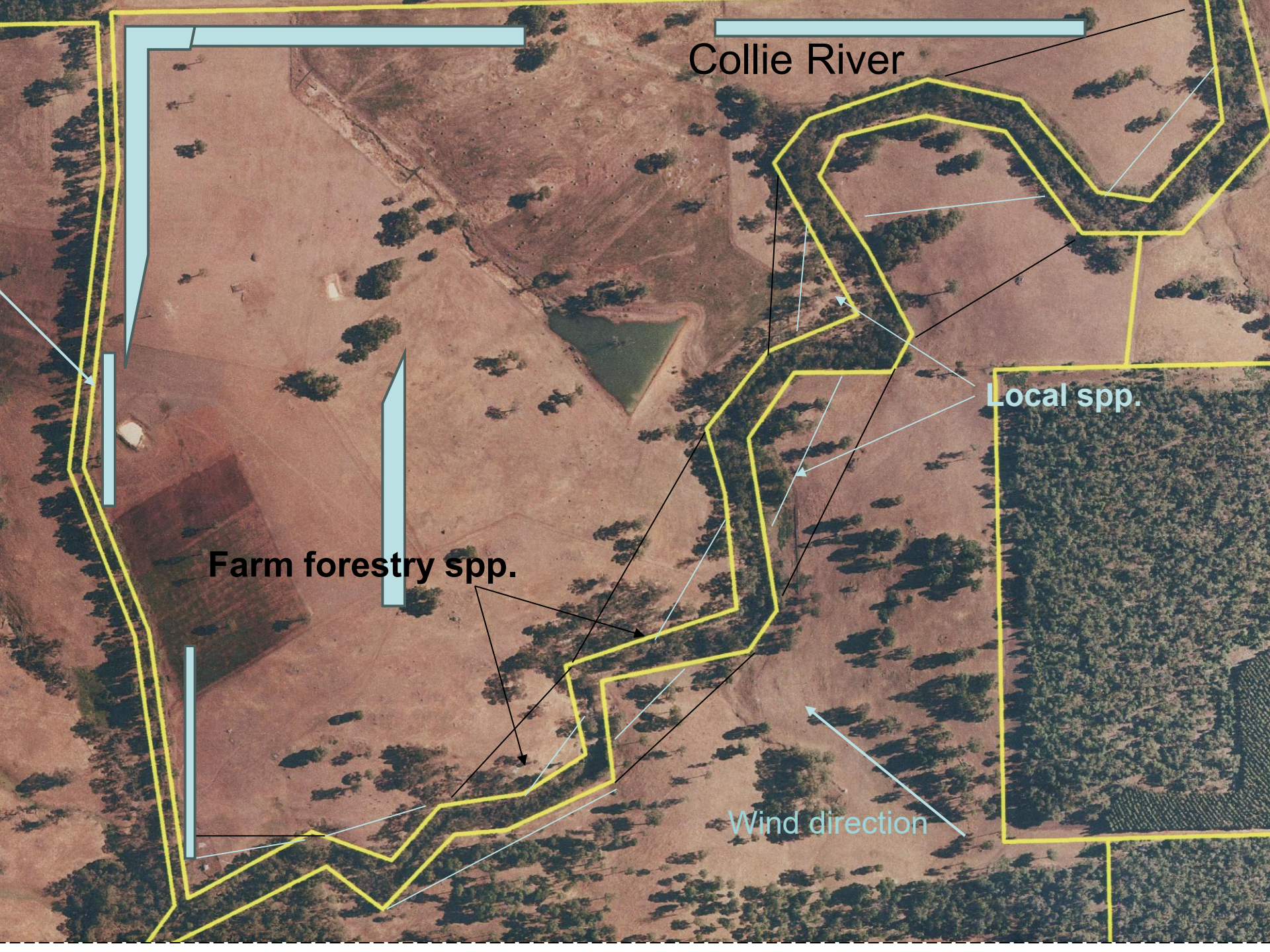
* Talls & med. height
* multi-species
* protection of infrast. on south side
* med. ht spp on north side

Types of windbreaks - “commercial”

Types of windbreaks - “commercial”

Types of windbreaks - “commercial”

Olives on
spud paddock -
* med-height
* single row
* north/south
* dense belt


Collie River
Local spp.
Farm forestry spp.
Wind direction


Thank you