

# Bream soil – red clayey soil in dolerite under dry forest

## Site description

*Occurrence:* Mainly on east coast below 500 m altitude, where mean annual rainfall is in the 600-1000 mm range

*Parent Material:* Deeply weathered dolerite

*Landform:* Rolling land and hills

*Drainage Class:* Well drained

*Vegetation:* Dry sclerophyll forest with *Eucalyptus obliqua*, *Pteridium esculentum*, *Acacia verticillata* and sparse *Pomaderris apetala*



## Distinguishing Soil Properties

*Profile Features:*

- Thin A1 horizon
- Gradational or uniform profiles with clay loam and clayey textures throughout; red colours in subsoils
- Stone content highly variable

*Chemical and physical features*

- Medium total C , low total N and low total P in topsoil (0-30 cm)
- Medium aggregate stability
- Permeability moderate



## Similar soils

- Soil 15.2, Forest Soils of Tasmania - on more stony drier sites (contains *E. amygdalina*) with possibly greater incidence of forest fires
- Soil 15.5, Forest Soils of Tasmania - at higher altitude (under *E. delegatensis* forest); red colours not so pronounced
- Holloway soil (Laffan et al. 1995) - at higher altitude, in northeast Tasmania
- Wielangta soil (Forest soil fact sheet no. 5) - higher P status and nutrients, stronger structure and thicker A1 horizon; under wet forest

## Soil Degradation Potential

FACTOR	RATING OF DEGRADATION POTENTIAL
Erodibility:	Moderate
Compaction and puddling:	Moderate
Mixing:	Moderate
Nutrient depletion:	Moderate
Landslides:	Slight to Moderate
Flooding:	Negligible

## Site Productivity

Low productivity primarily because of low nutrients plus some moisture limitations – will respond well to fertilisation unless soil is very stony

## Soil Management

These soils are suitable for wet-weather logging only when stones are abundant on the soil surface.  
Nutrient status is low because of very low organic matter levels and the thin A horizon - loss of the A horizon by mixing or other soil disturbance or very hot burning may reduce long-term productivity.

## Native Forest Logging and Regeneration

### LOGGING AND CLEARING:

Matting and/or cording on snig tracks may be necessary on sites with few stones as the soils are clayey and prone to rutting and mixing.

### PREPARATION FOR REGENERATION:

Hot burning should be avoided. Disturbance by ground traffic is likely to provide enough sites for adequate germination and regeneration. Alternatively use scarification.

### SILVICULTURAL CONSIDERATIONS:

Favoured silvicultural management is partial logging and not clearfelling. Any burning should be of low intensity. These soils should be separately managed from similar red-weathered soils under wet forest.

## Suitability for Plantations

**Suitable** for plantations provided N and P fertilisers are applied.

**CLEARING:** Care must be taken to retain the surface soils.

**CULTIVATION:** Ripping to break up firm subsoils may be beneficial.

**FERTILISER:** N and P fertiliser is required at planting and secondary fertilisation is likely to be beneficial.

## Profile

Author: MDL and PDM

Date: 22.9.00

Location: On north side of old track c. 80 m east of viewing platform on Wielangta Road

Map reference: Sheet 5626 (Kellevie) 682 683

Landform: Upper midslope of hillside 250 m long

Vegetation: *Eucalyptus obliqua*, *Pteridium esculentum*, *Acacia verticillata*, *Pomaderris apetala* (sparse), *Goodenia ovata*. Bare ground and surface boulders

Parent material: Strongly weathered dolerite

Drainage: Well drained

Slope: 18°

Aspect: North

Altitude: 305 m

Photographs: PDM 10-00-22 (site); PDM 10-00-21 (profile)

Australian Soil Classification: **Red Mesotrophic Ferrosol\***

A1	0-3 cm	Dark brown (7.5YR3/2) (moist) clay loam; weak strength; weak 1-3 mm granular structure; many fine roots; NaF 0/5.
B1	3-35 cm	Dark brown (7.5YR3/4) (moist) light to medium clay; 7% subrounded dolerite gravels 5-10 cm diameter; weak strength; moderate 10-20 mm blocky structure, breaking to 3-5 mm blocky; many fine and common coarse roots; NaF 1/5.
B2	35-60 cm	Yellowish red (5YR4/6) (moist) medium clay; 5% strong brown (7.5YR6/8) mottles 20-50 mm diameter (strongly weathered dolerite); 2% subrounded dolerite gravels 5-10 cm diameter; firm strength; moderate 10-20 mm blocky structure; common roots; NaF 0/5.
B3	60-90+cm	Yellowish red (5YR5/6) (moist) medium clay; 40% strong brown (7.5YR6/8) mottles 10-600 mm diameter (strongly weathered dolerite gravels); firm strength; moderate 10-20 mm blocky structure; many fine and common coarse roots; NaF 0/5.

## Laboratory analyses

Horizon	Depth (cm)	pH (H <sub>2</sub> O)	Total C (%)	Total N (%)	C/N	Colwell P (mg/kg)	Total P (mg/kg)	P retn. (%)	SO <sub>4</sub> -S (mg/kg)	Water-stable aggregates (%)
	<b>0-30</b>	5.3	2.07	0.08	26	3	84	55	25	<i>n.d.</i>
A1	0-3	6.0	6.33	0.21	30	6	154	51	5	20
B1	3-35	5.3	1.61	0.06	26	2	79	53	29	59
B2	35-60	5.3	0.91	0.05	19	<i>n.d.</i>	71	59	80	61
B3	60-90+	5.3	0.65	0.04	18	<i>n.d.</i>	73	66	37	63

Horizon	Depth (cm)	Exch. Ca (cmol(+)/kg)	Exch. Mg (cmol(+)/kg)	Exch. K (cmol(+)/kg)	Exch. Na (cmol(+)/kg)	CEC (cmol(+)/kg)	BS (%)
	<b>0-30</b>	0.86	0.97	0.25	0.18	12.8	18
A1	0-3	11.85	3.09	0.58	0.25	24.8	63
B1	3-35	1.21	1.63	0.22	0.19	13.8	24
B2	35-60	1.55	3.66	0.47	0.33	21.3	28
B3	60-90+	1.99	7.88	0.40	0.55	33.1	33

\* Citrate-dithionite Fe = 6.7% in B2 horizon.

Analytical methods were those of Blakemore et al. (1987), Laffan et al. (1996) and Rayment and Higginson (1992), with variation of methods for C, N and SO<sub>4</sub>-S (details available from P. D. McIntosh, Forest Practices Board).

## References

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