

Colgrave soil – gradational or uniform clayey soil under wet forest

Site description

Occurrence: In northern Tasmania on lowland sites where mean annual rainfall is c.1000 mm or more

Parent Material: Weathered mudstone, siltstone and slate (Mathinna beds)

Landform: Rolling and hilly land

Drainage Class: Well drained and moderately well drained

Vegetation: Wet and damp eucalypt forest with *Eucalyptus obliqua*, *E. viminalis*, *E. regnans*, *Pomaderris apetala*, *Olearia argophylla* and *Acacia dealbata*



Distinguishing Soil Properties

Profile Features:

- Silty loam A1 horizon over yellowish-brown or yellowish-red silty clay loam or clayey subsoils
- Thin bleached layer may be present
- Moderate or strong peds throughout profile

Chemical and physical features

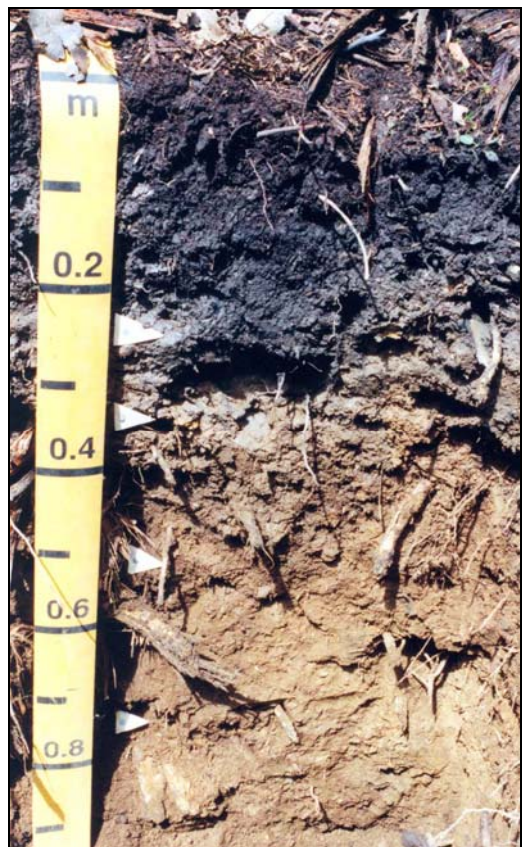
- High to very high total C, P and N in A1 horizon
- Medium to high exchangeable Ca and Mg levels in upper horizons (0–55 cm)
- Permeability – moderate

Similar soil

- Maweena soil (Grant et al. 1995b: Forest Soils of Tasmania, Soil 10.2) – gradational soil under wet forest; formed in fine-grained Mathinna sandstone

Previous descriptions

Grant et al. (1995a, b); Laffan et al. (1995)



Soil Degradation Potential

FACTOR	RATING OF DEGRADATION POTENTIAL
Erodibility:	Moderate (moderate to high in soils with bleached subsurface layers >10 cm thick)
Compaction and puddling:	Moderate
Mixing:	Moderate
Nutrient depletion:	Low
Landslides:	Slight
Flooding:	Negligible

Site Productivity

High productivity

Soil Management

The soils are resistant to degradation, but wet weather logging should be avoided.

Native Forest Logging and Regeneration

LOGGING AND CLEARING:

Cording and matting should be used.

PREPARATION FOR REGENERATION:

Scarification or burning is required to prepare a seedbed.

SILVICULTURAL CONSIDERATIONS:

Normal Code provisions for clearfell and burning apply.

Suitability for Plantations

Highly suitable for plantations.

CLEARING: Dozer clearing must be done using a rake blade.

CULTIVATION: The advantages of ripping may be small, because of good soil structure (peds) throughout the profile.

FERTILISER TREATMENT: Fertilising of planted seedlings is required. Secondary fertilisation is likely to be needed on soils with thin topsoils (A1 thickness <20 cm) in which nutrient levels are expected to be only moderate.

Profile

Authors: M. D. Laffan and P.D. McIntosh

Date: 21 October 2003

Location: The Glen, off Den Road

Map reference (AGD): Sheet 8315 (Pipers) 505295 5444295

Landform: Toeslope of hillside 100 m long

Vegetation: Wet sclerophyll forest with *Eucalyptus obliqua*, *Pomaderris apetala*, *Olearia argophylla* and *Acacia dealbata*

Parent material: Colluvium of siltstone, mudstone and slates from Mathinna beds.

Drainage: Moderately well drained

Slope: 18°

Aspect: West

Altitude: 210 m

Photographs: PDM 11-03-7 (site); 11-03-2 (profile)

Australian Soil Classification: **Brown Mesotrophic Humose Dermosol**

A1	0–25 (15) cm	Black (10YR2/1) (moist) heavy silty loam; 40% angular siltstone gravels 2–5 cm diameter; very weak strength; moderate polyhedral peds 20 mm diameter; many fine and medium roots; NaF 0/5.
A2g	25–35 cm	Dark greyish brown (10YR4/2) (moist) silty clay loam; 40% brown (10YR4/3) mottles 10 mm diameter and 20% dark grey (10YR4/1) inclusions introduced by earthworms; 35% angular siltstone gravels 5–10 cm diameter; firm strength; moderate subangular blocky peds 20 mm diameter; common medium roots; NaF 2/5.
B1	35–55 cm	Dark yellowish brown (10YR4/4) (moist) silty clay loam; 20% angular siltstone gravels 5–10 cm diameter; weak strength; strong polyhedral peds 5–10 mm diameter; common medium and few coarse roots; NaF 3/5.
B2	55–80 cm	Dark yellowish brown (10YR4/6) silty clay loam; 30% angular siltstone gravels 5–10 cm diameter; weak strength; strong polyhedral peds 5–10 mm diameter and granular peds 2–5 mm diameter; common medium and few coarse roots; NaF 4/5.
BC	80–95+cm	Dark yellowish brown (10YR3/4) silty clay loam; 65% angular siltstone gravels 5–10 cm diameter; weak strength; strong granular peds 2–5 mm diameter; common medium roots; NaF 4/5.

Horizon	Depth (cm)	pH (H ₂ O)	Total C (%)	Total N (%)	C/N	Total P (mg/kg)	Colwell P (mg/kg)	P retn. (%)	SO ₄ -S (mg/kg)	Water-stable aggreg. (%)
A1	0–25	4.9	13.0	0.73	18	272	37	0	5	79
A2g	25–35	5.2	4.4	0.26	17	171	9	12	4	20
B1	35–55	5.5	2.8	0.15	18	181	5	62	32	75
B2	55–80	5.5	2.4	0.12	20	219	n.d.	75	20	84
BC	80–95	5.4	3.9	0.18	22	212	n.d.	88	20	n.d.

Horizon	Depth (cm)	Exch. Ca (cmol(+)/kg)	Exch. Mg (cmol(+)/kg)	Exch. K (cmol(+)/kg)	Exch. Na (cmol(+)/kg)	CEC (cmol(+)/kg)	BS (%)
A1	0–25	18.5	4.18	0.55	0.18	39.0	60
A2g	25–35	8.13	3.05	0.44	0.08	21.1	55
B1	35–55	4.87	3.17	1.31	0.13	23.4	40
B2	55–80	2.58	1.67	0.91	0.28	20.0	27
BC	80–95	2.25	1.47	0.85	0.56	30.8	17

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 SO₄-S (details available from P. D. McIntosh, Forest Practices Board).

References

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Citation

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