



# Pangola grass

## Scientific name(s)

*Digitaria eriantha* (formerly *Digitaria decumbens*)

## Strengths

- Palatable, productive, persistent
- Tolerant of heavy grazing, waterlogging, drought and fire
- Moderately tolerant of soil salinity and high aluminium.
- Spreads by runners and competes strongly with weeds
- Maintains good nutritive value even at maturity

## Limitations

- Vegetative planting only
- Recorded as having caused big head in horses
- Limited cool season growth
- Susceptible to pangola stunt virus and rust.

## Plant description

**Plant:** A mat-forming, creeping perennial, spreading by runners (stolons) that root at the nodes.

**Stems:** The stolons are often reddish in colour, and tend to "loop" across the ground. Flowering stems are straw-coloured and grow to about 1.2m tall.

**Leaves:** Largely hairless, tapering, 10 - 25 cm long and 2 - 7 mm wide.

**Seedhead:** The flowering head extends above the leaves, with one or two rings of radiating branches at the top (cf. rhodes grass), each branch about 10cm long.

**Seeds:** Although pangola produces "seedheads", it produces little (claimed 0.001%) or no viable seed.

## Pasture type and use

Used as permanent pasture, mostly for beef production. It makes excellent hay provided it is leafy and succulent when cut. It is well-suited to irrigation.

## Where it grows

### Rainfall

Pangola is drought-tolerant, surviving in areas with average annual rainfall as low as 800mm. However, it is only really productive with over 1,000mm, and can still be useful in areas receiving over 3,000mm. It can withstand several months of waterlogging, but not sustained flooding.

### Soils

It is best adapted to moist, well-drained soils, from sands to clays, but not very heavy black clays. While it will grow on black self-mulching clays, establishment is difficult. It persists on infertile soils, but requires at least moderately fertile soil for production. Pangola is adapted across a broad pH range, from 4.5 to 8.5, and is moderately tolerant of aluminium in the soil (to

34% saturation of CEC). It is also moderately tolerant of soil salinity, and is not greatly affected by salt spray near the coast.

### Temperature

Tops are burnt by frost, although stands recover from crowns along the stolons.

## Establishment

### Companion species

Grasses: rhodes grass (for early cover)

Legumes: lotononis<sup>1</sup>, greater lotus<sup>1</sup>, creeping vigna<sup>1</sup>, caribbean stylo<sup>2</sup>, cassia<sup>1,2</sup>, american jointvetch<sup>1,2</sup>, leucaena<sup>1,2</sup>, calopo<sup>2</sup>, hetero<sup>2</sup>, centro<sup>2</sup>

<sup>1</sup> Subtropics and upland tropics

<sup>2</sup> Tropics

Because of its highly competitive nature, pangola tends to choke out most legumes, particularly if the grass is allowed to become tall and rank.

### Sowing/planting rates as single species

As pangola does not produce viable seed, it must be established using cuttings (stolon pieces), each comprising at least 3 nodes. Cuttings are obtained from a reasonably bulky; nursery area prepared for the purpose, and harvested using suitably adjusted mechanical equipment such as a forage harvester. These are spread onto the surface of a well prepared seedbed and lightly disced to cover. Rolling with a tyre or steel roller helps to ensure good contact between cuttings and soil, and reduces moisture loss. The planting density should be approximately one cutting per square metre, which is equivalent to about 3.5 - 7 cu m/ha of uncompacted harvested material.

### Sowing/planting rates in mixtures

Not applicable

### Sowing time

Pangola should be planted during a period when there is a high probability of follow-up rain for at least a week after planting. Although cuttings planted into a well-prepared seedbed and rolled to reduce moisture loss are fairly resilient, a period of hot dry days can dehydrate and kill the cuttings. In most parts of northern Australia, this will be in January or February, although there can be difficulty with machinery on cultivated, wet ground at this time of year.

### Inoculation

Not applicable

### Fertiliser

On fertile soils, there is usually sufficient nitrogen released during cultivation to stimulate development of the stand. On less fertile soils, 50 - 100 kg/ha of nitrogen applied 3 to 4 weeks after planting, with a similar follow-up application 4 to 6 weeks later, will improve the rate of stand development. Other nutrients should be applied as indicated by soil analysis or local best practice. e.g. superphosphate at 100 - 200 kg/ha.

## Management

### Maintenance fertiliser

Although pangola can persist at low levels of available soil nitrogen, it requires at least 100 kg/ha of nitrogen each year for higher levels of production. This should be applied according to the needs of the production system e.g. to stimulate early- or late-season growth. Other nutrients should be applied as required e.g. superphosphate at 50 - 100 kg/ha every one or two years. In hay production systems, significant amounts of nutrient are removed from a paddock, which should be reflected in the maintenance fertiliser program e.g. 10 t/ha of hay may remove 150 - 200 kg/ha of nitrogen, 15 to 20 kg/ha of phosphorus, and 100 - 150 kg/ha of potassium, or the equivalent of about 400 kg of urea, and 200 kg/ha each of superphosphate and muriate of potash.

### Grazing/cutting

The pasture should be only lightly grazed initially, until pangola plants have developed a good root system, and adequate ground cover achieved. Once established, pangola pastures can productively carry, on average, 1 - 2 beasts/ha, if a sound fertiliser program is followed.

### **Seed production**

Little or no viable seed is produced.

### **Ability to spread**

Once pangola grass is established it spreads rapidly by stolons. Stolons can only be moved from place to place through human activity or inadvertent hoof collection and distribution by livestock.

### **Weed potential**

Pangola poses little or no weed threat, because of the absence of viable seed.

### **Major pests**

Crab grass leaf beetle adults and larvae can severely damage young leaf tissue during the early part of the growing season. Damage usually occurs as small brown patches that, in extreme cases, can cover a paddock, giving the impression at a distance, of frost damage. The small beetles are often quickly controlled by natural predators. Pangola grass aphids found in Queensland and New South Wales can greatly reduce productivity in some seasons.

### **Major diseases**

The fungal disease, rust, may be a problem in wet years, particularly towards the end of the season, when the small brown powdery spots (pustules) form on the leaves, coalescing and yellowing or killing the leaves. In relatively recent years, another disease, caused by pangola stunt virus has appeared. Symptoms are stunting and slow growth, distorted seed heads, yellowing, and plants becoming more susceptible to leaf rust in the autumn to winter period. Alternative species should be sought in affected areas.

### **Herbicide susceptibility**

No information. Probably susceptible to glyphosate.

## **Animal production**

### **Feeding value**

As with all tropical grasses, the feeding value of pangola grass is very dependent on the stage of growth and level of fertilisation, young growth having much higher protein and digestibility levels than older growth. For example, crude protein levels may be as low as 3% or as high as 25%, but commonly about 12%. Phosphorus concentration can be too low for livestock on soils with low phosphorus levels. Dry matter digestibility varies from 45 - 70%. Pangola grass has relatively high concentrations of sodium in its tissues, compared with many other tropical grasses.

### **Palatability**

Pangola grass is very palatable when young, but tends to be avoided when the grass becomes old and stemmy.

### **Production potential**

As with feeding value, dry matter (DM) production is very dependent on the level of nitrogen fertiliser applied. Without fertiliser, yields could be lower than 5 t/ha DM, which could be more than doubled with 100 kg/ha N. In suitable environments, pangola can produce better animal production performance in terms of both live weight gain per head and per hectare than most other introduced pasture grasses.

### **Livestock disorders/toxicity**

Cases of "Big Head" disease (nutritional hyperparathyroidism) have been recorded in horses grazing pangola grass pastures. While it is less common than in horses grazing setaria, buffel grass or kikuyu, horse-owners need to be aware of the potential problem.

## **Cultivars**

**Note:**

There is only one type of pangola grass available in Australia. It has not been given a cultivar name.

### **Further information**

Tropical Forages database (SoFT) - Pangola grass  
Pastures: Mackay Whitsunday region

### **Acknowledgements**

Harry Bishop, formerly DPI&F, Mackay, Qld. "Pastures: Mackay Whitsunday region".

Arthur Cameron, DPIFM, NT "Pangola Grass" Agnote E35

### **Author and date**

Bruce G. Cook

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