

# Scientific name

*Paspalum atratum* Swallen

# Synonyms

*Paspalum plicatulum* var. *robustum* Hack  
*Paspalum* sp. aff. *P. plicatulum*

# Family/tribe

Family: *Poaceae* (alt. *Gramineae*) subfamily: *Panicoideae* tribe: *Paniceae* group: *Plicatula* .

# Common names

atra paspalum (USA); atratum (southeast Asia); capim-pojuca (Brazil); pasto pojuca (Venezuela).

# Morphological description

A leafy upright [perennial tussock grass](#), usually less than 1.0 m tall, to 2 m when in flower. Leaves to >2.5 cm wide, shiny and brittle, even when mature; leaf margins scabrous; leaf hairiness varies with [provenance](#). Seed borne in a simple [panicle](#) to 26 cm long comprising up to 20 racemes, the lower ones to 14 cm long. Spikelets about 3 mm long and 2 mm wide. 250,000-450,000 seeds/kg.

# Distribution

Native to:

*South America*: Brazil (Goias, Mato Grosso, and Minas Gerais states), Bolivia (Santa Cruz). In the wild, it generally grows in low places with a high water table, which are subject to [waterlogging](#) and periodic flooding during summer. It does not grow in permanently inundated areas.

Naturalised in:

Now used as a sown [forage](#) or hedgerow in areas extending from near the equator (southeast Asia) to the subtropics of Australia, USA and South America.

# Uses/applications

Used as a long-term [pasture](#) in the open and under trees. Upright [habit](#) and ease of cutting make it useful in cut-and-carry systems, although the sharp leaf edges can cause discomfort to the handler. Popular as a hedgerow for erosion control but tends to compete more vigorously

with adjacent crop rows than does vetiver [grass](#) (*Vetiveria zizanioides*). Unlike vetiver [grass](#), it can also be fed to animals. Shows early promise for [hay](#) making.

## Ecology

### Soil requirements

Successful on soils ranging from sands to clays, and can tolerate poorly drained, acid, low fertility conditions. Responds to improved nitrogen fertility.

### Moisture

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Mostly occurs in areas with [rainfall](#) 1,500-2,000 mm/yr. In cultivation, it will persist with about 1,100 mm/yr, but is best with over about 1,500 mm. Prefers moist, well- or poorly-drained soils. Although not as [drought](#) tolerant as *Brachiaria decumbens* or *B. brizantha*, *P. atratum* survives dry conditions reasonably well. Very tolerant of flooding but does not grow in permanent water.

### Temperature

Occurs between about 13.9°S in Bolivia and 20°S in Brazil, to 600 m [asl](#). These areas have an average [annual temperature](#) of about 23°C. However, it has adapted to areas with average [annual](#) temperatures as low as 20°C, but is best grown between about 22 and 27°C. *P. atratum* is primarily a warm season [grass](#), having limited cool season growth. Tops are killed by frost, but plants recover quickly with onset of warm conditions.

### Light

Moderate to good shade tolerance - useful in [agroforestry](#) .

### Reproductive development

Flowering in the first year may be minimal, but thereafter, commences early April (southern hemisphere) or October (northern hemisphere) in the subtropics, and earlier in lower latitudes. Within 5-10° of the equator, flowering may cease altogether. Flowering is disrupted if the stand is cut or grazed low within 2 months of commencement of flowering, destroying the elongating [apical meristem](#) . Seed tends to be shed as soon as it matures (shatters).

### Defoliation

Tolerant of low grazing and regular cutting, although best results obtained from more lenient management. Very easy to cut with scythe or mower.

# Fire

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Fire is not normally an issue where *P. atratum* is grown, but on the rare occasion that stands may be burnt, plants recover rapidly.

# Agronomy

[Guidelines for the establishment and management of sown pastures.](#)

## Establishment

Reports of [dormancy](#) levels in fresh seed vary from low to quite high, but, even with dormant seed, germination reaches acceptable levels after 3-4 months. Germination of fresh seed can be improved from about 20% to nearly 100% by removal of the [lemma](#) and [palea](#). Seed has a very limited "shelf life" under ambient conditions, and may remain [viable](#) for less than a year. Seed stored for several years should be stored at low [temperature](#) and low relative humidity. Seed is normally sown at 2-5 kg/ha, either broadcast or in 0.5-1 m rows. Establishes rapidly from seed, or from rooted tillers.

## Fertiliser

Survives at low fertility but responds to nitrogen applications of the order of 150-200 kg/ha/yr N. Other deficiencies should be corrected.

## Compatibility (with other species)

Can compete with aggressive species such as *Paspalum notatum* cv. Pensacola, even under heavy grazing. Due to its moderate shade tolerance, it can be grown under trees.

## Companion species

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Grasses: Best not planted with other grasses, although may combine with *Setaria sphacelata* in some situations.

Legumes: *Arachis pintoi*, *Calopogonium mucunoides*, *Centrosema acutifolium*, *Desmodium heterocarpum* ssp. *ovalifolium*, *Pueraria phaseoloides*.

## Pests and diseases

In Florida, armyworms can be a problem later in the [growing season](#), and some mole cricket damage has occurred. A leaf spot (*Helminthosporium* sp.) has been recorded on older leaves. Severe leaf spot has been noted in Brazil. Spittlebug has not been a problem. No record of nematode damage.

## Ability to spread

No vegetative spread, but will spread by seed if allowed to mature late in the season. However, if grazed or mowed within 100 days of flowering, seed set is minimised.

## Weed potential

[P. atratum](#) has been assessed as a weed in some areas due to the misconceptions that it is a "water [grass](#)" and that it develops a soil seed bank. It does not grow in inundated situations and seed does not survive any length of time in the soil.

## Feeding value

### Nutritive value

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[IVDMD](#) from 50-68%, mean [CP](#) 11%.

### Palatability/acceptability

Well eaten by cattle, buffaloes, horses, fish, and pigs.

### Toxicity

No record of anti-nutritional factors.

## Production potential

### Dry matter

Yields commonly 10-15 and up to 26 t/ha/yr DM.

### Animal production

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Stocking at 6 yearlings/ha, can achieve 0.6 kg/day [LWG](#) over a 168-day season. Higher per head gains have been achieved when grown with a [legume](#).

## Genetics/breeding

[Tetraploid](#) ( $2n = 4x = 40$ ), [apomict](#).

# Seed production

There is little flowering in the first year in plants established after June (northern hemisphere) or January (southern hemisphere). In the second year, stock should be removed or a cleaning cut given at least 100 days prior to harvest to avoid damage to elongating [apical meristem](#). Seed crops are usually ready for harvest about 4 weeks after flower emergence. Can produce up to 230 kg/ha of seed, but in practice, a harvest of 100 kg/ha of dried and cleaned seed is realistic. Crops should be monitored closely to pick the precise time for harvest, since ripe seed is readily dislodged from the head. Well-fertilised seed crops are bulky and tend to lodge (fall over) making harvesting difficult. Seed should be dried to, and maintained at, <10% moisture content if it is to stay [viable](#) for any period of time.

Hand-harvested, slow-dried seed of [Paspalum atratum](#) shows normal rates of deterioration under normal storage, but combine-harvested and/or rapidly dried seed has a relatively short shelf life. In the tropics, seed is dried slowly in the shade to preserve its [viability](#). While similarly structured, related seeds are prone to some threshing damage and some fast-drying damage, this [grass](#), like the closely related [P. plicatum](#), is particularly sensitive. Machine-harvested seed should therefore be dried comparatively slowly to low moisture and then maintained at that level. Further, seed produced in the upland tropics tends to contain an unusually high proportion of immature caryopses, resulting in lower than normal vital quality. This generally happens as a consequence of slow [caryopsis](#) development when growing conditions are sub-optimal, in this case probably because temperatures during crop development are marginally too low for production of the highest-quality seed. [Abscission](#) then occurs in a high proportion of spikelets before maturation is complete, leading inevitably to low mature [caryopsis](#) counts irrespective of harvest methods. Immature caryopses of all species are of low vigour and [viability](#) and have a short life expectancy.

## Herbicide effects

Seedlings are damaged by 2,4-D, but not by dicamba at 0.5 kg/ha AI. Pre-emergence applications of clomazone, fluometron, diuron, imazetnapyr, metribuzin, trifluralin), and norflurazon prevent establishment from seed.

Mature stands can be largely controlled using glyphosate at 3-4 kg/ha AI. If spray water contains high concentrations of antagonistic calcium and magnesium salts (see herbicide label), the addition of ammonium sulphate at 10 kg/ha, with glyphosate at 2 kg/ha AI, may improve kill.

## Strengths

- Easy to sow and quick to establish.
- Adapted to wet, acid soils.
- Tolerant of flooding.
- Palatable to cattle, horses and sheep.
- Tolerates close grazing.

## Limitations

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- Relatively short grazing season.
- Limited to moist situations.
- Unpalatable when mature.
- Seedlings susceptible to 2,4-D.

## Other comments

## Selected references

Kalmbacher R.S., Brown W.F., Colvin D.L., Dunavin L.S., Kretschmer A.E., Jr., Martin F.G., Mullahey J.J. and Rechcigl J.E. (1997) 'Suerte' atra paspalum: Its management and utilization. *Gainesville: Florida Agric. Exp. Stn. Circular S-397*. Univ. of Florida.

Kalmbacher R.S., Martin F.G. and Kretschmer A.E., Jr. (1997) Performance of cattle grazing pastures based on [Paspalum atratum](#) cv. Suerte. *Tropical Grasslands*, **31**, 58-66.

Kalmbacher, R.S., West, S.H. and. Martin F.G (1999) Seed [Dormancy](#) and aging in atra paspalum. *Crop Science*, **39**, 1847-1852.

Quarín, C.L., Valls, J.F.M. and Urbani, M.H. (1997) Cytological and reproductive behavior of [Paspalum atratum](#) , a promising [forage grass](#) for the tropics. *Tropical Grasslands*, **31**, 114-116.

## Internet links

<http://rcrec-ona.ifas.ufl.edu/cirs-397.html>

<http://crop.scijournals.org/cgi/content/full/39/6/1847>

## Cultivars

Cultivars	Country/date released	Details
'Cambá FCA*' (BRA-009610)	Argentina	
'HiGane' (ATF 2013, BRA-9610)	Australia	
'Pojuca' (BRA-009610,	Brazil	

VSW 9880 (collection no.))		
'Suerte' (IRFL 658)	USA (1995)	Early confusion about origin. Now confirmed same as BRA-009610.
'Terenos' (BRA-009610)		
'Ubon' (BRA-009610)	Thailand (1997)	Valuable <a href="#">forage</a> for wet, waterlogged, low fertility, acid soils in parts of northeast Thailand. Has produced up to 72% more dry matter on waterlogged soils than <a href="#">Brachiaria ruziziensis</a> in the second season.

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**Note:** All cultivars are derived from or similar to BRA-009610, a largely [glabrous](#), broad-leaved [provenance](#) from the vicinity of Campo Grande in Brazil.

## Promising accessions

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Promising accessions	Country	Details
None reported.		