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# *Cassia rotundifolia* Pers.

## Leguminosae

### Synonyms

*Cassia bifoliolata* D.C.; *C. fabiginifolia* H.B.K.; *C. monophylla* Vell.;  
*Chamaecrista rotundifolia* (Pers.) Greene.

### Common names

Roundleaf cassia (Australia).

### Description

A herbaceous, subwoody, short-lived perennial or self-regenerating annual legume. Stems prostrate to semi-prostrate, 30 to 110 cm long, radiating from the root-stock, pubescent to subglabrous. Leaves bifoliate, small. Stipules lanceolate-cordate, 4 to 11 mm long, ciliate or glabrous, up to 1 cm long. Petiole short, 3 to 8 mm long, not exceeding the stipule, not eglandular, pubescent like the stems. Leaflets asymmetrically subrotund to broadly obovate, rounded apically, 0.5 to 3 cm long, sometimes ciliate, without epetiolulates. One to two flowers, axillary, small, yellow. Pedicels more or less filiform, 1.5 to 3.5 cm long, longer than the leaves. Sepals lanceolate, usually ciliate, up to 5 mm long. Petals obovate, about 6 mm long, glabrous, sessile. Fertile stamens five, somewhat unequal, filaments very short. Anthers linear-oblong, up to 2 mm long, essentially glabrous and erostrate, dehiscent by paired terminal pores. Ovary pubescent. Pods linear, flat, 1.5 to 4 cm long and 3 to 5 mm wide, elastically dehiscent, blackish brown when ripe. Seeds obliquely transverse in pod, rectangular, flattened (Woodson and Schery, 1951; Adams, 1972; R.W. Strickland, personal communication).

### Distribution

Native to Florida, United States and Mexico, through Central America south into Brazil as far as Uruguay, being widespread in northern South America. Also found in Cuba, Puerto Rico and Jamaica. Naturalized in parts of West Africa. Normally occurs in savannah habitats, especially with sandy soils (Woodson and Schery, 1951; Adams, 1972).

### Season of growth

The growth habit is indeterminate and growth will continue after flowering has begun for as long as temperatures and soil moisture conditions are suitable.

### Rainfall requirements

Early-flowering lines will grow with as little as 500 mm annual rainfall, although more than 600 mm is desirable in Queensland, Australia (R.W. Strickland, personal communication).

### Tolerance of flooding

In studies by Whiteman et al. (19254), cv. Wynn was in the least tolerant of four groups into which the 17 commercial legumes tested under laboratory conditions were divided. This group died within seven to ten days, did not develop any adventitious roots and lost all nodules when flooded.

### Soil requirements

Suited to a wide range of soils, but best adapted to light-textured surface soils and not well adapted to clay soils, especially if inclined to become waterlogged. In general, soil requirements are similar to those of siratro (R.W. Strickland, personal communication).

### Ability to spread naturally

Natural spread is quite rapid on suitable soils, even under heavy grazing

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### **Land preparation for establishment**

Under normal conditions, fully prepared seed beds should be considered, but cv. Wynn has some ability to establish and spread into native spear grass (*Heteropogon contortus*) pastures from minimal seed beds. Seedling survival under harsh conditions at Narayen, in south-eastern Queensland, was less than for *Stylosanthes* spp., though it flowered and seeded in the first year. Townsville stylo was the only other legume to do so. For seed production, a fully prepared seed bed and a planting rate of 4 to 5 kg./ha are recommended (D.S. Loch, personal communication).

### **Number of seeds per kg.**

200 000 to 470 000 (cv. Wynn 253 000).

### **Percentage of hard seed**

Usually greater than 90 percent in freshly harvested samples .

### **Seed treatment before planting**

Seed should be mechanically scarified to reduce the hard-seed level.

### **Nutrient requirements**

The only recommendations available at this stage are for seed production stands, to which 250 kg./ha Mo superphosphate and 100 kg./ha of m. muriate of potash are applied at planting in coastal south-eastern Queensland, with 125 kg./ha superphosphate and possibly 50 kg./ha of muriate of potash as annual maintenance dressings. Application of Mo at c. 100 g/ha every three years is also tentatively recommended (D.S. Loch, personal communication) .

### **Tolerance to herbicides**

For seed production stands, trifluralin can be used before planting, while bentazone (3 litres/ha of 48 percent product) and dinoseb (4 litres/ha of 20 percent product) appear safe for post-emergence use. Acifluorfen, 2,4-D and 2,4-DB have caused crop damage on cv. Wynn and should not be used. Fluazifop (1 to 2 litres/ha on 21.2 percent product) appears likely to control grass weeds in seed crops (D.S. Loch, personal communication).

### **Response to defoliation**

Cv. Wynn is essentially prostrate; it therefore seems likely that it will withstand fairly heavy grazing, certainly heavier grazing than siratro.

### **Grazing management**

*C. rotundifolia* is fairly tolerant of a wide range of management regimes and styles. However, care will need to be taken that vigorous, tall-growing grasses and weeds are not allowed to dominate the lower-growing cassia.

### **Dry-matter and green-matter yields**

Annual dry-matter yields of more than 7 000 kg./ ha have been recorded at Beerwah and Gatton, those at Beerwah with cv. Wynn being double the yields of greenleaf desmodium (*Desmodium intortum*) and siratro in spring and early summer. Later in the season, yields were equal to those of the standard cultivars (R.W. Strickland, personal communication).

### **Toxicity**

Six accessions of *C. rotundifolia* have been tested on a rat colony at the Commonwealth Scientific and Industrial Research Organization (CSIRO), Samford, south-eastern Queensland, and showed no signs of toxicity. Live-weight gains and digestible dry-matter intakes up to 14 percent higher than with the lucerne (*Medicago sativa*) controls have been recorded. Seeds fed gave approximately 80 percent of the weight gains of the control, autoclaved soybean meal (R.W. Strickland, personal communication).

### **Seed harvesting methods**

*C. rotundifolia* is suitable for normal, direct-header harvesting. Using this method, two harvests per year should be possible. Unless flowering ceases owing to moisture stress, timing of each harvest does not seem critical, as crops flower continuously and standing seed yield will remain near the peak for prolonged periods, the loss of seed from shattering pods being offset by new pods entering the system (D.S. Loch, personal communication).

### **Seed yield**

At present there is no commercial experience, but yields in excess of 800 kg./ha from two harvests in one season have been obtained at Beerwah from small plots. Lower yields of only 200 kg./ha, from single harvests at Grafton, New South Wales, and Narayen, have also been recorded (R.W. Strickland, personal communication).

### **Cultivars**

The only cultivar released to date is Wynn, derived from introduction CPI 34721, from Valinhos in Brazil. Released by the Queensland Herbage Plant Liaison Committee in August 1983, it is an early-flowering type, reaching peak flowering in January. The CSIRO collection can be divided into four maturity groups, the latest not flowering until April/May in southern Queensland and unlikely to complete seed set before the onset of frosts in that environment (R.W. Strickland, personal communication). It is likely that a mid-season type will also be released.

### **Diseases**

To date, the only known disease attack was a minimal leaf spotting caused by *Pleospora* sp. at Gympie, Queensland. This is unlikely to cause any concern under grazing conditions.

### **Main attributes**

With widespread adaptation to lighter-textured, more acid soils and a fair tolerance to heavy grazing, cv. Wynn appears likely to complement siratro in southern Queensland and possibly to extend into somewhat drier country.

Restriction to lighter-textured soils.

### **Rhizobium requirements**

It does not require specific rhizobia, nodulating readily with native rhizobia in Queensland soils.

## *Cassia rotundifolia*

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*Cassia rotundifolia* showing leaves, flowers, and seed pods in varying stages of maturity

Photo: Tropical Forage Legumes, FAO, 1988