

GLYCINE

Neonotonia wightii

Fabaceae

ECHO® PLANT INFORMATION SHEET

Origin

Glycine occurs natively in tropical portions of Africa and Asia. It is widespread in Ethiopia and other portions of East Africa, India and Indonesia. Many Glycine varieties have been introduced elsewhere in the tropics and subtropics as pasture legumes, particularly in Australia and Brazil.

Uses

Glycine is a productive nitrogen-fixing legume often grown mixed with pasture grasses or in pure stands as a hay or silage crop. In Kenya, Glycine added 180 kg/ha of nitrogen to a pasture for the first five years after sowing and 110 kg/ha for the next four years. Glycine frequently is grown with tree crops as a cover crop to suppress weed growth and improve soil nitrogen supply. It is a useful erosion control species on hillsides and along stream banks.

Common Names

- Portuguese
 - Soja Perene

Cultivation

Like most tropical pasture legumes, glycine thrives in warm tropical regions having an average temperature of 30° C or higher. The cultivated variety 'Cooper' has an optimum daytime temperature of 27° C with a nighttime optimum of 22° C. Glycine thrives in climates receiving 30-70 in (760-1800 mm) of rainfall. The Cooper variety is more drought tolerant than many of the other varieties; although it grows slowly during low rainfall periods. Glycine thrives in well-drained soils. It is not tolerant of continuously wet soil conditions. Glycine grows best on fertile soils with high calcium availability and a soil pH above 6.0. In Australia, Glycine grew well and produced root nodules heavily on black earth and alluvial soils but did poorly on siliceous sand soils. Glycine is propagated from seeds. Generally, no seed pretreatment is required; however, hard-coated seeds picked by hand may require mechanical or acid scarification to break the seed coat. Soaking the seeds in water at room temperature 6-12 hours will help ensure uniform germination. Prior to planting, inoculate the seeds with an appropriate cowpea rhizobial strain. Rhizobia cultures such as CB756 and SFS288 have been used successfully in Australia and Brazil. Apply a sticking substance such as a sugar solution (1 part sugar, 9 parts water) or a sweetened cola beverage to the seeds. Mix the seeds completely with the sticking substance. Mix 50 g of inoculant with each kg of seed. Mix the inoculated seeds with lime to reduce seed stickiness and provide the germinating seedling with a ready supply of calcium. Seeds should be planted 1.5-2 cm (1/2 to 3/4 in) deep at a seeding rate of 3-4 lb per acre (3.3-4.4 kg/ha). This rate is based upon pure seed with 100% germination. Use appropriate adjustments for impure seed or lower germination rate.

Drilling is the preferred method of seed planting but broadcast seeding followed by rolling may be used instead. Normally, seeding is done at the beginning of the rainy season. However, if the seeding is for pasture initiation following a maize crop, the seeding may be done in between the maize rows during the last maize cultivation. Glycine has been combined successfully with green panic, setaria, guinea and molasses grass species cultivars in pasture situations. After establishment, Glycine/grass pastures will profit from fertilization with superphosphates. Grasses compete heavily with Glycine for phosphates especially early in the growing season. Nutrients favoring legume growth are potassium, phosphate, sulfur, and calcium. Supplements promoting nitrogen fixation include molybdenum, iron, and cobalt.

Harvesting and Seed Production

Give the pasture rest periods from grazing during the first year, especially during the Glycine flowering period. Because Glycine is slow to establish and nodulate fully it is best used in crop rotations involving 2-3 years. Because of its high nitrogen-fixing capability, Glycine may be grown alone as a cheap source of high protein forage. If Glycine is used as a cover crop or green manure crop under trees it will need to be grazed or periodically harvested to prevent it from growing up the trees. Geese or livestock grazers can be used to keep Glycine from climbing into trees.

Pests and Diseases

Glycine is relatively pest and disease free. It has tolerance to the Amnemus weevil. During wet weather in Australia, Glycine is susceptible to a Sclerotinia rot; a leafspot, *Cercospora* sp.; and a leaf blight, *Rhizoctonia solani*. A bacterial leafspot, *Pseudomonas glycinae*, has been reported in Malawi. HUMAN CONSUMPTION – Glycine is a forage crop species. However, the sister species, *Glycine max*, soya or soybean, is a well-known human food crop.

References

Heuzé V., Tran G., Giger-Reverdin S., Lebas F., 2015. *Perennial soybean (Neonotonia wightii)*. Feedipedia, a programme by INRA, CIRAD, AFZ and FAO. <https://www.feedipedia.org/node/293> Last updated on September 30, 2015, 15:09

http://www.tropicalforages.info/key/forages/Media/Html/entities/neonotonia_wightii.htm