Brown rust of sugarcane - *Puccinia melanocephala*

The two major rust fungi on sugarcane are brown rust caused by *Puccinia melanocephala* and orange rust caused by *P. kuehnii*. Brown rust is relatively common, found everywhere sugarcane is grown, whereas orange rust has only recently been found in the Western Hemisphere (Chavarria et al. 2009).

**Puccinia melanocephala** Syd. & P. Syd 1907

Spermoonia and aecia unknown.

**Uredinia** primarily hypophyllous (on lower surface of leaves), cinnamon-brown, linear up to 4 mm, urediniospores obvoid or ellipsoidal, 25-39 × 17-28 µm, cinnamon to dark-brown, echinulate, germ pores 4-5, equatorial, wall 0.8-2.3 µm; paraphyses hyaline to golden, capitate or spathulate, 32-98 µm × 12-25 µm, wall 1-2.8 µm thick, 4-15 µm at apex.

**Telia** hypophyllous, exposed, black to dark-brown, telioshores 34-56 × 16-24 µm, mostly clavate, walls 2-3.5 µm thick at sides, 2.5-8 µm at apex, upper cell dark brown, lower cell paler, pedicels brown, thin-walled, usually not collapsing, 4-17 µm long; telial paraphyses long, capitate.

**Host range:** Sugarcane and its relatives in the Poaceae including *Bambusa vulgaris*, *Bambusa* spp., *Eulalia fastigiata*, *Miscanthus floridulus*, *M. sinensis*, *Miscanthus* spp., *Phyllostachys aurea*, *P. bambusoides*, *P. glauca*, *P. nigra* var. *henonis*, *Saccharum narenga*, *S. officinarum* (sugarcane), *S. rufipilum*, *S. ravennae*, *Sinarundinaria* spp., *Sorghum* spp.

**Geographic distribution:** Widespread, occurring wherever sugarcane is grown.

See Hiratsuka (1992) and Virtudazo et al. (2001) for a more detailed description.

Brown rust is distinct from orange rust in producing abundant, capitate paraphyses. Walls of the paraphyses are thicker at the apex. The urediniospores of brown rust are generally smaller than orange rust, although the size ranges overlap. Urediniospore walls of brown rust are uniformly thick, whereas those of orange rust are thicker at the apex. Brown rust telioshores are pigmented, the upper cell is dark brown and the lower cell is paler. Teliospore walls of brown rust are thicker than those of orange rust and are also thicker at the apex. Telial pedicels are long and dark brown, unlike orange rust having telioshores that are sessile or have hyaline pedicels. Telial paraphyses of brown rust are long and capitate. Like orange rust, spermoonia and aecia are unknown.

Here is a [link](#) to a chart comparing *Puccinia melanocephala* with *Puccinia kuehnii*

References:


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Uredinia of *Puccinia melanocephala* on *Saccharum* spp. (×32)

Paraphyses of *Puccinia melanocephala* on *Saccharum* spp. by LM (×400, Scale bar: 50 μm) Urediniospores of *P. melanocephala* are cinnamon-brown with a uniformly thick wall.

SEM micrograph of *P. melanocephala* urediniospore illustrating echinulate spines.

Urediniospore of *Puccinia melanocephala* on *Saccharum* spp. by LM (×400, Scale bar: 30 μm)

Teliospores of *P. melanocephala* are clavate, golden brown with upper cells darker than lower cells, and apically thickened walls.