

Pseudo Black Chaff

Stem and head blackening in wheat varieties.

Each season, there are numerous reports of discoloration occurring in wheat crops across Australia. In some crops, the peduncle (Figure 1), glumes (Figure 2) or nodal regions further down the plant change from their characteristic green to an unusual purple-black. At first glance, this discolouring can be alarming, as it can easily be mistaken for the development of disease, which it is not.



Figure 1. Peduncle expression of Pseudo Black Chaff.

This discoloration is known as Pseudo Black Chaff (or PBC) and is controlled by a gene that is located alongside one of the most stable and important stem rust resistance genes (Sr2) characterised in wheat. In fact the presence of PBC is often used by plant breeders to quickly identify which new wheat varieties possess stem rust

resistance conferred by Sr2. The expression of PBC is environmentally dependent and seems to be more pronounced in humid or favourable environments. Some varieties that carry Sr2 will show more PBC than others, however the expression of PBC is not associated with the presence or absence of stem rust infection itself.

Although a little unsightly, there is no evidence in the scientific literature of PBC causing any yield reductions in wheat. Research needs to be undertaken to confirm what (if any), agronomic effects PBC may have. However, the longevity and success of previous Sr2 carrying varieties suggests that the impact is not likely to be great and should put most growers' minds at ease.

The action of the 'slow rusting' resistance gene Sr2 can be considered quite similar to the Adult Plant Resistance (APR) genes that are responsible for the stripe rust resistance in many commonly grown varieties. For this reason, it is considered a very important gene, and has been bred into many wheat varieties in use across Australia.

Current AGT varieties protected by the Sr2 gene and thereby likely to display PBC under favourable conditions are: Coota[®], Denison[®], Hammer CL Plus[®], Mace[®], Mitch[®], Scepter[®], Sunblade CL Plus[®], Suncentral[®], Sunlamb[®], Sunmaster[®], Sunmate[®], Sunmax[®], Sundtime[®] and Suntop[®].

Disclaimer: The information contained within this brochure is based on knowledge and understanding at the time of writing. Growers should be aware of the need to regularly consult with their advisors on local conditions and currency of information.



Figure 2. Glume expression of Pseudo Black Chaff.