# MONITORING MONTHLY CHANGES IN FIBRE DIAMETER WITH THE OFDA2000

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Restricting fluctuations in fibre diameter (FD) during the year through management of sheep nutrition can lead to improvement in staple strength, reductions in FD and better economic returns (Mata *et al.* 2002). The Measure as you Grow approach has been promoted in Western Australia as an economic way for producers to monitor and manage FD change in Merino flocks, and has been successfully used by producers (Oldham *et al.* 2002). The OFDA2000 instrument, which can readily generate FD profiles, has been evaluated in this study in comparison with the Measure as you Grow technique.

Wool samples were collected from sheep in set-stocked (SS), simple rotation (SR) or intensive rotation (IR) grazing systems (Warn *et al.* 2002). Each month between September 2001 and July 2002, 2 staples from the mid-side of 10 sheep in the IR treatment, and 5 sheep in the SS and SR treatments, were sampled. One staple was assessed using the Measure as you Grow (MAYG) technique. The second staple was measured in a greasy state on the OFDA2000 instrument using the default grease correction factor (GCF), and the measurement from the base of the staple was extracted for analysis (OFDA2000 monthly). As small staples are difficult to measure on the OFDA2000, the first measurement in November (compared with September for MAYG) was also used to predict FD earlier in the season. These 2 methods were compared to OFDA2000 profiles measured within 1 month of shearing (OFDA2000 shearing). A linear mixed model including a cubic spline of distance from the tip of the staple (Verbyla *et al*. 1999) was fitted to the FD data for each measurement method.

The OFDA2000 monthly measurements provided a closer match to the FD profile at shearing (Figure 1) compared with MAYG, which generally showed greater extremes. The FD ranges for MAYG were between 0.7 and 1.5 μm greater than the methods using the OFDA2000. This could be due to the GCF influencing profile shape in these methods (Gloag and Behrendt 2002). Also, there was a trend across all grazing treatments for MAYG to predict the profile maximum further away from the tip.

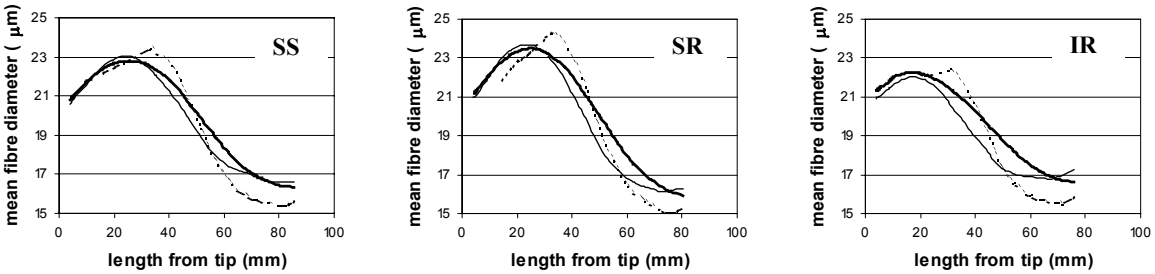


**Figure 1. Fibre diameter profiles generated from the fitted cubic spline model for MAYG (----), OFDA2000 monthly (—) and OFDA2000 shearing (▬) for the set-stocked (SS), simple rotation (SR) and intensive rotation (IR) treatment.**

The weighted mean FD was similar for all measurement methods, suggesting that both the Measure as you Grow technique and the use of the OFDA2000 throughout the year provide a reliable estimate of average flock FD. Further work needs to be done to quantify profile differences and investigate issues surrounding the application of GCF in the generation of profiles. Given the differences in profile shape between methods, it is likely that guidelines need to be developed to assist the interpretation of fibre diameter changes for decision making.

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