3.14 The Effects of Diet Preference on Feed Intake, Digestibility and Nitrogen Balance of Sheep Given *Iseilema* spp. (Flinders Grass) Hay and/or *Desmanthus leptophyllus* cv. JCU 1 *Ad Libitum*

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Eighteen male Merino sheep (34.83 ± 2.73 kg) were used in this experiment with a completely randomised block design to evaluate the effects of diet preference on feed intake, apparent digestibility and nitrogen balance. The sheep were fed *ad libitum* one of three experimental diets: Flinders grass hay (F); freshly cut *Desmanthus leptophyllus* (D) and a choice of Flinders grass hay and fresh cut *D. leptophyllus* (D+F). The results showed that sheep had a 70% preference for D and had a 30% preference for F when they were provided the D+F diet. The highest dry matter intake (DMI) and organic matter intake (OMI) ($P < 0.05$) were recorded for the D+F diet compared with the other two diets. The dry matter digestibility (DMD), organic matter digestibility (OMD) and nitrogen digestibility did not differ between the D and the D+F diet, but these values were significantly higher ($P < 0.05$) than those of the F diet. Sheep fed either the D or the D+F diet gave rise to positive nitrogen balance, while the F diet was in negative nitrogen balance. Both D and D+F diets had greater ($P < 0.05$) efficiency of nitrogen retention in comparison with the F diet. Lower nutrition utilisation of the F diet was relative to loss of sheep liveweight, whereas sheep given either D or D+F diet slightly increased their liveweight. It is suggested that in the semi-arid sheep country, diet quality and animal production could be enhanced by utilisation *Desmanthus* spp. during the dry season.