

Barley as a dual-purpose crop in Tasmania

Moayad S. Abdul-Rahman, N.J. Mendham and J.J. Yates

Department of Agricultural Science, University of Tasmania, Hobart, 7001

Although oats is the normal dual—purpose crop (grazing and grain or grazing and hay) in Australia, barley is commonly used for this purpose in many parts of the world. Furthermore, barley is now the dominant cereal crop in Tasmania. The aim of this experiment was to study the effect of timing and number of defoliations on the yield of green fodder and grain of a range of barley cultivars compared with the local dual—purpose oats.

Methods

The cultivars used and their habit of growth were: Shannon and Malebo barley (Erect, Er), Triumph barley (Semi—prostrate, Sp) and WU3072 barley and Esk oats (Prostrate, Pr). The experiment was sown at the University Farm near Hobart on 10 April 1985. There were four mowing (defoliation) regimes (cutting height 4-6 cm) as follows: Nil, Early (once in July-August, E), Late (once in September, L) and Early and Late (both occasions, E and L). A split—block design was used with four replications and individual plots were 1.5 m x 10 m. In the previous year, early defoliation of all cultivars at the same time disadvantaged the erect types by removing growing points. In this experiment, therefore, defoliation was imposed when the shoot apex of the main stem was just above the ground surface (0-2 cm), which occurred one month earlier in the erect cultivars than the others.

Results and Discussion

Table 1. Effect of time of defoliation on total dry matter and grain yields (t/ha) of barley and oats.

Defoliation treatment Defoliation date	Forage (dry matter) yield					Grain yield			
	E		L		E and L	Nil	E	L	E and L
	5 vii	6 viii	5 ix	6 viii					
Shannon (Er)	2.08	(4.37)	8.51	5.24	—	7.7	6.6	2.6	2.3
Malebo (Er)	2.33	(4.22)	8.76	6.87	—	7.4	7.9	3.4	3.9
Triumph (Sp)	(1.38)*	2.74	5.44	—	5.56	8.4	7.4	3.8	3.8
WU3072 (Pr)	(1.03)	1.87	5.21	—	5.77	8.8	8.7	5.1	3.1
Esk (Pr)	(1.68)	3.41	6.92	—	6.33	5.6	4.3	1.8	1.9
LSD (p 0.05)	0.41	0.95	1.31	2.44	1.22	1.7	(cv. within defol.)		

*Brackets indicate additional samples for comparison.

The general trend (Table 1) of highest forage yield in the erect barley cultivars and highest grain yield in the prostrate WU3072 was most obvious with late defoliation. This was most likely due to the greater residual leaf area after defoliation in the prostrate cultivar, whereas the erect types had most of their foliage above cutting height. Oats gave higher forage yields than the semi-prostrate and prostrate barley under early or late defoliation but not with both early and late defoliation.

All barley cultivars had superior grain production to oats under all defoliation treatments. Early defoliation which removed photosynthetic material, caused little decrease in grain yield of barley. Malebo, which is a grazing type with high leaf area production, may even have shown a slight increase. Data collected showed that more fertile tillers resulting from longer leaf area duration and improved light penetration (1) as well as decreased lodging (2) were the likely reasons for increased yields.

1. Richards, R.A. 1983. *Aust. J. Agric. Res.* 34: 23-31.

2. Dann, P.R., Axelsen, A. and Edwards, C.B.H. 1977. *Aust. J. Exp. Agric. Anim. Husb.* 17: 452-461.

