

THE EFFECT OF NITROGEN FERTILISER ON THE WINTER GROWTH OF DRYLAND PHALARIS

Kevin Morthorpe¹ and Graeme Stewart²¹NSW Agriculture & Fisheries, Trangie²NSW Agriculture & Fisheries, Albury

Phalaris pastures in southern Australia are often used for both winter grazing and seed production. Growth rates, and hence production, of phalaris are high in spring but low in winter. This growth cycle is not ideal for both a grazing and seed production enterprise, because the greatest pasture production occurs after the crops are closed to grazing in spring. The use of applied nitrogen (N) in spring is a standard practice to increase seed yield, but the effect of autumn applications on winter productivity has received little attention. The extent to which seed production can be integrated successfully with intensive forage utilisation largely depends on improving winter forage yields.

Data were obtained in 1985 and 1986 from three field experiments being used to investigate the N requirement of phalaris seed crops. Four fertiliser treatments (nil, 30, 60 and 120 kg N/ha) were applied to three year old stands of the cultivar Siroso in May. Stock were excluded from the experimental area. Plots were harvested in mid-July and mid-September (closing time). Total cumulative green (GM) and dry (DM) matters (May to September) are shown in Table 1.

Table 1: The effect of nitrogen fertiliser on winter green (GM) and drymatter (DM) production of dryland phalaris (kg/ha) in New South Wales.

| Rate of nitrogen application (kg N/ha) | Tooma | | Holbrook | | Emmaville | |
|--|--------|-------|----------|-------|-----------|-------|
| | GM* | DM | GM | DM | GM | DM |
| Nil (control) | 11903c | 3568c | 8838c | 1955c | 8066c | 2105c |
| 30 | 15306b | 4350b | n.d.+ | n.d. | n.d. | n.d. |
| 60 | 17441b | 4780b | 19831b | 2924b | 11465b | 2683b |
| 120 | 25127a | 6068a | 25940a | 3543a | 18375a | 4180a |

* Values in columns not followed by a common letter differ $P < 0.05$

+ Not determined

At three different sites, autumn N application significantly increased total winter production of phalaris. The average dry matter and green matter yields were 137% and 171% of the control respectively when 60 kg N/ha was applied. As a result, the number of stock that can be carried through the winter period may be markedly increased on many farms. Grazing of phalaris seed crops is also an important management tool, which significantly increases seedhead numbers and reduces lodging in tall seed crops (Morthorpe & Stewart, unpublished data). In a grazing - seed production enterprise the quantity of nitrogen applied needs to be adjusted to maximise seed production. This aspect is being examined for phalaris.