



Ewe prolificacy and stocking rate in grass-based systems

A **TEAGASC** study has looked at the impact of ewe prolificacy potential and stocking rate on lamb average daily gain and liveweight output per hectare within a grass-based system.

Ewe prolificacy potential (PP; predicted number of lambs born per ewe per year) and stocking rate (SR; ewes per ha) are two of the most influential factors affecting lamb output (Keady *et al.*, 2009) and the efficiency at which feed resources are utilised in grass-based lamb production systems (Young *et al.*, 2010). Previous studies have tended to focus on efficiency at an individual animal level rather than on overall system efficiency.

Athenry ewe prolificacy and stocking rate study

The objective of this study was to investigate the effect of ewe PP, SR and their interaction on lamb liveweight gain and lamb output at the system level. The study was a 2 x 3 factorial design, consisting of two differing ewe PPs (medium prolificacy (MP) – Suffolk-sired crossbred ewes – a weaning rate of 1.5 lambs per ewe; and, high prolificacy (HP) – Belclare-sired crossbred ewes – a weaning rate of 1.8 lambs per ewe) and three SRs: low (LSR; 10 ewes per ha); medium (MSR; 12 ewes per ha); and, high (HSR; 14 ewes per ha). The study was carried out over three production years. Each treatment was managed in a five-paddock rotational system for the duration of the study. Lamb average daily gains (ADG; g per day) were recorded from birth to finishing.

Animal performance and output

High PP ewes produced a higher number of lambs born per ewe (+0.20 lambs; $P < 0.001$) and per hectare (+1.5 lambs; $P < 0.05$), and weaned an extra 0.18 lambs per ewe ($P < 0.01$) and 2.01 lambs per hectare ($P < 0.01$). SR had no effect on the number of lambs born or weaned per ewe ($P > 0.05$). However, the number of lambs born and weaned differed on a per hectare basis, with the lowest number reported at the LSR, intermediate at the MSR, and highest at the HSR ($P < 0.001$). The HP treatment achieved a 0.45kg higher lifetime (birth to slaughter) lamb ADG per ha compared to the MP

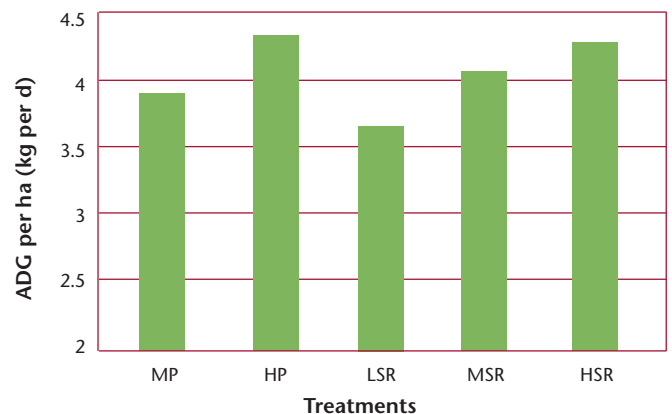


FIGURE 1: Effect of ewe prolificacy potential and stocking rate on lifetime daily lamb liveweight (kg) gain per ha.

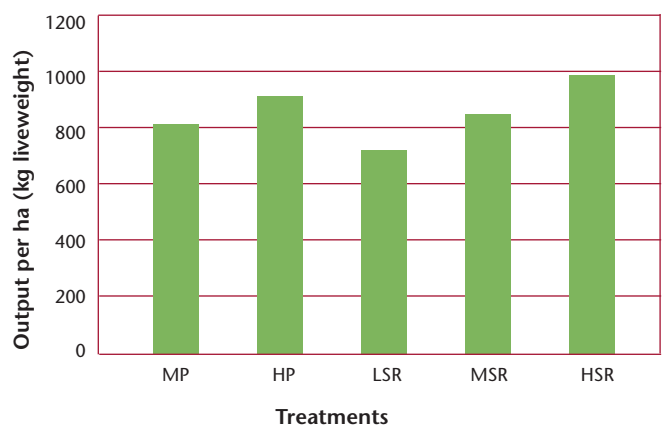


FIGURE 2: Effect of ewe prolificacy potential and stocking rate on total lamb liveweight (kg) output per ha.



treatment ($P < 0.001$; **Figure 1**). Total lifetime lamb ADG per ha was lowest at the LSR, intermediate at the MSR, and highest at the HSR ($P < 0.001$). Total lamb liveweight output per ha also increased with increased PP and SR as shown in **Figure 2**.

Implications for industry

Results from this study demonstrate the potential to increase the level of lamb production and output per ha within grass-based systems by increasing ewe PP and SR. The appropriate SR for a farm will be dictated by its grass growing potential to support a given SR. Increasing ewe prolificacy should always be the first priority, while increasing SR must always be in conjunction with increased grass production and utilisation.

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References

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