The Effect of Small-Square Feeder Design on Hay Waste, Herd Bodyweight Change, and Economics During Outdoor Feeding of Adult Horses

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Hay waste during feeding represents a costly expense for horse owners. The economics of hay waste associated with feeding round-bales in outdoor paddocks and small square-bales in individual stalls has been investigated. However, waste from small square-bales fed outdoors has not yet been investigated. The objectives of this study were to determine hay waste, herd bodyweight (BW) change, hay intake, and economics of small square-bale feeders when used in outdoor feeding of adult horses. Feeder designs included a hayrack ($280), slat feeder ($349), basket feeder ($372), and a no-feeder control. Two feeders of each type were placed in four separate outdoor dirt paddocks. Twelve adult stock-type mares (BW 503 ±36 kg) were divided into four similar groups. Groups were rotated through the four paddocks in a Latin square design. Herds remained in each paddock for 7 days, including 2 days of acclimation and 5 days of data collection. Horses were weighed immediately before and after the 5 day data collection period; the difference was herd bodyweight change. Horses were fed grass hay at 2.5% of the herd bodyweight split evenly at 0800 and 1600 hours. Waste hay was considered any hay on the ground outside of the feeder, while orts were considered any hay not eaten but remaining inside the feeder. Waste hay and orts were collected daily before each feeding, and were dried and weighed. The number of months to repay the feeder cost (payback) was calculated using hay valued at $250/ton, and improved efficiency over the no-feeder control. No injuries were observed when horses were fed from the small-square bale feeders. Mean hay waste was 13, 5, 3, and 1%, for the no-feeder control, hayrack, basket feeder, and slat feeder, respectively. All feeders resulted in less hay waste compared to the no-feeder control ($P \leq 0.0001$), and a difference was measured between the hayrack and slat feeder ($P = 0.0203$). The hayrack, basket feeder, and slat feeder paid for themselves in 12, 11, and 9 months, respectively, with the slat feeder resulting in a shorter payback period ($P \leq 0.0239$). Herd bodyweight change was different among the feeders ($P \leq 0.0015$). Herds gained 10 and 7 kg when feeding from the basket feeder and hayrack, and lost 3 and 11 kg when feeding from the slat feeder and no-feeder control. Hay intakes differed between feeders ($P < 0.0001$). Hay intake was similar between the basket feeder and hayrack (2.4% bodyweight), with these feeders resulting in a greater hay intake when compared to the slat feeder and no-feeder control (2.2% bodyweight). The hayrack, basket feeder, and slat feeder paid for themselves in 12, 11, and 9 months, respectively, with the slat feeder resulting in a shorter payback period ($P \leq 0.0239$). The use of a small square-bale feeder resulted in less hay waste compared to not utilizing a feeder, and all feeders paid for themselves within 12 months. This information will aid horse owners and professionals when purchasing small square-bale feeders and estimating hay needs.