

## **Evaluation of Wool and Hair Breeds of Sheep in High- and Low-Input Production Systems**

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**Background.** Two important goals of the sheep industry are to increase reproductive rate (lambs marketed annually per ewe maintained in the flock) and to decrease labor requirements. Achievement of both goals simultaneously would markedly increase practicality and profitability of commercial sheep production. Past research at USMARC documented the exceptional reproductive performance of Romanov crossbred ewes. Hair breeds evolved to express “easy-care” attributes (adaptation, hardiness, parasite tolerance, and shedding of hair and wool) and might perform well with minimal labor requirements. The objective was to evaluate wool (Dorset and Rambouillet) and hair (Dorper, Katahdin and White Dorper) breeds for their ability to complement Romanov germplasm in two distinct production systems. Rams of the five breeds were mated to Romanov ewes to produce five types of crossbred ewes. Production of these crossbred ewes was evaluated at 1, 2 and 3 years of age in each production system. In the high-input system, labor and harvested feed were provided for sheep raised in a barn and ewes were limited to rearing two lambs with additional lambs reared artificially. Ewes in the low-input system lambed on pasture and were responsible for rearing all lambs born. In the latter system, no labor or supplemental feed were provided before weaning.

**Results.** A total of 830 crossbred ewes produced 1,962 litters and 4,171 lambs from 2,172 exposures to two terminal sire breeds (Suffolk, Texel). The main results of the experiment are summarized in the graph below (WD = White Dorper, DP = Dorper, KD = Katahdin, DS = Dorset, and RB = Rambouillet). Crossbred ewes in the high-input production system were mated in October, resulting in larger litter sizes than crossbred ewes mated in December for the low-input production system. However, lamb mortality was similar between the two systems that differed greatly in labor, feed and facilities. Lambs produced in the high-input system received concentrate feed from an early age and were heavier at 24 weeks of age than lambs produced in the low-input system. These outcomes resulted in greater 24-week litter weight in the high-input system than in the low. This information can be used by producers to decide which type of production system is most profitable for their particular circumstances.

The overall production of these five types of crossbred ewes was high, with Romanov being the common link across all crossbred types. Unexpectedly, the relative performance of crossbred types did not differ importantly between production systems. White Dorper x Romanov crossbred ewes were the most productive in each production system, perhaps most notably in the low-input system. In this system, without labor and shelter at lambing or supplemental feed until weaning, 3-year-old crossbred ewes of all types averaged 1.92 lambs marketed per ewe lambing and 50% of the ewes that gave

birth to triplets weaned their entire litters. These results document that prolific sheep and low inputs can be successfully combined if appropriate crossbred types are used.

