



Management Factors to Improve Range Cow Reproduction

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Of the factors that influence the growth and reproductive performance of beef cows, proper nutrition is probably the most critical. Because feed costs (including range) represent over half the total cost in a cow-calf production system, it is very important to keep feed costs low while meeting your animals' nutritional needs. As seen in Table 1, cow condition score (on a 1-9 scale with 5 being good optimal condition, 1 being very thin and 9 being very fat) influenced pregnancy rate at the V-V ranch. This figure summarizes 12 years of data and clearly shows the benefit of having cows in optimal body condition. Figure 1 shows the variation in pregnancy rate by year (50 to 92%). This reflects differences in range condition (forage quality) due to precipitation, elevation, soil type and temperature. Developing feeding, supplementation and management programs to improve pregnancy rate and reduce the variation in pregnancy rate can have significant benefits.

Vital nutrients in beef cattle diets include water, energy, protein, calcium, phosphorus, potassium, sodium, trace minerals, and vitamins. Depending on your circumstances, you may choose from a number of feeding approaches for your herd. The traditional approach is to allow the cattle unlimited access to range. If the forage is not sufficiently high in protein, energy and other nutrients, the cows may be malnourished even though they have all they can eat. In general, forages are high in quality when they are vegetative and green. As they mature the forage quality goes down and when the go dormant quality declines even more. Poor quality range (mature or dormant) has a high proportion of fiber to protein and takes longer for cows to digest.

Figure 1. Pregnancy Rate by year at V-V

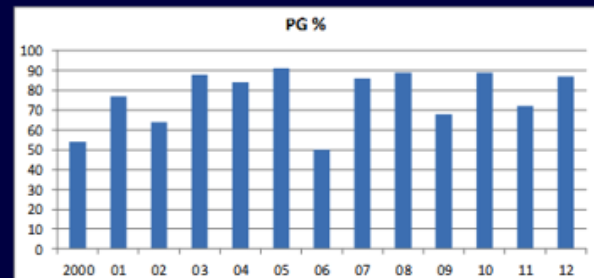


Figure 2. Pregnancy rate by age at V-V

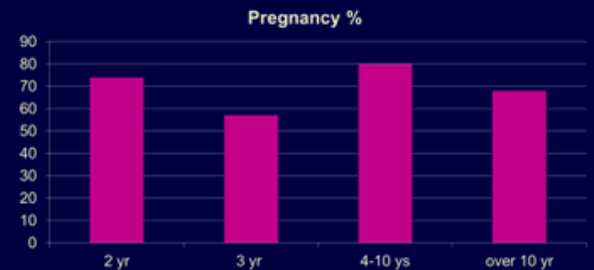


Table 1. The influence of cow condition score (on a 1-9 scale with 5 being good optimal condition, 1 being very thin and 9 being very fat) on pregnancy rate and the number of cows in each condition at the V-V ranch (summary of 12 years of data)

Condition Score	Pregnancy Rate, %	Cow numbers
≤ 4	48	673
5	72	2050
≥ 6	88	2617

Consequently, cows can eat only about one and a half percent of their body weight per day of low-quality forage. It may be necessary to supplement a low-quality forage diet with some type of protein supplement (i.e. blocks, range cubes, tubs). With supplementation, cows can actually digest more low-quality forage and increase their intake up to two percent of their body weight.

Mineral supplementation is also important. Phosphorus supplementation may be needed particularly from calving to breeding, but it is expensive. Micro minerals should also be in your supplement, particularly Zn, Cu and Se. All of these minerals are important for good immune function. Zinc is also very important for good bone strength and hoof health. Inadequate Se can also result in white muscle disease, retained placenta, and poor reproduction. Vitamin supplementation should include vitamin A (particularly with dry weathered forage), and vitamin E (which helps with Se deficiency).

Changing management can also have an influence on cow reproductive rate. The information from the V-V, in Figure 2, clearly shows that many of the 3 year olds are calving late, in thin condition and failing to rebreed. The two year olds are doing better, but there is still room for improvement. It is difficult for these young growing animals to lactate, grow and get pregnant under Arizona range conditions. In Arizona we typically get good forage in the spring and again in the summer because of rainfall patterns. This results in 2 short periods of good quality forage during the year. The rest of the year the cattle are grazing mature dry forage that is poor quality and does not meet the young cow's nutrient needs. One way to reduce the cows nutrient needs is to early weaning the calves off the two year olds prior to breeding. This will allow them to get bred earlier and gain body condition prior to calving as three year olds. This is because we remove the lactation stress and lower the nutrient requirements of the heifers. Only about 10% of the late calving 3 year olds are still in the herd as 5 year olds. So weaning the calves off of the two year olds will also improve mature cow pregnancy rates. At the V-V we got 11 percent more heifers pregnant when we weaned the calves prior to breeding. The heifers also bred 11 days earlier in the breeding season which will help them to rebreed in future years. Net returns are similar for early weaning and normal weaning for feedlot steers and heifers because early weaned calves are very efficient and you get additional revenue from sale weight. There are additional costs for replacement heifers so the reproductive advantage must offset these costs. Overall when you look at feed costs for the calves, additional weight of the calves, calving earlier in the breeding season, and improvement in reproduction, early weaning the first calf heifer's calves is a good way to improve reproduction for the entire herd. When

we have drought conditions (poor range conditions) it can be beneficial to early wean the calves from the entire cow herd to improve reproduction and reduce consumption of range.

Some producers have improved reproduction by changing their calving season to summer so that they calve and breed when range conditions are of high quality due to summer rains. This change can reduce feeding and supplementation costs and it can be combined with early weaning if it creates the most economical system.

The information in this publication comes from a ranch with a good herd health program. It is important to work with your veterinarian to develop a vaccination and testing program to ensure that reproductive diseases like Trick, BVD or venereal diseases are not a problem.

Every ranch has unique labor and range resources. It is important to develop a nutrition and management program that is well matched to each individual ranch. Doing this can dramatically improve reproduction and ultimately the economic return to the ranch.



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