

Choosing the Time of Year to Breed and Calve Beef Cows in Texas

L.R. Sprott*

As any cattleman knows, the time of year when cows calve directly affects many herd management practices:

- The start of calving is dictated by the start of breeding.
- Cows calving in the fall normally need more supplemental feed in the winter, unless cool season pastures are used, than do cows that calve in the spring.
- Fall-born calves will be marketed in the spring and calves born in the spring will be marketed in the fall unless the producer can retain ownership of calves past weaning.

These few differences in management indicate that a producer should give careful consideration to the time of year in which to calve cows. The decision of when to calve is complicated by numerous factors and, in many instances, inattention to details can dramatically affect costs of production, animal performance, income and profitability.

Things to Consider

The first thing to realize is that there is no single date that is best for the start of calving. However, there



are breeding and calving dates that probably should be avoided because differences in climate in regions of Texas can affect the availability and conditions of pasture needed for nutrition of pregnant cows and calves.

There are a few principles about fertility in cows that a producer should consider in deciding when to breed and calve the herd.

Principle 1—Regardless of management influences, fertility among cows is variable. Table 1 shows that fertility is highest in cows that conceive at first service, and it is clear that cows requiring more than two services during the breeding period are the least fertile in the herd.

Principle 2—It is important to properly feed cows so that they can show estrus early in the breeding period. Table 2 shows that cows that display estrus within the first 21 days of breeding have higher pregnancy rates compared to cows displaying estrus after the first 21 days of breeding. Consequently, pregnancy rates are high in herds that have a high proportion of cows showing estrus early in the breeding period.

Principle 3—Most of the pregnancies within a herd occur in the cows with highest fertility. Table 3 shows that 95 percent (Trial 1) to 97 percent (Trial 2) of all pregnancies are attributed to cows conceiving at their

*Professor, Extension Beef Cattle Specialist and Research Scientist, The Texas A&M University System

first or second estrus. Only 3 percent (Trial 2) to 5 percent (Trial 1) of pregnancies are attributed to cows that conceive at their third estrus.

Consider these principles regarding cow fertility in deciding when to start breeding. It could increase the chances that the most fertile cows will conceive and ensure high pregnancy rates.

Table 1. Pregnancy rate in cows requiring multiple services.

Number of services	Number of cows	Pregnancy rate
One	220	77.3% ^a
Two	28	35.7% ^b
More than two	67	16.4% ^c

^{a,b,c}P < .005, Sprott et al., 1998, PAS 14:231

Table 2. Pregnancy rate in cows showing estrus early in the breeding period.

Number of cows	Time of estrus	Pregnancy rate
220	First 21 days	81.8% ^a
65	After first 21 days	58.5% ^b

^{a,b}P < .005, Sprott et al., 1998, PAS 14:231

Table 3. Cows generating the most pregnancies in the herd.

Trial	Number of cows	Number pregnant	Percent (%) of all pregnancies occurring at:		
			1st estrus	2nd estrus	3rd estrus
1	285	229	208/229 (91)	10/229 (4)	11/229 (5)
2	251	216	177/216 (82)	33/216 (15)	6/216 (3)

Trial 1 - Sprott et al., 1998, PAS 14:231

Trial 2 - Sprott, 1999 (unpublished)

Fertility in Summer Months

Temperature and humidity during certain months are stressful and can reduce fertility. Table 4 shows that if cows exhibit their first estrus after the month of May in Central Texas (Trial 1) or April in the Gulf Coast

Table 4. Fertility at first estrus during spring breeding as affected by month (Texas).

Trial	Pregnancy rate (%) by month				
	April	May	June	July	July - September
1	—	180/220(81.8)	38/65(58.4)	11/67(16.4)	—
2	31/41(75.7)	13/29(44.8)	10/22(45.4)	—	3/19(15.8)

Trial 1 - Sprott, et al., 1998, PAS 14:231; May vs June, P < .005, June vs July, P < .005 (number of cows - 285);

Trial 2 - Sprott, 1999 (unpublished, Brazoria County, TX), P < .005 (number of cows -111)

region (Trial 2), the chances of conceiving are dramatically reduced.

Results, at either location, showed pregnancy rates were less than 17 percent in cows displaying their first estrus during July through September. That indicates that summer breeding in these two regions of Texas is not recommended.

Research has shown that this reduction in fertility is a result of heat stress brought on by high temperature and humidity that combine to raise the temperature/humidity index. Heat stress in cows is known to cause hormone imbalances, reduced quality of ova, early embryo death and reduced blood flow to the uterus. These factors, either singly or in combination, result in low fertility. Likewise, bulls also are affected by heat stress that causes sperm cell quality to decline. As a result, when heat stress occurs, its negative effects on fertility in both the cows and bulls reduces the chance of pregnancy.

Similar studies have not been conducted in other areas of Texas, but it appears that late summer rains and low humidity in areas of West Texas allow producers in that region to breed their cows during summer months without experiencing major reductions in fertility. In contrast, high humidity in eastern, southeastern and Gulf Coast regions of Texas suggests that summer breeding may not be advisable.

Fertility in Winter Months

Unfortunately, data concerning pregnancy rate at first estrus during the cold months in Texas are not available. However, Table 5 shows that Central Texas cows exposed for breeding during November, December and January have acceptable reproductive performance. Note that the lower pregnancy rates in Herd 1 (1989,1990) and Herd 2 (1988, 1989) were attributed to nutritional problems. Pregnancy rates improved when the herd owners corrected their management practices. If nothing else, data in Table 5 indicate that proper nutrition is required and that temperatures during Central Texas winters are not so stressful that fertility is compromised.

Table 5. Pregnancy rates (%) in central Texas cows bred in the fall (Nov., Dec., Jan.).

	Year					
	1988	1989	1990	1991	1992	1993
Herd 1 (Fayette County)	—	74	76	86	94	93
Herd 2 (Hays County)	87	83	92	91	—	—

Herd 1 - 107 cows
Herd 2 - 35 cows

Calf Performance as Affected by Month of Birth

Table 6 shows the effect of month of birth on calf performance. These data were taken from more than 8,000 calves born in the central, southern and Gulf Coast regions of Texas. In general, the information can be applied to herds in the eastern, southeastern, south central and southern regions of Texas.

The data show that growth performance drops in calves born in May through September. Calves born in those months had adjusted weaning weights (to remove age bias) below that of calves born in cooler months. Peak performance occurred in calves born in March (Trials 1 and 2) or April (Trial 3) and declined for all calves born from May through September by as much as 56 (Trial 1), 79 (Trial 2), and 124 (Trial 3) pounds. The information presented in Table 6 should not be used to target a specific month to calve because there is some variation in the data between locations.

It can be concluded that high temperatures are very stressful on summer-born calves and will reduce their growth. Unless a producer retains ownership of summer-born calves to feed through the winter, the calves are unlikely to generate acceptable income. Even then, data from a fourth Gulf Coast herd with summer calves (not shown) revealed that growth rate in summer calves was low, which forced them to be kept until 12 months of age to reach an acceptable sale weight that their herd mates reached at 7 months of age.

Table 6. Effect of month of birth on adjusted weaning weight in calves.

Trial	Month of Birth											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	388	427	430	417	416	—	—	374	424	—	478	465
2	477	491	477	467	432	424	434	414	398	432	447	474
3	361	394	415	438	396	—	341	314	320	349	359	357

Trail 1 - Burtleson County, 1976
Trail 2 - Webb County, circa 1969
Trail 3 - Calhoun County, 1976-1979

If calves born in cooler months perform better than those born in summer, then what effect is there on performance of calves born in the cold of December, January and February? Table 6 shows that calves born in those months also suffer, but not to the same degree as those born in hot months. Cold may negatively affect calf performance, but the degree of cold stress in central, southern and the Gulf Coast regions of Texas is not high enough to eliminate calving in the fall and winter.

This is completely contrary to the effects of cold on performance in winter-born calves in northern states where temperatures are more severe and high death loss and the potential for low growth rate in calves are major concerns. Perhaps the most important thing to conclude from data in Table 6 is that stressful temperatures of both cold and heat will affect calf performance, and summer calving is not recommended in the eastern, central, southern and Gulf Coast regions of Texas.

Effects of Cow Size on Choosing When to Calve

Cow size is an important consideration in choosing when to calve. Data from an Arkansas trial show that calf performance and profits are best in small to medium frame cows that calve in the fall compared to spring months. Even though feed costs increased for these fall-calving cows compared to those calving in spring, the value of higher performance in their calves justified the higher feed costs and resulted in higher profits.

To the contrary, large frame cows that calved in the spring had higher profits than when calved in the fall. The reason was that supplemental feed requirements for the fall-calving cows were so high that the value of performance in their calves did not justify the high feed costs. These data suggest that unless alternative nutritional management steps can be taken to reduce feed costs in large frame, fall calving cows, it is best to calve such cows in the spring.

Conclusions

The data presented do not clearly identify a specific month to calve and breed cows in Texas, but there is no question that summer calving (May through September) in the eastern, central, southern and the Gulf Coast regions of Texas will result in significantly reduced calf performance. A drop in calf performance ranging from 56 to 124 pounds (Table 6) in summer-born calves probably is not economically acceptable to a producer.

In six other Texas trials, management steps to eliminate summer-born calves and concentrate the calving season in the cooler months of spring or fall resulted in an average 74 percent increase (range of 27 percent to 150 percent) in production.

It also is clear that fertility in cows bred in July through September (Table 4) drops. Depending on location, cows (Texas Gulf Coast region) bred in May

and June had pregnancy rates approximately 30 points below those bred in cooler months, while cows in the central and Gulf Coast regions bred from July through September had pregnancy rates from 60 to 65 points below cows bred in cooler months.

The lack of data on calf performance and fertility for cows in West and North Texas prevents any statement about the appropriate months to calve and breed in those regions. But summer breeding and summer calving in eastern, central, southern and the Gulf Coast regions of Texas is not recommended.

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Revision