Although quite palatable, it has not been eliminated by selective grazing when planted in mixtures.

Cultivated fields of Paiute have averaged about 230 pounds of cleaned seed per acre. Seed germination has averaged about 90%. At 100% purity, there are approximately 600,000 seeds per pound. Seed matures uniformly. Unlike other orchardgrass varieties, seed of Paiute is held tightly in the head, but can be harvested without difficulty.

Seeds of Paiute are relatively small, yet can be easily planted with most conventional drills. Seed should be planted at 1/2 inch but not more than 3/4 inch deep. A firm seedbed is recommended when drill seeded. Seedlings are competitive, and can be planted in mixtures with most other herbs. When drill seeded as a single species, between 3 and 6 pounds of seed per acre should be used. Paiute is suited to aerial or broadcast planting. Seed may be broadcast on a rough soil surface if soil slumping or mechanical cover can occur to insure seed coverage. Paiute can be established from spring or fall seedings. A high percentage of all seeds germinate and emerge, consequently, adequate stands usually develop even under adverse conditions. Although the seeds are small, seedlings are vigorous.

Paiute was developed by the Intermountain Forest and Range Experiment Station, Forest Service, U.S. Department of Agriculture; the Utah Division of Wildlife Resources; and the Soil Conservation Service, U.S. Department of Agriculture. The Agricultural Experiment Stations of the University of Arizona, University of Idaho, New Mexico State University, and Utah State University participated in the release of this cultivar.

Breeder plants and foundation seed are maintained by the Aberdeen Plant Materials Center (SCS), Aberdeen, Idaho. Foundation seed is available through local Soil Conservation Districts, State Agricultural Experiment Stations, and Crop Improvement Associations of Idaho, Utah, Arizona, and New Mexico. Certified seed is expected to be available in fall 1984. Additional information can be obtained by contacting personnel at the USDA Forest Service Shrub Sciences Laboratory, Provo, Utah or through local USDA Soil Conservation Service offices.

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# Is Bigger Always Better?

**Delbert G. Moore**

There is a general impression in the cow business that "bigger is always better." The main emphasis of cow management over the past 30 years has been to increase average weaning weights per calf on the assumption that this will increase net returns to the ranch unit.

Until recently, the emphasis on increased size has been justified as we moved away from the small animal size and early maturity in vogue during the 1940's. These small cattle had been useful in producing "choice" fed cattle with the relatively small amount of grain available during the war and recovery period. As grain production exploded and beef demand increased during the 1950's, we required larger cattle that could be fed large amounts of grain for extended periods of time. This required cattle with both later maturity and greater mature size. This trend toward larger cattle was strengthened by the development of commercial feedlots which purchased both feed and cattle. In these feedlots the fixed costs of lot, feedmill, machinery, and labor could be spread across more total gain with larger faster gaining cattle thus reducing cost per pound of gain.

**The commercial feeding industry has traditionally depended on yearling type cattle,** many of which have been on grass (or wheat pasture) between weaning and entering the feedlot. Presently there has been an increased interest in calf feeding programs where calves go directly at weaning onto high energy rations and finish at 1,200 lbs. or more and 15 months of age or less. This "fast finish" practice provides incentives for even heavier weaning weights and, in many cases, requires considerable use of grain for both calves and cows before weaning to meet energy requirements. The economic impact to the cowman of these larger sizes has been assumed positive without evidence. For one thing, cowmen have always concerned themselves with average weaning weight per calf and have generally ignored both the pounds of calf weaned per acre of range and the cost of supplemental feed inputs. However, nutrition efficiency, at best, remains constant with increased cattle size and probably declines. Increased calf weaning weights will, then, require either fewer cows or more supplemental feeding of grain prior to weaning. Increased

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weaning weights may not always result in increased net returns.

(Neither the above nor what follows is an attack on performance testing, which has been the single greatest factor in improving efficiency of beef production in the last thirty years. There are efficient and inefficient beef cattle at every level of cattle size. The purpose of performance testing is to determine which are which and to select for the efficient.)

The left side of Table One shows our present cost for producing calves with a 205-day weight of about 450 pounds. The right side of the table shows what I THINK our cost would be if we produced 600-pound calves at 205 days of age. I am assuming that mature cow weight would increase 20%; that milk production would increase; and that calves would be creep fed. Since forage coversion efficiency would not increase, cow numbers would be reduced by 20% to maintain proper range use. If the calves were to be produced without creep feed, stocking rate would have to be further reduced. Since for an established ranch many costs are fixed, the reduction in numbers increases cost per head for such things as facility costs, machinery cost, calf handling, breeding, and management charge. Given these assumptions, total pounds of calf produced, for the same acres of range, increases by only 4.5% and total cost per pound of calf produced declines from 87 cents to 81 cents, which are not startling differences. Even a modest increase in grain prices would eliminate the cost difference entirely. The greatest difference in production between the two systems would be due to a difference in calving or weaning percentage.

**Table One**

| COST ITEMS | 450 lbs. | 600 lbs |
|---|---|---|
| FEED | | |
| Pasture rental value | 90.00 | 108.00 |
| Creep feed | 0.00 | 20.00 |
| Cow flushing | 0.00 | 5.00 |
| Winter feed | 85.00 | 102.00 |
| Feed Total | $175.00 | $235.00 |
| OPERATION COSTS | | |
| Breeding | 20.00 | 22.00 |
| Vet, vaccines | 5.00 | 5.00 |
| Calf handling costs | 5.00 | 6.00 |
| Replacement heifers | 10.00 | 10.00 |
| Equipment and operation | 15.00 | 17.00 |
| Death loss | 5.00 | 6.00 |
| Total Operation | $60.00 | $66.00 |
| OTHER COSTS | | |
| Interest | 75.00 | 80.00 |
| Facility cost | 10.00 | 12.00 |
| Labor & management | 50.00 | 65.00 |
| Total Other | $135.00 | $157.00 |
| TOTAL COST/COW | $370.00 | $448.00 |
| Weaning percent | 94% | 92% |
| Pounds calf/cow | 423 | 552 |
| Cost per pound | $0.87 | $0.81 |
| Total lbs. beef produced | | |
| 423 × 100 = | 42,300 | |
| 552 × 80 = | | 44,160 |

Replacement heifer costs are computed by taking the difference between the sale value of a cull cow and the total investment in her replacement times a 15% culling rate.

**In this example, assuming the calves are sold at weaning,** the program which at present prices loses the least money is dependent upon whether 450-pound calves sell at a premium to 600-pound calves. The 450-pound calves can be "backgrounded' or fed to grow rapidly without gaining much in condition for about 150 days and then finished or they can be backgrounded and then sent to grass before finishing. The 600-pound calves can be backgrounded and then finished or "fast finished." None of these practices is inherently more profitable than another.

Up to this point none of these systems would affect total national beef production. In my example the heavier calves of the 600-pound calf program are balanced by fewer numbers. If numbers were maintained by grain feeding to cows and calves prior to weaning, less grain would be needed between weaning and slaughter to reach choice grade and slaughter weights would not increase.

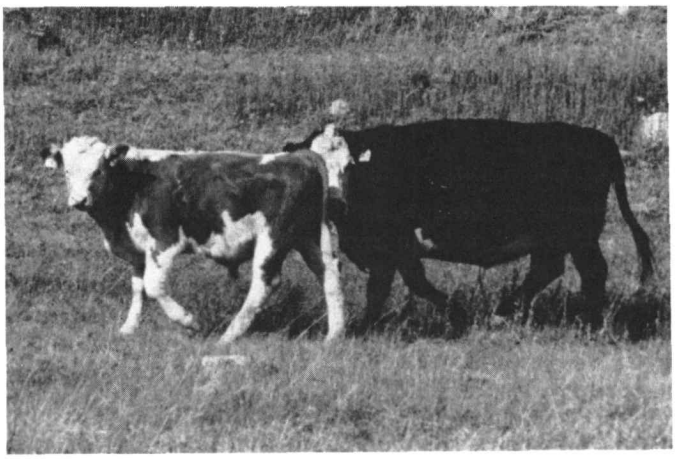
**The only reason for not producing 600-pound calves, and the point of this article, is that the heavier calves cannot be grazed as yearlings.** Cow-yearling ranches have, however, several advantages over cow-calf operations. Table Two shows that a 100-cow ranch operated on a cow-calf basis requires about the same total feed as 75 cows operated on a cow-yearling basis. This table assumes that all calves are backgrounded to gain about 1.7 pounds per day after being weaned at 450 pounds and are then grazed for from 120 to 150 days with an expected gain of 1.4 pounds. Under this system steers will weigh about 900 pounds off grass and will need about 100 days in a feedlot to reach choice grade and acceptable weight. This system should produce about 25% more total beef than a cow-calf ranch with the same feed use. Total cost per pound of beef produced is reduced from 87 cents to about 65 cents. (This is from our records and is accurate for our system of management.) Since total production is higher, relative profitability of the cow-yearling system is less dependent upon selling price than the previous examples. It involves more management complexity, however.

**TABLE TWO**

**RESOURCE BREAKDOWN FOR COW CALF AND COW YEARLING RANCH**

| Feed Items | 100 cows | 75 Cow/Yearling |
|---|---|---|
| Cow grazing | 650 AUM | 487 AUM |
| Bulls-replacement grazing | 80 AUM | 60 AUM |
| Yearling grazing (58 head) | 00 AUM | 168 AUM |
| TOTAL GRAZING | 730 AUM | 715 AUM |
| Winter feed cows | 180 ton hay equiv. | 135 ton hay equiv. |
| Winter feed repl.-bulls | 30 ton hay equiv. | 21 ton hay equiv. |
| Winter feed calves | 00 | 81 ton hay equiv. |
| TOTAL HAY EQUIVALENT | 210 ton | 237 ton |
| Total beef production | 47,000 lbs. | 60,000 lbs. |

**Cow-yearling systems are more flexible in dealing with drought than are cow-calf ranches,** since a cow-yearling operator can adjust his yearling numbers or time on grass to changing forage conditions rather than having to adjust cow numbers. Cattle which can be grazed as yearlings are more flexible in use of feed resources generally. Genetic change



takes a long time accomplish and an equally long time to reverse. Cattle types which require grain for calf production and which require nearly full feeding of grain from weaning to slaughter are more vulnerable to changes in grain price than are grass based systems. Persons who use high grain systems are less in control of their own destiny.

I wrote earlier that up to a point none of the management systems resulted in more or less total national beef production. However, all range resources in the U.S. are likely to be used for some grazing purpose. If yearling cattle are no longer grazed, the grazing space left is likely to be used for more cows. This will increase total beef tonnage and depress price. Cow-yearling ranches provide a method of fully utilizing range resources while at the same time liquidating cows and actually reducing total beef tonnage and improving price.

Individual ranchers must increase range condition and carrying capacity on their own ranches wherever possible. As they do I hope they will consider the above logic. Increased carrying capacity used for more cows will increase total beef supplies far more than will the same increase used for yearling programs. On an individual basis increasing cow numbers will not reduce costs as much as you may think. In my example only 24% of the cost of calf production is rental value of grass. Because many costs are related to number of cows (supplemental feed, calf treatment, cow interest, death loss, most of breeding costs) a 50% increase in carrying capacity of range would reduce costs by only ten cents per pound of production.

Much of the above is speculative in nature. The data are valid for my management system and range base but may not be valid for others. All the efficient cattle presently produced regardless of size will fit some feed and management system; but bigger is not always better. ●