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ECONOMICS COMMENTATOR



SOUTH DAKOTA STATE UNIVERSITY
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SUSTAINABLE BEEF CATTLE PRODUCTION

by
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This is the tenth in a series of Economics Commentator articles over the past 7 years focusing on "alternative" or "sustainable" agriculture. In all except one of these articles, crops have been the primary focus of attention. The literature on sustainable agriculture elsewhere in the U.S. is also heavily weighted toward crops.

In the one Commentator exception (No. 293, January 31, 1991), we focused on integration of crop and livestock (beef and hog) enterprises on nine sustainable case farms in South Dakota. Data on home-raised livestock feed, production and disposition of manure, and relative contributions of crops and livestock to overall farm income were presented for the respective case farms.

This issue of the Commentator is conceptual. We present ideas on the overall nature of sustainable development and how it applies to the production of crops and the production of livestock. To address the literature imbalance, we cover sustainable livestock production more fully than either of the other topics. Whereas we characterize separately sustainable crop and sustainable livestock production in this article, we recognize that the sustainability of many farming systems depends on close integration of crop and livestock enterprises on individual farms.

Sustainable Development

"Sustainable development" is a multifaceted topic without a universally accepted definition. In broad terms, however, sustainable development concerns philosophies and courses of action to help insure the long-term ecological/environmental, institutional/social, and economic "staying power" of various geographical entities in the world: villages, towns, (Continued on page 2)



LIVESTOCK OUTLOOK

by
Gene Murra
Extension Economist
Livestock Marketing

The consumer should have plenty of good choices when making meat purchases this Fall and into at least mid-1994. Beef, pork and poultry production should be sufficient to keep prices close to or maybe below year earlier levels during those periods.

Hog Outlook

If one price were to be used for barrow and gilt prices for this Fall and the first half of 1994, it would be \$45. If prices are to be below that level, it most likely would be late in the third and early in the fourth quarter of 1993 and then again in the first quarter of 1994. Even then, it is very unlikely that prices will drop below \$40 for long periods of time. If prices are to be above \$45, it most likely would be during the second quarter of 1994. Then, the \$50 level is not out of reach!

Several factors could have a major role in helping to upset the above forecast. One of those is "actual" slaughter. Early in 1993 slaughter was below expectations. After some "catch-up" in the second quarter, slaughter in the third quarter once again is below expectations. While this has helped support cash hog prices, it leads to some questioning of the "actual" supply. Are the hogs really there? And, if so, are larger numbers being held back for breeding? Whatever is happening, the supply side is not crystal clear. The best guess now is that 1993 should be close to the record 17.2 billion pounds produced in 1992. And, production in early 1994 could be up slightly from early 1993 output.

Another factor which could affect the situation, at least longer term, is the nation's corn crop. Current questions (Continued on page 4)

(Sustainable ... cont'd.)

counties, states, countries, regions, and the world at-large.

Proponents of sustainable development emphasize, among other things, the importance of people (1) being concerned about the needs of future generations, rather than simply the needs of the current generation; (2) being allies with nature, rather than simply marshalling efforts to control nature; (3) exploring possibilities for enterprise diversification and recycling of waste products, rather than simply pursuing ever more specialized, large-scale production; (4) maximizing use of internally-produced resources, rather than relying heavily on externally-purchased inputs; (5) limiting non-renewable energy consumption, in view of ever-diminishing supplies of fossil fuel energy; (6) being cautious in specifying maximum tolerances for chemical residues in food and generation of toxic waste materials; and (7) not being preoccupied with economic growth.

Sustainable Crop Production

Applied to crop production, sustainable development involves seeking opportunities to substitute "natural on-farm produced resources" for purchased synthetic fertilizers and agricultural chemicals (e.g., insecticides, fungicides, and herbicides) and otherwise to protect natural resources from degradation, while ensuring that producers earn adequate profits to remain in business.

Illustrative "natural on-farm produced resources" are (1) crop rotations, intercropping, and relay cropping to enhance soil fertility, control weeds, and maximize use of space and time; (2) livestock wastes, crop residues, and green manures to enhance soil fertility; (3) nitrogen collected from the air and recycled through nitrogen-fixing legumes; (4) integrated pest management practices, modified planting dates, and other cultural practices to control insects, diseases, and weeds; (5) varieties selected for resistance/tolerance to insects and diseases; and (6) modified tillage and other cultural practices to control soil erosion.

Sustainable Cow-calf Production

In conceptualizing features of

"sustainable" beef cattle production

systems, we have attempted to consider the joint short- and long-term implications of various production practices to productivity, profitability (both level and variability), environmental quality (water and soil resources), animal health/welfare, and human health/safety.

These considerations have been applied to grazing/feeding, drinking water, herd health, breeding, calf, and manure management practices. While we recognize that individual differences among farms/ranches influence selection of most suitable management practices, we propose that the following types of production practices may be generally conducive to sustainable beef production.

Grazing/feeding. Producers with high ratios of grazed-to-harvested forages are able to limit (1) amounts of fossil fuel energy and out-of-pocket expenditures on machine-related inputs in production and (2) exposure to risks of potential human injury from farm machinery operation. Producers who home-raise large proportions of feedstuffs are likely to have longer term "staying power" than those who routinely depend heavily on purchased feedstuffs. By properly following pasture rotations (rather than continuous grazing), producers can realize greater productivity --from various grass species having intermittent opportunities for undisturbed natural re-seeding and re-growth--from their pasture resources.

Drinking water. Producing beef cattle sustainably requires existence of adequate quantities of good quality drinking water, even in years of below-average precipitation and water run-off. Producers with natural ponds, river/creeks, and springs can avoid damage to water source embankments and contamination of drinking water if they limit access of their cattle to the water sources. Other things the same, producers who do not have to lift and/or transport drinking water with non-renewable pumping energy can reduce production costs and help alleviate possible future natural resource crises.

Herd health. Producers who use no antibiotics, insecticides, parasiticides, or vaccinations because of following herd management practices that completely preclude sickness/injury/discomfort to

their cattle would represent a "sustainability" health ideal. However, because some types of health impairment are likely with even "well-managed" herds, we view the following practices to be conducive to animal productivity and welfare: (1) use of antibiotics to treat specific sicknesses/injuries (versus routine use of antibiotics); (2) occasional uses of insecticides, parasiticides, and calf scour vaccinations; and (3) regular use of brucellosis, blackleg, and IBR-BVD-PI₃ vaccinations. Providing special care and facilities for cows when they calve; special protection to cattle from snow, mud, wind, and heat; and special facilities to segregate and treat sick/injured animals are also viewed to contribute positively to the health, welfare, and productivity of cattle.

Breeding management. Pregnancy checking cows, fertility testing bulls, and production testing cows are relatively low effort/cost practices that can provide critical information for decisions regarding possible retention/disposal of animals from the herd. Selecting herd sires which transmit structural soundness, high carcass quality, light birth weights, and rapid growth performance also directly contribute to herd productivity and profitability. Breeding yearling heifers at intermediate weights can help to preclude low conception rates associated with premature breeding and incurring the opportunity cost of unnecessarily delayed production from first-calf heifers. If breeding seasons are "too long," providing differentiated management and care to calves of widely varying ages may prove to be problematic. If "too many" cows calve in too short a period, however, producers may be unable to provide adequate attention to individual mothers and newborn calves. In many cases, selective use of artificial insemination can enable producers to economically upgrade herd efficiency.

Calf management. Dehorning, castrating, and branding calves at early ages can minimize calf productivity and welfare setbacks. Weaning of calves at intermediate ages enables producers to take advantage of the natural milk production and nurturing instincts of cows, while precluding problems of inadequate maternal nutrition for newly developing calf-embryos during the critical final pregnancy trimester. The judicious use of home-

raised creep feed during periods of abnormal feed shortage and to prepare calves for post-weaning transition (versus extended periods of routine creep feeding) can enhance herd productivity and profitability. Producers who individually identify their calves have opportunity to assess the comparative performance of the calves' mothers.

Manure management. The more intense the application of nitrogen and phosphorus from manure--up to a threshold level--the greater the build-up of organic matter in the soil and the less the expenditure required for purchased fertilizer. Beyond the threshold level of application, however, soil nitrates may build up in the soil and contaminate water.

"Organic" Beef Production

Most "organic" certifying organizations specify standards for "organic" beef production. While their production standards pertain to some of the issues of sustainability mentioned above, the organizations also stress the importance of "organic" beef producers (1) feeding only "organically"-produced feedstuffs (i.e., feeds produced with no synthetic fertilizers or agricultural chemicals), (2) not administering antibiotics to cattle except in cases of "emergency" sickness/injury, (3) not using hormones and growth promotants, and (4) not using "alternative" feeds such as recycled manure, urea and/or anhydrous ammonia, and plastic pellets for roughage. Whether such practices will come to be viewed more generally over the long-term as "sustainable" is uncertain at this time.

Postscript

If interested, readers are invited to request from the author copies of more extensive reports on "sustainable development," "sustainable crop production," and/or "sustainable beef cattle production" (SDSU Economics, Box 504A, Brookings, S.D. 57007-0895).



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(Livestock ... Cont'd from p.1)
include how much corn, what will be the price, how early will frost occur and will mold and mycotoxins be a problem.

Even demand is a question. In general, demand during this Summer has been weak. Pork will continue to face challenges from the poultry industry, where 4-5 percent increases in output seem to be expected every year.

Cattle Outlook

If one price were to be used for slaughter cattle for the rest of 1993 and the first half of 1994, it would be \$75. Prices below \$75 most likely would occur during the last half of 1993. Even then, prices should stay above \$70 and closer to \$75 than to \$70. Prices could move up to and above \$80 during the first half of 1994. The record \$87.50 recorded in March of 1993 seems out-of-reach. However, prices closer to \$80 than \$75 during the first quarter and even early in the second quarter now are forecast. Prices closer to \$75 by late in the second quarter seem likely.

The above scenario would be somewhat supportive to feeder cattle prices. However, two other opposing factors need to be watched. First, feeder cattle supplies remain fairly tight. Favorable roughage conditions, both pasture and hay, have contributed positively to feeder cattle prices. Second, however, is the potential negative impact from the grain side. Lower

corn production has resulted in higher corn prices. The corn situation for 1993 is not yet settled. Further moves up in corn prices will depress feeder cattle prices.

Both fed and feeder cattle markets will be affected by some of the same factors which affect hogs, as discussed earlier. Supplies of beef, as well as pork and poultry, will be plentiful (although beef production won't be at record levels). Demand is somewhat soft, probably more so for beef and than poultry. Price at the retail level is factor here. The corn crop also could affect the situation, as noted earlier.

Summary

While the rest of 1993 and the first half of 1994 likely will not be record producing years, at least as far as prices for cattle and hogs are concerned, they shouldn't be that bad either. The good managers will do okay--the poor ones will need some luck. But then, that isn't that much different than its always been.

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