what you find where. King Clone shows that creosote bushes may have been in the desert area sooner than we thought, probably even during the last stages of the last ice age."

Researchers may quibble with Vasek over a few thousand years, but they all agree King Clone is ancient. Because the seedling it spread from was probably one of the first desert plants in the state, it deserves further study.

Fortunately for King Clone, the Nature Conservancy agrees. In March it bought a 17-acre parcel on which King Clone resides—none too soon, with a house going up less than a mile away. We're preserving King Clone because of its scientific value," says Lester Olmstead-Rose, the Conservancy's land protection assistant. "Besides being the oldest plant alive, King Clone represents an important genetic link to life during the last ice age."

Grass—the Next Cinderella Crop

H. Allan Nation

Agronomists all over the United States are scanning the horizon for the next Cinderella crop to hit American agriculture. In the 1970's the Cinderella crop in much of the U.S. was soybean, but today with fearsome competition arising in the Southern Hemisphere the soybean looks more and more like the Wicked Stepmother to farmers who grow it. Corn, wheat, cotton, and rice are all in gross oversupply in the United States, and few expect a dramatic turn-around in the demand for any of those U.S. crops in the remainder of this decade. I hope to be able to make a credible case that America's Cinderella crop for the remainder of this century is all around you. It is here and has always been here and that crop is grass.

The Good Lord in his magnificent plan for the universe has deemed grass to be the ultimate climax crop in his universe. He absolutely will not allow a bare piece of ground. Grass cools the soil, tempers the fall of the raindrop, and heals and rebuilds the soil organic matter and nitrogen. Grass is the only crop we can grow that puts more into the soil than it takes out of it.

The stirring and tilling of the soil and the planting of monocultures is not found naturally anywhere on earth. These activities eventually destroy the organic matter God's grass crop carefully built in the soil and will economically destroy the farmer eventually. Without organic matter, the soil's life-force of microbes dies, and when the life dies in the soil, crop residues will no longer recycle. Herbicides will no longer work and can actually do more damage than good. The soil has no water holding ability and the soil will eventually literally blow in the wind.

In the Mississippi Delta, farmers are having to almost continuously run center pivot irrigators to grow cotton in a 60 inch rainfall area! The soil has so little organic matter than it can only hold one-half an inch of water in an area where the summer daily evaporative rate is one-third of an inch. The only thing that can break the death spiral for these farmers is to put this land back to grass for four or five years and heal the soil. Unfortunately, many of these farmers were able to get a degree in agriculture with virtually no understanding of soil science or ecology. They, in their ignorance, still believe that cotton is king and grass is something you try to kill.

These farmers, who are going broke by the bushel basket, will tell you that their land is too good for grass and yet any soil scientist can tell them that their land has been rendered virtually worthless by their continuous cropping. Research in Georgia shows a virtual doubling combinations of species and classes of animals offer a much better harvest than any one species or class. All of our grasses have seasonal protein requirements high enough to allow our grazing animals to breed and our breeding seasons must mesh with these periods.

We have placed entirely too much emphasis on weaning weights and not nearly enough emphasis on genetically matching animals and their environments. For example, much of the Southwest is covered with brush and yet there are cattle in Africa who can make up 90% of their diet from brush. It would be much more cost-effective to genetically adapt the cattle to the brush than to chemically adapt the environment to our present breeds of cattle.

There will never be one "ideal" steer in the United States. Genetics will have to be altered to allow the animals to maximize the harvest of the existing environments. The correct emphasis for any cowman is not on the steer calf but on the replacement heifers he is carefully adapting to his specific environment. Genetic adaptation comes not so much from the bull we buy, but the cow we cull. The more ruthless we cull, the faster we adapt our herd. A 75% calf crop indicates that we are three-quarters of the way there in getting rid of cows who can't hack it under our environment.

Our customers, the American consumers, are telling us to route fewer animals to the feedlot and more to the hamburger stand. We need to allow every heifer we produce to have a chance to make it as a productive breeding animal that is better adapted to our environment than her mother. If she, in fact, proves she is so adapted, Momma goes to McDonald's and daughter takes her place. Those who say we have too many cattle in the United States totally overlook the fact that we import one billion pounds of hamburger grade beef a year. That's the slaughter equivalent of the entire cowherd of Missouri, our second largest cow-calf state.

Our post-weaning steer programs need to be regearred for producing animals in the 850 to 1,000-pound weight category prior to being placed in the feedlot for a quick finish. Our critics point out that cattle are wasteful users of the grain resources of the world. Economists point out that cattle will
never anywhere equal the feed efficiency of chickens, and both the critics and the economists are right. However, if we place cattle on feed at this weight category, the total feed efficiency of grain to liveweight slaughter equals or exceeds that of poultry. I'm not going to overly worry about poultry competition with the cow. I'm not going to overly worry about poultry competition because they breed a bird that can gain two pounds a day on grass, and as far as a waste of our grain resources, I am far more worried about our waste of grass resources.

The central plains area was originally a summer fattening range for yearlings driven up from Texas and it worked extremely well as such. When we started shifting the post-weaning growing program from grass to grain, we created a huge under-utilized resource, and man hates to see a resource go to waste, so we expanded the only part of the cattle business left to grass—the cow. This set us off on the roller-coaster we have been on for the last 35 years whereby the availability of grain rather than grass dictated the size of the cow herd. Every mouthful of grass a steer eats relieves the pressure to have that mouthful of grass eaten by a cow.

If we start routing cull cows to slaughter rather than heifers to the feedlot, and if we start growing all our steer production to 850 to 1,000 pounds before placing them on feed, you can start to see that we could have a much better utilization of our grass resources without that much increase in total tonnage of beef. It would also largely free us from the grain market vagaries. We do not have cattle to eat surplus grain. We have cattle to harvest grass.

Let's look at the pieces of our puzzle so far. We've got a crop that God will grow for free. We've got a harvesting machine that runs on sunlight and water, but we've had one key element missing. That element was the ability to efficiently control and steer our harvesting combine. And, it was this one missing element that allowed rowcrop farming to be more profitable than grazing.

Consider for example, the economics of growing a crop, but having a combine aimlessly churning through the field during the entire growing season. It would be bad enough if this combine were only loosed to do its damage when the crop was ready to harvest, but I am talking about a combine that wanders aimlessly over the crop from the day the first seed is planted. Picture that, please. Can you imagine how much of the crop would be crushed by the wheels of the combine compared to how much would grow up in the hopper?

While this sounds totally ridiculous in the context of a soybean or corn crop, it is precisely how we have been attempting to harvest our grass crop. Our cows only harvest approximately one-third of the grass we grow with continuous grazing.

Our biggest problem in grassland farming has been that we have been attempting to grow more grass rather than attempting to more efficiently harvest what we have already grown. It is on this one key missing piece of the puzzle that all of our grassland economics have foundered, and it is on this one key piece of the puzzle we are starting to separate the men from the boys, and the winners from the losers, in the grass business. In my opinion, the greatest technological breakthrough in the history of the cattle business has been these new New Zealand electric fences. As a boy, I grew up on a commercial cattle ranch, and I hated every minute of it. Looking back, it was not the cows I hated. It was those damned barbed wire fences that were always needing repair.

I recently visited a man in Alabama with 9,000 head of cattle and not one fence on his place was more than a one wire New Zealand style electric fence.

Fencing costs, which were the major capital cost of a grassland farming operation just a few years ago, are a minor expense now. Now for the first time, we can start effectively controlling that combine on our crop. Just like the rowcrop farmer, we can keep our combine off the crop until it is at its peak and whack it off again.

Like the cotton farmer, we can also pick and scrap. We can let our yearlings pick the prime crop and the cows follow them and scrap the rest. With control over our crop, we can start effectively harvesting alfalfa, johnsongrass, orchardgrass, and other extremely high quality forages that were previously only harvestable as hay.

Rather than going to all the trouble of harvesting corn as silage, we can grow a corn crop, allow it to stand and dry down until we need it in the winter, and then take one of these reel-type electric fences and ration off only as much of the corn crop as our yearlings can eat that day. In effect, we can combine a rowcrop just like a grass crop.

Want to fatten steers on grain sorghum? Stagger plant your crop and strip graze it while the grain heads are still in the soft, green, doughy stage. After you've gone across the crop like this approximately twice in much of the U.S., you'll still have an excellent standing hay crop to winter your dry cows on. Virtually any crop we can harvest with an oil-burning, iron combine, we can harvest with a solar-powered animal combine.

I hope I have shown you that all of the pieces of the puzzle are finally in place. All we need now are grass farmers willing to put these pieces together in their most optimum form for their particular area. If you'll forget the past, ignore prejudices and old wife's tales about cattle and grass, and if you'll start to think of grass as a crop and animals as a combine, I think you too will start to see that grass is indeed America's next and most enduring Cinderella crop.