

# What will be effect of biotechnology

ALBANY, N.Y. — With the advent of biotechnology, agriculture is on the brink of a new era. Yet, just what influences new technologies will have on agriculture and society remain to be seen.

"Although recent advances in biotechnology suggest the possibility of significant impacts on agriculture in New York State, the nation, and the world, the future impact of biotechnology on agriculture is largely uncertain," said Robert Kalter, professor of agricultural economics at Cornell University, who prepared a paper for the recent Agriculture 2000 Governor's Conference in Albany.

Kalter's report, written in conjunction with William Magrath, an agricultural economics researcher at Cornell, was one of 17 reports commissioned by Governor Cuomo to plan for the agricultural future of New York State. The majority of the presentations at the conference were made by faculty in the department of agricultural economics in the New York State College of Agriculture and Life Sciences at Cornell.

In all likelihood biotechnology — the application of chemical, physical, and engineering principles and techniques the biological systems to achieve improved production of food and fiber and to produce biological substances and value in commerce and medicine — will accelerate the rate of agricultural productivity, Kalter said. This will have both beneficial and adverse affects.

"The benefits to society are obviously improvements in efficiency and product quality, and a higher standard of living," Kalter pointed out. "A rapid acceleration in productivity, on the other hand, may result in a downward pressure on consumer prices and farm incomes, in fewer employment opportunities in agriculture, and in fewer farms."

Kalter explained that only a few new commercial products or processes evolving from biotechnology have been proven, and none are in widespread use.

"Yet, the possible innovations are limited only by the human imagination," he emphasized.

In plant production, it is hoped that varieties will be engineered to take on new characteristics. For example, the nitrogen fixation capabilities of legumes may be transferred to cereals; crop varieties could take on drought, salt, and cold tolerant characteristics or be altered to be resistant to pesticides, plant pathogens, and herbicides. Annual crops could become perennials and the photosynthesis ability of plants might even be improved.

In food processing, synthetic production of flavors and other constituents of prepared foods could be engineered, as could the production of costly raw materials such as cocoa oil.

The earliest adoption of biotech's accomplishments probably will be in animal production. Embryo sex selection, embryo transfer, vaccines and antibiotics for disease control, feed supplements, and the production of hormones and growth regulators are just a few examples of new biological tools that could result in lower production costs and improved animal physiology and health.

How quickly innovations are adopted will depend on the profitability of the product or process, farmer perception of the risk involved, the capital investment required, and, finally, on consumer confidence in the quality and safety of the new product.

Kalter pointed out that major research and development funding will be necessary to continue to support research not only in the natural sciences, but also in the social sciences, to develop policies for the problems and opportunities that may arise.

Specific objectives must be articulated first. Among these goals could be a reduction in consumer food prices, the stabilization or increase of farm incomes, and the protection of family farming or preservation of farmland and open space, Kalter and Magrath suggested in their presentation.

Then, techniques to assess the profitability of potential innovations must be developed. Finally, there is a need to develop a better understanding of the process by which new innovations, spread — theories based on research that predict technology adoption and that will manage the diffusion of efforts from other social goals and objectives, Kalter said.

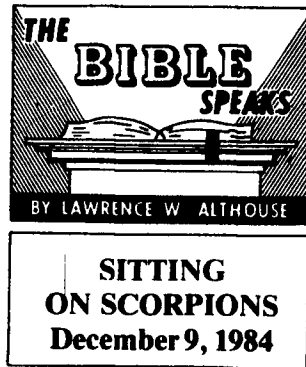
"Biotechnology presents us with almost unlimited research opportunities that could ultimately impact, in far reaching ways, the agricultural sector and the well being of consumers," Kalter said.

"Biotechnology will greatly alter the speed and direction of technological change in agriculture. Farm production, agribusiness, research, education, and public policy are likely to undergo dramatic changes.

Policy makers, industry, and the present institutional structures will have to bend with the forces resulting from the new technology.

"What needs to be understood is that biotechnology is beginning to shape our private and public policy making agenda and will do so increasingly in the future, Kalter concluded.

Cornell's Biotechnology Institute, a collaboration between university and industry scientists, focuses research on molecular genetics, cellular biology, and cell production. It fosters basic technology research with applications to benefit agriculture, food, chemical, and pharmaceutical industries.



Background Scripture: Ezekiel 2:1 through 3:3.

Devotional Reading: Jeremiah 7:1-15.

In my last pastorate in Mohnton, Pennsylvania, I typed out and placed these words on the pulpit lamp, where every Sunday morning as I got up to preach I could see them and be reminded:

And you, son of man, be not afraid of them, nor be afraid of their words, though briars and thorns are with you and you sit upon scorpions; be not dismayed at their words, nor be dismayed at their looks... (Ezekiel 2:8)

It was a wonderful congregation of people and I never had to be afraid of either their words or their looks. Still, this text was a very necessary reminder to me that my task was to speak, as best I could, for God and not to please my congregation.

### UPON MY FEET

How easy it is to agree that we must speak and act for God and not to please other people. We all know how true that is. But very often it is so hard to do, particularly when it means standing all by ourselves to the disapproval of people whose esteem we covet.

A few months ago I was at a religious meeting in which something occurred that was totally repugnant to my spiritual convictions. I wanted desperately for someone else to do something about it. I knew that if I protested I risked disapproval of people whose good will I valued. I had everything to lose and, seemingly, nothing to gain — except my own self-respect.

I don't think it is necessary for me to relate what I eventually did or didn't do, for it is much more important for you to consider what you would do and perhaps have done when confronted by the prospect of sitting down on a nest of scorpions for the sake of deeply held convictions.

### I SEND YOU

It is in times as these when we must remember that we must take the long-run, rather than the short-run view. In the short-run it is obviously more desirable to please people and earn their esteem. Yet we know that in the long run pleasing God is all that really matters. If the world rejects us — and our rejections are seldom as devastatingly total as that — it is only for a while.

Furthermore, many of us are tempted to play to the grandstand rather than to the heavens because we are afraid that our witness, no matter how bold or brave, will not do any good. Often it is true the faithful witness is ignored, but God reminds us that that is his affair, not ours: "And whether they hear or refuse to hear...they will know that there has been a prophetic witness among them" (2:5) — or, if not a prophet, at least a witness for God.

In the long run, sitting on a nest of scorpions is better than failing to witness for the Lord.

## NOW IS THE TIME

By Jay Irwin

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## Farm Calendar



**Monday, December 10**  
Annual Seed, Feed, Fertilizer and Pesticide Dealers meeting, Union Hotel, Flemington, N.J. at 6 p.m.

**Tuesday, December 11**  
Winter Forage Meeting, Md. Del. Forage Council, Caroline 4-H and Youth Park, Denton, Md.  
Southern Md. Crops Conference, 9 a.m. to 3 p.m., Mechanicsville firehouse.

Rutgers Annual Pest Control Conference, Quality Inn, North Brunswick. Continues

tomorrow.

**Wednesday, December 12**  
Penn Ag Performance Appraisal Seminar, 10 a.m. to noon, General Sutter Inn, Litz.  
Central Md. Forage Conference, 8:30 a.m., Westminster, Md.  
Milk Marketing Inc. annual meeting, Columbus, Ohio.  
Financial Management workshop, 9 a.m. to 3 p.m., Pleasant Acres, York.

**Thursday, December 13**  
FW. Pa. Commercial Vegetable

Growers Seminar, 8:30 a.m. to 4 p.m., Bradley House, Wexford.  
Eastern Lancaster County Adult Farmer program on tax management, 7:30 p.m., Blue Ball Elementary School.  
Baltimore County Field Crops Day, 9 a.m. to 3:30 p.m., Friendly Farm restaurant, Upperco, Md.  
York County Sheep Producers, 7:30 p.m., 4-H center.

**Friday, December 14**  
Delaware Council of Farm Cooperatives

**To Exercise Breeding Animals**  
Many farm animals are kept in close quarters during the winter months. This is fine for animals being fattened for market, but may not be suitable for breeding animals. The flock of breeding ewes should have access to an exercise lot daily; there will be less trouble with paralysis in the ewe flock and stronger lambs born if ewes are exercised daily.

When the ground becomes frozen, or snow-covered, some shepherds will feed hay on the ground out in the exercise lot in order to force the ewes to exercise. Dairy cows need outside exercise to maintain good feet and legs, and to provide opportunity for heat detection. Brood mares need the same daily exercise, if they are to remain in the best of health.

**To Practice Holiday Safety**  
This is not a new idea but one that bears repeating. With the holiday season approaching, there

are many extra decorations and events that can present fire hazards. We urge every parent to discuss the need of safety measures that will prevent serious fires and possible human injury. Too many people are careless with evergreen decorations and Christmas trees. Candles, fireplaces, and overloading our electrical lines are all possible fire hazards when not carefully handled. We urge everyone to make an effort to be careful with holiday decorations and, certainly don't take chances. If there is a possibility of a fire, then eliminate that item.

**To Properly Store Firewood**  
We are more energy conscious than we've ever been — and this is certainly a good trend. Many homes are equipped with a fireplace or wood stove. This means the use of more firewood. Proper storage is important.

When storing your firewood keep it outside since many insects may hibernate in the wood piles. If you keep it inside they'll think it's spring and wake-up to become a pest in your home. If this happens use an ant and roach aerosol for control. It's a lot easier just to keep the firewood in a cold garage or some outside shelter. The important thing is to keep it as dry as possible, even if it means covering it with a plastic tarp. Wet firewood takes a lot of heat just to dry it out.

**To Be Patient With People**  
Farming in the best of times is a very stressful occupation. To add to that the low returns over the last several years due to high expenses and lower returns for

