

## ACKNOWLEDGEMENTS

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- > The Value of Federal Formula Funds to the U.S. Agricultural and Food System

## FOR MORE INFORMATION

More information is available on public investments in agricultural research and on the future of science in agriculture at the following websites:

- > [www.agnr.umd.edu/users/nera/counterfactual](http://www.agnr.umd.edu/users/nera/counterfactual)
- > [www.cals.ncsu.edu:8050/escop/roadmap2.pdf](http://www.cals.ncsu.edu:8050/escop/roadmap2.pdf)



# FORMULA FOR **SUCCESS**



Over the past 30 years, the annual rate of return for government bonds has been 3 percent above the inflation rate.

The S&P 500's average rate of return has been 8.5 percent.

The annual rate of return to society for the benefits of publicly funded agricultural research has been approximately 50 percent.

#### 50 PERCENT? WAIT, TIME OUT. EXPLAIN.

Studies by Iowa State University and Yale University economists found that taxpayer investments in agricultural research and development at the nation's land-grant universities and the U.S. Department of Agriculture have yielded an approximate 50 percent annual rate of return on investment since 1970.

#### AGRICULTURE? YOU MEAN COWS AND PLOWS?

Sure, agriculture includes high-quality food and fiber produced on farms. But it's much, much more. The breadth of research and educational programs provided by land-grant universities — historic institutions built on the idea of service to society — extends to critical needs and issues you may not immediately associate with traditional agriculture.

#### LIKE WHAT? SHOW ME SOME OF THIS RETURN ON INVESTMENT.

Here are a few highlights:

## COMBATTING BIOTERRORISM



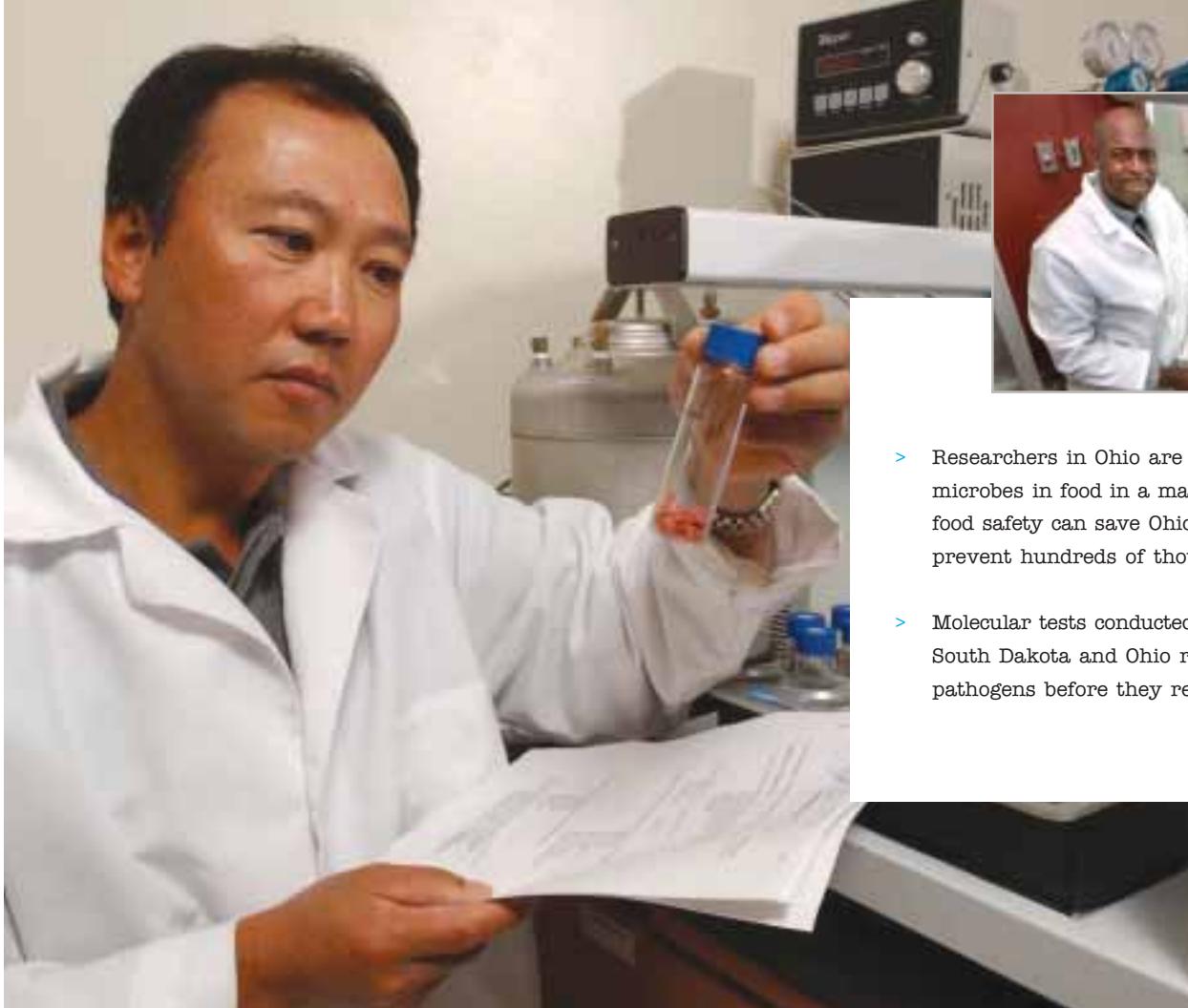
- > Pennsylvania researchers are developing rapid diagnostic tests to curb avian influenza, a disease that if intentionally introduced could cripple the state's \$700 million poultry industry. They also are studying advanced sensors to allow processors to quickly detect insidious threats on fruits and vegetables.
- > Utah researchers developed a cell-based, rapid test to screen large numbers of anti-viral agents to defend people and animals against viruses that might be used in a bioterror attack.

## EATING SMARTER



- > Virginia and Iowa researchers have determined that for every \$1 invested in food and nutrition education, the returns from reduced health-care costs reach more than \$10. Families participating in nutrition education increased their intake of key nutrients by 5 to 50 percent.
- > Researchers in Kansas, Maine, Iowa, New York and at 7 other universities are attacking the obesity epidemic by working to understand young people's food choices. Increasing "nutritional literacy" will serve up the benefits of fruits and veggies.

## SAFER FOODS



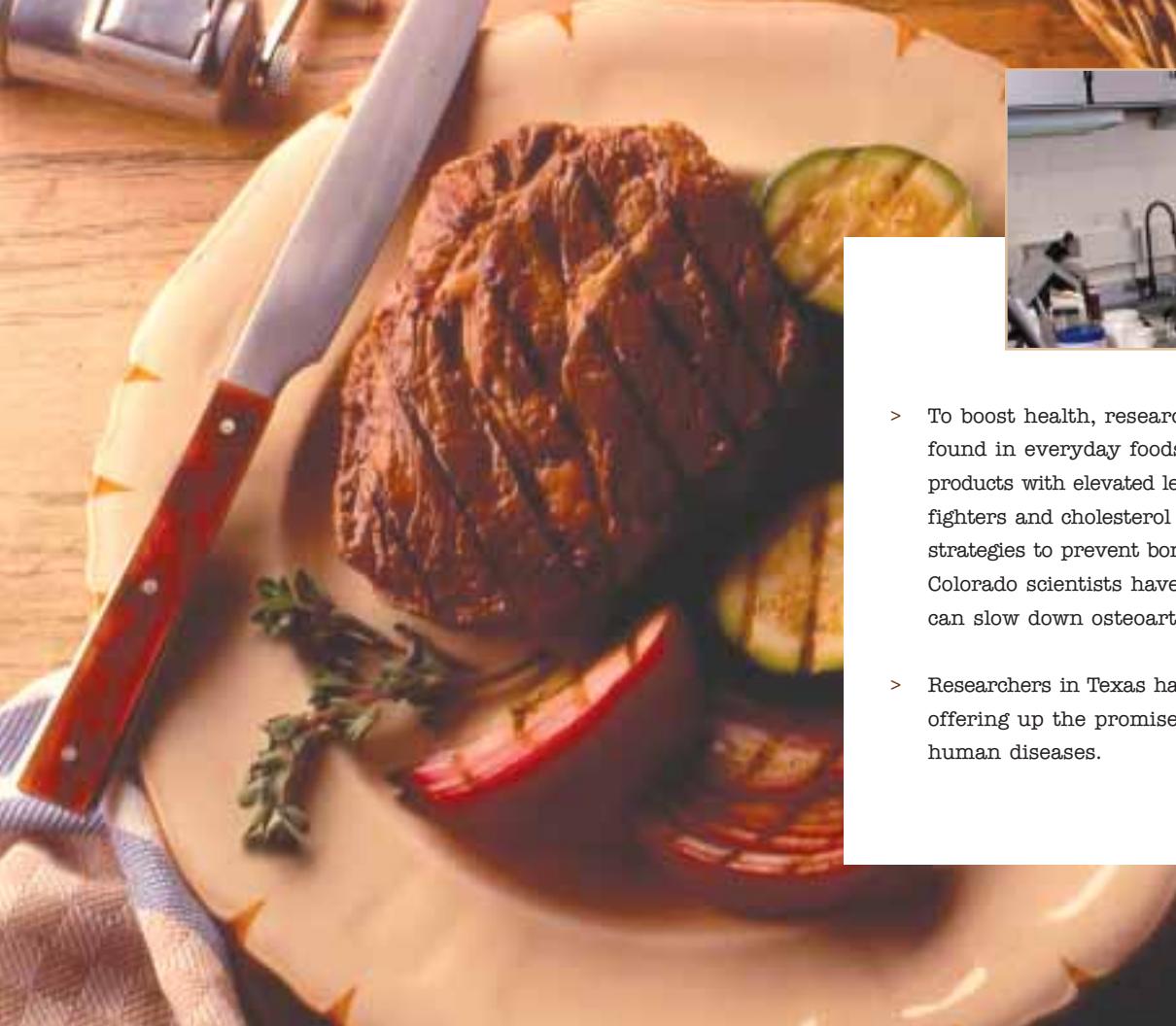
- > Researchers in Ohio are developing methods to detect dangerous microbes in food in a matter of minutes, instead of hours. Enhancing food safety can save Ohio up to \$532 million in economic losses and prevent hundreds of thousands of Ohioans from getting sick.
- > Molecular tests conducted at farms and feedlots have helped Minnesota, South Dakota and Ohio researchers pinpoint the presence of foodborne pathogens before they reach consumers.

## CLEANER ENVIRONMENT



- > Florida researchers tested a common fern's appetite for soaking up arsenic, a cancer-causing heavy metal, from contaminated soils. The market for plant-based remediation of wastes is estimated to be \$370 million in 2005.
- > Scientists in California and Nevada are working to restore the legendary water quality and clarity of Lake Tahoe, a research and educational effort involving 30 agencies.

## HEALTH ENHANCERS



- > To boost health, researchers are identifying and enhancing compounds found in everyday foods. Ten universities are working to develop dairy products with elevated levels of fatty acids considered to be excellent cancer fighters and cholesterol reducers. Iowa research on soyfoods is leading to strategies to prevent bone-loss problems faced by women after menopause. Colorado scientists have determined that foods with omega-3 fatty acids can slow down osteoarthritis, which afflicts 21 million Americans.
- > Researchers in Texas have discovered virus proteins that attack bacteria, offering up the promise of a next generation of antibiotics to fight human diseases.

## STRONGER COMMUNITIES



- > Florida family and youth researchers have shed light on crime and violence trends in schools and evaluated prevention programs. Result: a decline in disruptive behavior in classrooms by 40 percent over two years. The work is a national model for improving school safety.
- > State officials used a North Carolina research-generated economic model to estimate a \$75 million economic impact from the use of incentives to attract new businesses

And let's not forget  
**PRODUCTION**  
**AGRICULTURE**



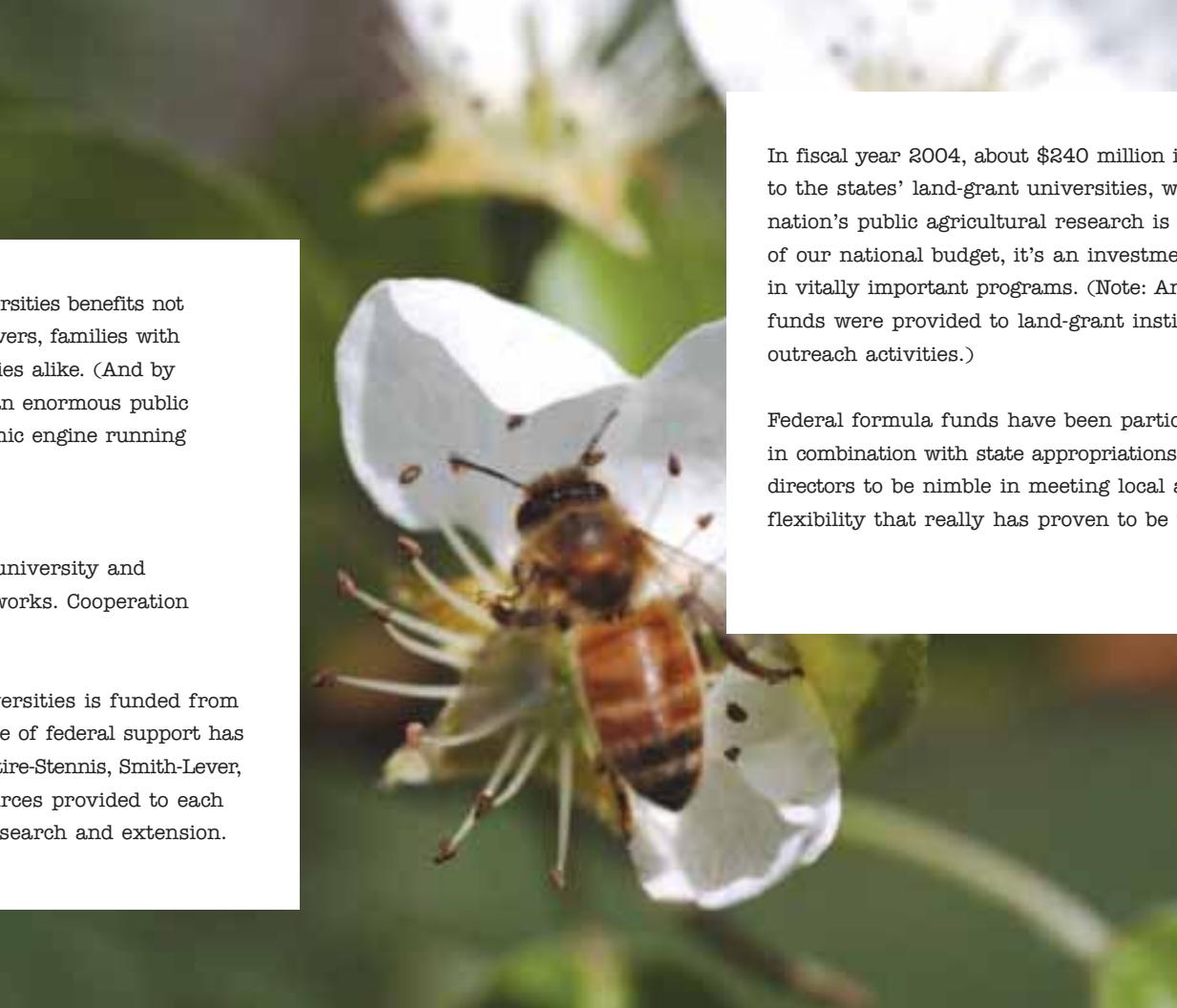
- > Research constantly is improving the efficient production of food and fiber, making America's food supply safe, secure, plentiful and the envy of the world.

Taken all together, public research at our land-grant universities benefits not only farmers, but consumers, small businesses, nature lovers, families with young children and citizens in small and large communities alike. (And by the way, the value of research to educating students is an enormous public benefit. Society-ready graduates keep our nation's economic engine running at top performance.)

#### **SO, WHAT'S THE FORMULA FOR SUCCESS?**

Two answers. One, this is a nationwide partnership of university and federal scientists and extension specialists that really works. Cooperation and responsiveness is what it's all about.

Two, public agricultural research at the land-grant universities is funded from a mix of state, federal and private sources. A cornerstone of federal support has been federal formula funds allocated through Hatch, McIntire-Stennis, Smith-Lever, Evans-Allen and Animal Health appropriations — resources provided to each state through the U.S. Department of Agriculture for research and extension.

A close-up photograph of a honeybee pollinating a white flower. The bee is positioned on the stamens of a white flower, its body covered in pollen. The background is blurred green foliage.

In fiscal year 2004, about \$240 million in constant dollars was provided to the states' land-grant universities, where three-quarters of the nation's public agricultural research is conducted. In the big picture of our national budget, it's an investment that's modest at best, but in vitally important programs. (Note: Another \$400 million in formula funds were provided to land-grant institutions for extension and outreach activities.)

Federal formula funds have been particularly crucial. Formula funds, in combination with state appropriations, have allowed state research directors to be nimble in meeting local and regional needs. It's this flexibility that really has proven to be the formula for success.



## END OF STORY?

No, here's the latest chapter:

Federal and state support is declining.

From 1980 to 2003, federal support declined 8 percent. In 1980, federal formula funds funded 15 percent of land-grant agricultural research. In 2003, it was down to 7 percent and has dwindled since.

Some suggest formula funds should be reduced further in favor of competitive grants. But the Iowa State-Yale economists calculated that such an action would weaken the phenomenal rate of return for society. In that scenario, 45 of the 50 states would be big losers. Besides, competitive grants programs for agricultural sciences are not being adequately funded either. While USDA competitive grants through the National Research Initiative (NRI) have grown by more than 50 percent in the last three years, the NRI continues to languish in comparison to NIH and NSF competitive grant portfolios.



The universities also have been hit by another budget whammy. Many states, struggling with weak economies, unfunded federal mandates and mounting deficits, have deeply cut university research. State funds, which had comprised 55 to 60 percent of the land-grant research budget for 35 years, dropped to only 43 percent in 2003. For some states, the declines have been more dramatic.

In the meantime, university scientists have been hugely successful in winning competitive grants and diverse private support. But these funds come attached with expectations that drive research in very targeted directions. As these funds grow and federal formula funds decline, it means the states can devote less energy to tackling local problems. As a result, areas of investigation important to society may be neglected.



## SOUNDS PRETTY SERIOUS.

"In jeopardy" is not too strong a phrase for the condition of publicly funded food, agricultural, natural resource and family-focused research in our country.

Let's face it. This kind of research and steady progress is taken for granted. Maybe the message of long-term local improvements isn't flashy enough to filter its way through the clutter. But can we imagine our country without this research foundation?

We need more champions for the work each state does to keep our nation healthy, our environment clean, our food supply plentiful and nutritious, and our country safe. We need champions in Congress for the federal formula funds, which have provided the continuous, dependable public funding that have paid rich dividends to the American economy in improved consumer welfare and standard of living in local communities and to enhanced competitiveness of American products worldwide.

Every day public officials are challenged to make the most of every dollar invested. What better way than supporting the case for sustained federal formula funding. A 50 percent annual rate of return from such a modest investment is too great a loss for society.



## WHERE CAN I GET MORE INFORMATION?

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