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economic perspectives on Arizona's agriculture and natural resources

THE UNIVERSITY OF ARIZONA.

Eugene G. Sander

An Interview with the UA's Executive Vice President and Provost

Russell Tronstad

Dr. Eugene G. Sander recently marked the twentieth anniversary of his arrival at the University of Arizona to become dean of the College of Agriculture and Life Sciences (CALs). At Texas A&M, where he had been previously, Sander was head of the Department of Biochemistry and Biophysics and director of the Institute of Biosciences and Technology. He received his B.S. in animal science from the University of Minnesota and his Ph.D. in biochemistry in 1965 from Cornell University. Sander then went to Brandeis University as a postdoctoral fellow before being hired by the University of Florida as an assistant professor in the Department of Biochemistry, College of Medicine.

Dr. Sander has not slowed down throughout his career, particularly lately. In spite of his full plate of duties as vice provost for CALs, in 2006 he took on additional responsibilities as vice president for Outreach. This includes the University of Arizona South and continuing education and academic outreach programs, along with a dual reporting relationship with Arizona Cooperative Extension. In 2007, he became executive vice president and provost on an interim basis, and as such, he is the chief academic officer of the University. After a permanent provost has been selected, Dr. Sander will return to his "normal" duties as vice president for University Outreach and dean of CALs. CALs consists of ten academic departments and two schools, with research stations and Extension offices throughout Arizona. The latest faculty productivity ranking places CALs as number one in the nation in the category of agricultural sciences. Agronomy and

Crop Sciences topped the list at number one among U.S. research universities, including institutions such as Cornell, University of California-Davis, University of Illinois, and Purdue. Dr. Sander has played a key role in this ranking through hiring/retention deliberations and resource allocation decisions for at least two-thirds of the faculty that currently work within CALs.

Dr. Sander is married to Louise Canfield Sander with whom he enjoys two children and four grandchildren.

Although Dr. Sander carries one of the busiest schedules on campus, he took the time to fill me in on several questions regarding "the rest of the story" on Dr. Eugene G. Sander.

Arizona Review. *Since genetics, environment, and management are three key components of production agriculture, how did these elements influence your career? Does your lineage contain many educators, administrators, military officers, or other leadership positions?*

Sander. I had parents who were hard working, intelligent, and well educated. They believed in education and insisted that my sister and I do well at everything we started. My father was a county extension agent and my mother was a school teacher, and they managed our family and insisted that everyone get

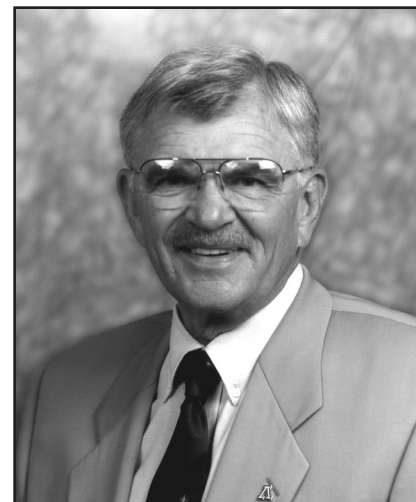


Photo courtesy Gene Sander

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Arizona Review

Economic Perspectives on Arizona's Agriculture and Natural Resources

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Welcome

to the 2007 edition of the *Arizona Review*, published by the Department of Agricultural and Resource Economics (AREC) and the Bartley P. Cardon Endowment for Agricultural and Resource Economics. In addition, we would like to thank the Risk Management Agency for their support.

For our opening interview in this issue, Russ Tronstad sat down for a chat with Eugene Sander, the longtime dean of the College of Agriculture and Life Sciences and current executive vice president and provost of The University of Arizona. Next, illegal immigration is a subject with deep effects on Arizona and the Southwest. Heather Waters studies the economic costs to ranchers along Arizona's borders. There are quite a few. Bruce Beattie and Jorgen Mortensen recap the importance that agriculture plays in Arizona's economy. Arizona may not be one of the nation's big agricultural states the way Texas, California, and Kansas are, but these authors argue persuasively that you must look at direct, indirect, and induced effects to get a truer picture of agriculture's value to the state.

In two complementary articles, the Extension specialists in AREC examine some interesting results emerging from the Agricultural, Food, and Public Policy Survey recently undertaken by the Farm Foundation in 27 states. Finally, we feature our regular looks at commodity production and price trends in Arizona agriculture, a listing of what our departmental members have published recently, and an update from Dean Lueck on the activities of the Cardon Endowment.

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The Costs of Illegal Immigration to Arizona's Border Ranchers

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Around two million illegal immigrants are estimated annually to enter the United States from Mexico through Arizona, with about 1.5 million crossing from the Organ Pipe Cactus National Monument to the southeastern corner of Arizona. Tighter border security in California and Texas has shifted illegal immigrant crossings to the state, making it the principal gateway to the United States for those coming from Mexico and Central America. While an increasing number of National Guard troops and U.S. Border Patrol resources have been put into place on the border to make it more secure, a steady flow of illegal immigrants continues to pour in, with only a fraction of them apprehended. Figure 1 shows border apprehension statistics for the southwestern United States from October 2006 to January 2007.

In 2004, the median hourly wage for general labor was \$1.86 in Mexico and \$9 in the United States. This is one of the greatest wage differentials of any border in the world and a disparity that a man-made barrier will not change. As a result, residents, mainly ranchers, in the southern part of the state witness a constant stream of illegal migrants and border enforcement personnel on both their private property and state and federal leased lands. The crossings lead to additional expenses, ranging from repairing water troughs and lines to hiring extra personnel to walk fence rows and pick trash, as well as increasing concerns about personal safety. To examine the costs associated with illegal migrant crossings, cattle ranchers in Pima, Santa Cruz, Cochise and Pinal counties were questioned about their experiences with illegal immigration problems on the land they operate on.

In total, 76 cooperating ranchers were interviewed of the 97 who were initially contacted, giving a response rate of 78.4 percent. All the ranchers surveyed operate cattle enterprises that are family operations or sole proprietorships. They answered a questionnaire addressing issues on the demographic characteristics of the ranch and costs from illegal migrants, as well as their

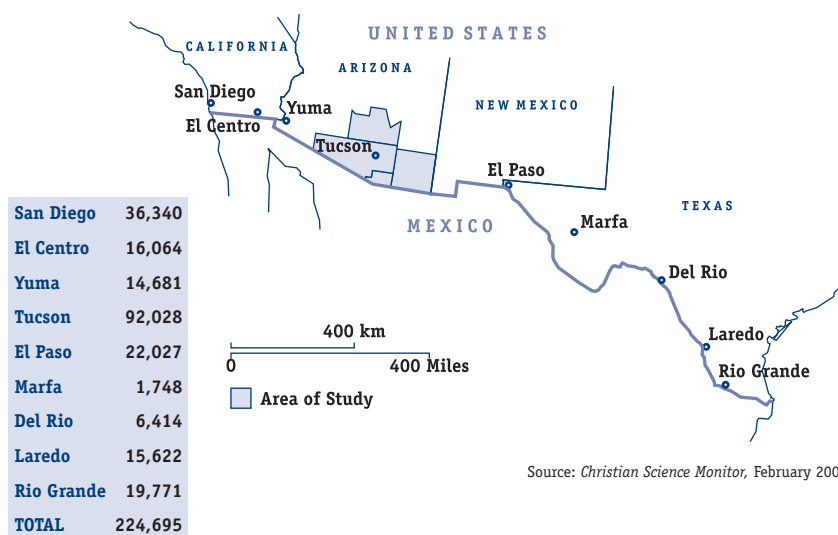


Fig. 1 U.S. Border Patrol Apprehensions by Sector, October 2006 to January 2007

other experiences with illegal immigration. Responses were obtained from January 2007 to June 2007.

Most all of the larger and well-known ranchers in the study area were contacted. Hobby and small-scale ranchers (25 head or less), composing almost half of the livestock producers in the region but less than 20 percent of total cattle numbers, were the most difficult to identify and are the least represented group in the study. Yet since the large-scale ranches represent more of the land and resource base, cost estimates regarding illegal migrant activities from these operations are likely more representative of the region's total cost than those from the hobby and small-scale ranchettes. Table 1 displays the distribution of animal units (AU) represented by county in the survey, suggesting that around 25 percent of the resource base is represented by the completed questionnaires received.

Ranch characteristics included in the survey are county the ranch resides in, distance from the border, number of miles of border fence for ranches with land adjoining the U.S.-Mexico border, approximate animal-

Table 1 Animal Units Represented by County

County	Animal Units Represented in Survey*	Total Animal Units**	Percentage of Total
Cochise	6,450	35,000	18.4%
Pima	5,400	7,000	77.1%
Santa Cruz	3,725	6,000	62.1%
Pinal	550	16,000	3.4%
Total	16,125	64,000	25.2%

* Since a range of animal units was asked for in the questionnaire, midpoints of categories were used to aggregate total animal units for a region.

** Source: 2005 USDA-NASS Arizona Agricultural Statistics Bulletin.

unit carrying capacity, land area of operation measured by sections (1 section = 640 acres), elevation (categories ranging from 2,000 to 6,000 feet), riparian areas, and ownership structure. The elevation variable was primarily aimed at

determining those ranches with more than 10 percent of their land base above 5,000 ft. Questions to help assess environmental degradation from illegal migrants were addressed by including miles of “new trails” added and lost forage from either degraded forage conditions or not being able to graze certain pastures.

Demographic questions about the respondents included the number of years their family had owned the property, if livestock was their primary source of income, if the ranch was their sole residence, and their age. Other questions focused on whether or not local groups provided free trash collection services to the rancher, the availability of ranch labor, personal fear

from illegal migrant activities, the presence of drug trafficking on the ranch, and whether illegal migrants or drugs were a greater problem for them. Finally, ranchers were asked to vocalize their general feelings regarding immigration.

The core of the questionnaire focuses on economic cost estimates from illegal migrant activities for different cost categories. These included monitoring (labor and fuel); damages to watering equipment and fencing, trash clean-up, preventative practices, cattle losses, lost water from drained tanks, and miscellaneous costs. Although the value of replacing water can vary greatly by location, a fairly conservative marginal cost of \$1 per 1,000 gallons of lost water was utilized.

Monitoring costs were specifically defined as the labor and fuel above and beyond required ranch maintenance, or those expenses relating only to illegal migrant problems. Preventative practices were those investments made by the rancher to curb the damages from illegal migrants, such as installing water fountains, gates, motion sensors or fences, and/or burying their pipelines. Personal labor costs for all relevant categories were estimated to be between \$10 to \$15 per hour, at the discretion of each individual, to account for opportunity cost, insurance, and physical labor.

Cattle losses were based on lost weight gains, deaths from litter ingestion, and illegal slaughter. Miscellaneous expenses were often caused by burglary or theft and/or accidental fires. Preventative practices, cattle losses, and miscellaneous categories, as described above, included periodic expenses averaged over the last five years which were converted to average monthly expenditures. All costs are represented in 2007 U.S. dollars.

Figure 2 shows the estimated average monthly costs per animal

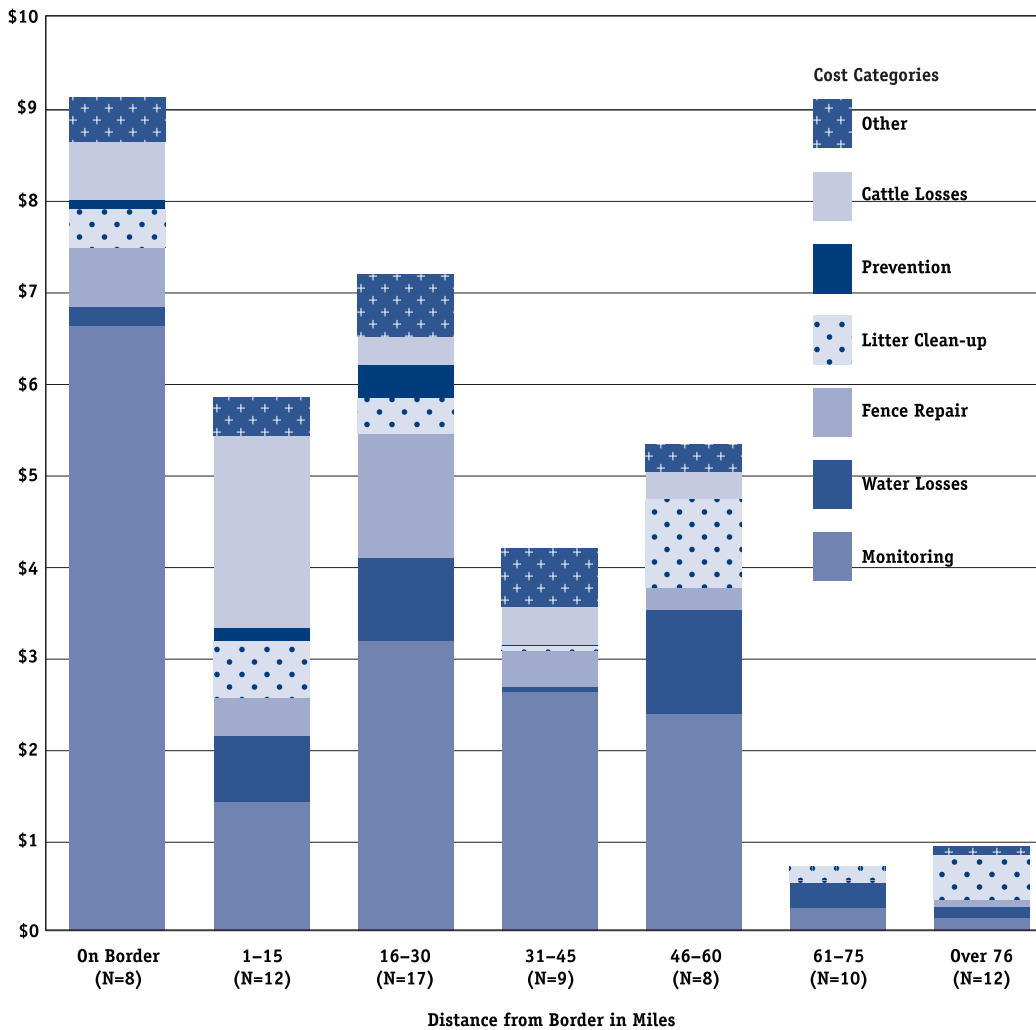


Fig. 2 Average Total Monthly Costs/Animal Unit of Illegal Migrant Crossings by Distance from the Border

unit, by category, that are accruing to ranchers from illegal migrant crossings, depending on how close they are located to the border. Monitoring costs are the largest expense, followed by cattle losses. Again, monitoring expenses include fuel and labor to check fences, watering equipment, and other ranch facilities as well as herding cattle back when fencing is damaged. Clearly, this is a time consuming task and fuel is not cheap. Although it may be suggested that the regular job duties of any rancher require checking on equipment and animals, these costs were specifically calculated for the time and expenses above and beyond “normal” ranch duties to deal with only the illegal migrant issue.

For cattle losses from trash ingestion, illegal slaughter, or diminished weight gains, the problems seemed to be less frequent. Still, when a cow is lost or a calf does not gain weight at the expected rate, there are serious revenue losses to the rancher. Depending on the cow’s age, pregnancy/calf status, and condition, she can fetch anywhere from \$800 to \$1,500 in today’s marketplace. Lighter calves, especially those too small to enter a feedlot, sell for less per head than heavier calves of the same age.

One may argue that respondents have an incentive to exaggerate their costs in hopes of increased compensation from authorities. However, 25 percent of the ranchers reported no damages from illegal migrants and some, conversely, spoke about their worries of making the illegal immigrants appear overly costly or negative to the U.S. economy. In fact, many respondents empathized with illegal aliens in search of higher wages and a better life for their families, but were also concerned about a border that could allow terrorists to enter the United States or increased criminal activities, such as drug trafficking. Drugs

are a major problem, as noted by the question regarding personal fear of illegal immigrants. Many respondents mentioned hearing gun shots or witnessing shoot-outs over drug runs as well as coyote (migrant smugglers) territories. Nevertheless, many ranchers were more disturbed by the lack of action and efficacy of U.S. immigration policies. These individuals see no end in sight to the illegal migrant damages and most noted that they have intensified in the last few years. This coincides exactly with the new enforcement tactics of the Border Patrol, which have shifted migrants into rural Arizona from urban centers in California and Texas.

Several ranchers are selling their property due to a combination of factors associated with illegal immigrant costs and with the value of their property for residential or “rural lifestyle” real estate. Some of the participants initially contacted to complete a questionnaire sold their operation before the end of our collection period. Off-farm or -ranch income is very important to the cash flow for many ranches. For operations with less than 200 animal units, 53 percent claimed another primary source of income other than their livestock operations. This is not an uncommon pattern or trend for farming and ranching throughout the United States and Arizona. However, costs from illegal migrant crossings are a unique burden that is added to these marginally profitable enterprises. As described in table 2, the estimated break-even price needed to cover production costs is around 16 to 26 percent greater for the average ranch respondent in our study.

Using a representative ranch with 350 animal units, table 3 describes

Table 2 Break-even Calculations for Southeastern Arizona Ranches

	No Border Costs*		With Border Costs	
	High Total Costs	Low Total Costs	High Total Costs	Low Total Costs
Required Average Calf Prices Needed to Break Even (\$/cwt)	\$94.96	\$61.15	\$110.78	\$76.97
Percentage Increase in Break-even Price	--	--	16.7%	25.9%

*Source: *Cost and Return Estimates for Cow/Calf Ranches in Five Regions of Arizona*. University of Arizona, Cooperative Extension Publication No. AZ1193.

average illegal migrant costs by category for ranches in our sample. Monitoring costs associated with illegal immigration, by far the largest expense, are estimated at \$781.61 per month or \$9,379.32 per year for the representative ranch. Total costs from illegal immigration are estimated at almost \$20,000 per year. These figures reflect the averages from our sample and some ranches were found to have significantly higher expenses. Ranches with noticeably higher costs generally had characteristics that included close proximity to the border, availability of trash collection services, large animal unit carrying capacity, and drug running occurring on the enterprise.

So, what are some possible solutions to this problem? Several survey respondents suggested a new guest worker scheme similar to the Bracero Program of the 1950s

Continued on page 19.

Table 3 Estimated Costs from Illegal Migrant Crossings for a Representative Ranch in Southeastern Arizona

Type of Cost	Monthly Cost	Annual Cost
Monitoring	\$781.61	\$9,379.29
Water	\$180.26	\$2,163.06
Fencing	\$184.03	\$2,208.32
Litter	\$150.92	\$1,811.01
Preventative	\$41.82	\$501.89
Cattle	\$191.94	\$2,303.50
Other	\$135.50	\$1,625.96
Total Costs	\$1,666.07	\$19,992.83

ON THE IMPORTANCE OF AGRICULTURE TO THE ARIZONA ECONOMY

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This is a revised version of a paper presented at the 2006 Arizona Agribusiness Forum. The authors benefited from several important insights of Dean Lueck.

There are plenty of reasons to be concerned for those whose economic well-being depends (directly or indirectly) on Arizona’s agriculture. Like our fellow citizens whose incomes are rooted in other sectors of the economy—tourism, mining, manufacturing—we all understandably care a lot about our economic security, our careers, and our way of life. We all (also understandably) sometimes get defensive about the importance of what we do, and we don’t take lightly threats to our continued success and security—be those threats real or imagined, imminent or distant.

Like people in other industries, the desire of agriculturalists to establish and communicate our importance to others is especially noticeable in the political arena, e.g., when there is a perceived political threat. Such threats take various forms—a move to “take away” a long-held right or privilege, proposed legislation to regulate activity, a proposed change in the tax code, or a proposed reduction in “our share” of state or federal government expenditures. Competition for the attention and favor of politicians is intense. Claims and counter claims about the relative importance and impact of various sectors on state and local income, jobs, etc. As participants in the political

process, those of us directly and indirectly involved in agriculture will make our case and do so aggressively. But, unlike two young boys arguing over whose father is the strongest, exaggeration will not serve the process well.

Which brings us to the matter at hand. We submit that agriculture is more important than often realized by those outside the sector, but less important than sometimes claimed by insiders. Point 1: To be sure, agriculture is important in the United States. Not only are Ameri-

cans among the best fed and clothed of the world’s peoples, but most of our citizens accomplish this while spending but a small fraction of their income on food and fiber. This is testimony in part to the considerable productivity of American agriculture. Albeit less so recently, agriculture has, historically, stood tall among U.S. industries in terms of its positive contribution to our balance of trade. And, though a small part of a modern economy, agriculture is obviously fundamental to health and welfare. Point 2: In *relative* terms, agriculture is only somewhat less important in Arizona than it is for the nation as a whole. Further, agriculture is, comparatively, only slightly less important in Arizona than in several states where agriculture is huge in contrast to Arizona.

Point 1 is quite well understood and needs no further discussion. However, Point 2 is not so well understood, and we presume our bold assertions may surprise some. So, let’s have a look at some numbers.

Arizona’s Agricultural Economy in Perspective

Direct Impact of Primary Agriculture

Table 1 presents 2005 farm and ranch output data (value of production) for the United States and for several states, including Arizona. We purposefully picked California, Texas, and Kansas as comparison states because they are states everyone recognizes as BIG agricultural states. The salient feature to notice about the data in table 1 is that while a \$3.5 billion industry comprising 1.3 percent of the value of all U.S. agricultural production, Arizona agriculture pales in comparison with that of California, Texas, and Kansas.

But most of us know that. The main motivation for presenting table 1 is to make the point that total output values (which we often hear bantered about) are *not* the right data to establish the relative importance of various sectors comprising a local, state or national economy. Total output values are important

Table 1 Value of Agricultural Production, 2005 (billion dollars)

	Production Value ¹	Percentage of U.S. Value
United States	275.4	100.0
California	33.8	12.3
Texas	19.9	7.2
Kansas	11.4	4.1
Arizona	3.5	1.3

¹ Included in production value is an imputed value for farmstead dwellings, owner-operator income from custom services provided, sale of forestry products, and certain other types of income in addition to the market value of crop and livestock products produced.

Source: Economic Research Service, U.S. Department of Agriculture.

but not for that purpose. Anyone who has purchased a new vehicle lately knows that the sizeable price tag reflects more than just the contribution of the dealership in Phoenix or Casa Grande. Most of the value added embodied in that automobile was for production in Michigan, Tennessee, or Japan. Output values (the final price tag) are a measure of the cumulative costs of the inputs involved in the production and marketing of the item we are purchasing. Value added, in contrast, is the value of production net of the cost of intermediate inputs (such as fertilizer, fuel, feed, etc., in the case of agriculture). Many of these inputs are manufactured elsewhere (outside Arizona). It is value added in the locale of interest that is the relevant concept in assessing the contribution or the “importance” of the subject economic activity to that economy. This is true not only for automobiles but also for agriculture, tourism, mining, or what have you.

Value-added data for production agriculture in the United States, Arizona, and our comparison states are given in table 2. While the numbers (column 1) are obviously smaller (by about half) than the production value data in table 1, the state ranking remains the same—California, Texas, Kansas, and Arizona. The sum of value added across all sectors of the nation is akin to Gross Domestic Product (GDP) or Gross State Product (GSP) in the case of state-level economies. GDP and GSP data are reported in column 2. Lastly, in column 3 of table 2 are calculations of value added by agriculture divided by GSP (GDP for the United States) to obtain the percentage contribution of agriculture to the total economy for the United States, Arizona, and the three comparison states. The first thing that “jumps out” is that the percentage contribution of primary agriculture to the economic base of the nation and all the example states, except perhaps for Kansas, is fairly small—on the order of one percent. This is *not* a reason for distress. To the contrary, a low percentage of an economy’s income directly attributable to primary agriculture is a sign/result of being wealthy. Low-income and less-developed countries/economies are almost always characterized as having a high percentage of GDP, resources devoted to, and income from primary agriculture.

As suggested at the onset, there is a second thing about the percentage data that may surprise you. What we see is that agriculture’s share of Arizona GSP, albeit somewhat smaller, is surprisingly similar to that of California, Texas, and the nation as a whole. No one would seriously question the importance of agriculture to the national economy, the California economy, or the Texas economy. Yet, we see that agriculture’s percentage share of Arizona’s GSP is not a lot less than the

comparable statistic for the nation and for two major agricultural states.

Question: Why is the percentage share for Kansas so large? The answer lies in the relative importance of other sectors in the Kansas economy. In Arizona, California, and Texas, and indeed the nation, production agriculture is fairly small alongside *the sum of all other sectors*. In contrast, anyone who has driven across Kansas knows how agriculture dominates the landscape. For much of Kansas, farming and ranching *is* the economy—period. Not so in Arizona, California, and Texas.

Direct and Indirect Impacts of Arizona Agribusiness

So far we have considered only what might be called the direct contribution of primary (on farm) agriculture to the Arizona economy. As important as that is, the story does not end there. Farming and ranching like all other economic activity is connected (linked) to many other sectors. There are three important components of inter-sector connections—backward-linkages, forward-linkages, and consumption-linkages (sometimes called induced effects). That is, farm and ranch production activity is linked backward to the rest of the economy through purchases from input suppliers who in turn have economic links to other sectors. Likewise, agriculture’s raw-product outputs are linked forward to the rest of the economy through product processing, transportation, and marketing. Finally, like all other members of society, farm and ranch families and their employees are consumers of television, haircuts, vacations, etc.

Mortensen has carefully looked at Arizona’s agriculture and its linkages to the greater economy using an economic accounting methodology called input-output analysis. An economy-wide (in this case Arizona) input-output model enables the analyst to quantify the backward-linkages and the consumption activity of income earners of a subject sector on the greater economy. The input-output methodology does not enable one to account for forward-linkage effects.

Table 2 Agricultural Value Added by States Compared with Gross State Product, 2005

	Agricultural GVA ¹ (Billion Dollars)	Total GDP/State GSP ² (Billion Dollars)	Agricultural GVA as Percentage of GDP/GSP
United States	144.6	12,403.0	1.2
California	17.8	1,621.8	1.1
Texas	10.7	982.4	1.1
Kansas	4.7	105.4	4.4
Arizona	1.8	215.8	0.8

Source: 1) Economic Research Service, U.S. Department of Agriculture; GVA includes same items as identified in note 1 of table 1, corrected for purchased inputs, motor vehicle and property taxes, and direct government payments. 2) Bureau of Economic Analysis, U.S. Department of Commerce.

Table 3 Direct, Indirect, and Induced Economic Impact of Arizona Agribusiness

	Value-Added (Billion Dollars)		
	2000 basis ¹	2002 basis ¹	Estimate 2004 ²
Agribusiness, direct impact*	1.7	2.0	2.1
Indirect impact, other industries	0.5	0.9	1.0
Impact induced from consumption	0.8	1.2	1.2
Total impact	3.0	4.1	4.3

* About two-thirds of value added is from primary agriculture (crop and livestock production) and one-third is attributable to input supply and product processing. In contrast to the data in tables 1 and 2, the data in this table does not include an imputed value for farm dwellings, forestry, and custom work.

Source: 1) Based on IMPLAN input-output tables and model software for 2000 and 2002, respectively. 2) Based on value-added statistics for 2002 and 2004 and assumed same industry transaction pattern as in 2002.

To circumvent this shortcoming, Mortensen broadened the definition of the subject sector to include primary agriculture, its immediate input suppliers, and its output processors and marketing activity up to but not including food and fiber wholesale/retail activities. The idea was to define the subject sector to include all farm commodity related activity in primary agriculture and in those directly linked input supply- and product-processing industries (agribusiness) that would not be present in Arizona if there were no primary agricultural production here. Food wholesalers and retailers, for example, are not included in the Arizona agribusiness subject sector because those businesses (grocery stores, restaurants) would be present in Arizona whether or not there was agricultural production in Arizona.

The figures in table 3 show the calculated total economic impact of Arizona agribusiness in value-added

terms. At the time of Mortensen’s study in 2004, 2000 was the most recent year for which input-output transaction and other structural tables were available for some 500 individual economic sectors of the Arizona economy. An update of the study’s main results, including a summary *estimate* for 2004, was done in 2005 when input-output tables for 2002 became available. In table 3, the total impact (row 4) each year is broken down into *direct* activity (row 1) in the agribusiness complex (as defined above), *indirect* effects (row 2) that capture economic activity in agribusiness’ input supply chains, and the *induced* impact (row 3), which is generated by the spending of personal incomes earned in the agribusiness sector.

The total impact increased considerably from 2000 to over \$4 billion in 2002 owing to an improved farm economy. Induced impact is somewhat higher than the indirect impact. The sum of indirect and induced economic impact is about the same value as the direct agribusiness impact, so that the implied value-added multiplier for agribusiness is about two. The 2004 total impact estimate, which is illustrated in figure 1, is only slightly higher than the calculated impact for 2002—\$4.3 billion in 2004, up from \$4.1 billion in 2002.

So, what’s the bottom line?

- It is fair to say that provision of food and fiber products from agribusiness (including primary agriculture) represents somewhere in the range of 1 percent of Arizona’s GSP. This percentage is similar in many other urban states. That is, \$2.1 billion (agribusiness direct effect) divided by \$215.8 billion (Arizona gross state product) equals 0.0097.

- When indirect and induced value added effects are taken into account, the total economic impact amounts to about 2 percent of Arizona GSP. *However*, it is important to remember that indirect and induced effects of any given sector of an economy are part of the direct effect of other sectors of that economy. If one were to add up the direct value added of all sectors of the Arizona economy and were then to further add an indirect and induced value added component for each and every sector, we would arrive at the startling/implausible conclusion that *Arizona’s economy is bigger than the Arizona economy!* This is one of many possible double-counting pitfalls that one must watch out for when scrutinizing the economic impact claims of various interested parties in the political arena.

- In Arizona, as in all states, agriculture is a relatively more important part of the economic base of certain local communities/counties where the personal income from farming, ranching, and related activity is more important than it is for the state as a whole.

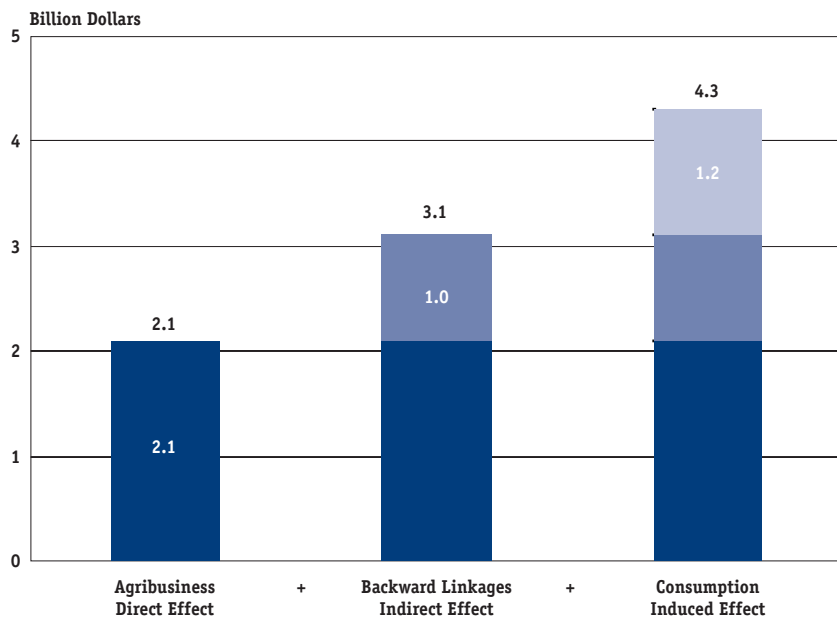


Fig. 1 Estimate of Agribusiness Value-added Impact on the Arizona Economy, 2004

A Note on the Cardon Endowment

It is time again to update our readers on the Bartley P. Cardon Endowment for Agricultural and Resource Economics. Established in 1997 to honor the late Bartley “Bart” P. Cardon, former professor and dean of the College of Agriculture and Life Sciences, the Endowment funds are used to support research in agricultural and resource economics by providing resources directly for research, by providing assistantships and scholarships to undergraduates and graduate students, and by bringing national and international scholars to visit the University of Arizona. Per our usual practice, much of the research supported by the Cardon Endowment can be accessed from the Cardon Research Papers in Agricultural and Resource Economics, an online repository for scholarly research. The Endowment also supports academic outreach through this newsletter, the *Arizona Review*, a biannual publication providing economic perspectives on Arizona’s agriculture and natural resources; the Arizona Agribusiness Forum (in its 22nd year); and many other activities and publications.

In 2007, the Endowment supported a wide variety of students, scholars, and projects. Student support includes Ph.D. students Carmen Carrion-Flores, Haimanti Battacharya, and Arnab Mitra, all working on topics that explore the link between agriculture, land use, and environmental policy; master’s students Sarah McDonald (working on the law and economics of conservation easements) and Li Zhu (working on the economic impact of state ‘Right to Farm Laws’).

This year, also, the Cardon Endowment was crucial in launching the *Program on Economics, Law, and the Environment (ELE)*, which is a joint research and education initiative of the James E. Rogers College of Law (LAW) and the Department of Agricultural and Resource Economics (AREC). The new ELE Program—the first of its kind in the nation—draws upon the combined environmental expertise currently exhibited by the faculties of AREC and LAW. This expertise encompasses nationally known scholars with specialties in water, land, property, public lands, environmental

regulation, biodiversity, sustainability, federalism and risk management. The ELE Program began with a spring 2007 semester ELE workshop at which internationally recognized scholars from Stanford University, University of Pennsylvania, University of California – Santa Barbara, New York University, and Resources from the Future presented original research to faculty and AREC-LAW students. On October 26 ELE hosted a symposium, *Property Rights in Environmental Assets: Economic and Legal Perspectives*, in which 25 scholars from inside and outside the University presented and discussed new research on topics ranging from water law to climate change policy to intellectual property in biotechnology. Papers from the symposium will be published in a special issue of the *Arizona Law Review* in 2008. ELE’s goal is to be a preeminent organization for economics and legal analysis of important environmental and resource problems. More details on the ELE Program can be found at www.ele.arizona.edu.

As you can see, the Cardon Endowment provides vital intellectual and academic support to AREC, CALS, and the UA, and it is greatly appreciated. **AR**

—Dean Lueck

For More Information

Cardon Research Papers in Agricultural and Resource Economics

ag.arizona.edu/arec/pubs/researchpapers.html

Arizona Review

ag.arizona.edu/arec/pubs/azreview.html

Arizona Agribusiness Forum

ag.arizona.edu/arec/dept/agbusforum2007.html

Economic Impacts from Agricultural Production in Arizona

ag.arizona.edu/arec/pubs/econimpacts.html

Program on Economics, Law, and the Environment

ele.arizona.edu/

Dean Lueck is the Bartley P. Cardon Professor of Agricultural and Resource Economics. Professor Lueck joined the University of Arizona in 2004 and directs the resources of the Cardon Endowment.

Arizona Farm Policy Preferences

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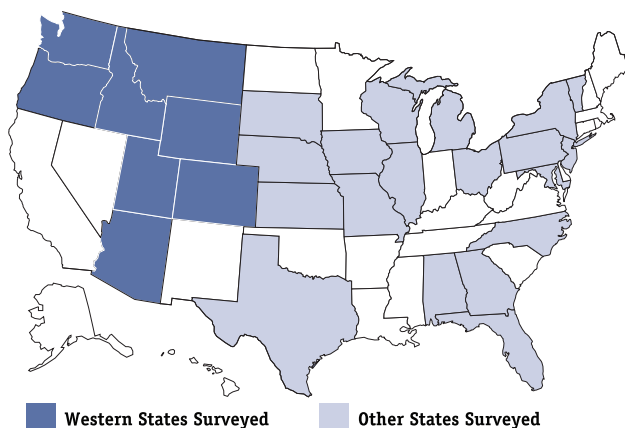
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As this article goes to press, Congress has yet to finish deliberations on the 2007 Farm Bill. The House passed its version of the Farm Bill (H.R. 2419) on July 27, while the Senate version was reported out of committee on October 25. For the last 20 years, the Farm Foundation has supported a national survey of agricultural producer policy preferences (NPP) prior to each farm bill. This article reports some results of this latest *Agricultural, Food, and Public Policy Preference Survey*. The survey is the result of the collaboration and support of the National Agricultural Statistics Service (NASS) of USDA, NASS state field offices, and State Extension Services in Arizona and 26 other collaborating states. Arizona project collaborators included four AREC faculty (this article's authors) and Steve Manheimer, director of the NASS Arizona Field Office.

Nationwide, 63,935 producers were surveyed and 15,602 useable responses were received (24%). Arizona received 353 useable responses from 1,279 producers surveyed (28%). This article focuses on how Arizona responses, by general commodity area, compared to those for the West and the United States (8 states and 27 states, respectively. See figure 1.).



Source: *The 2007 Farm Bill: U.S. Producer Preferences for Agricultural, Food and Public Policy*.

Fig. 1 State Participation in the National Agricultural, Food, and Public Policy Survey

Policy Goals

Producers were asked to rank various policy goals or options on a scale from 1 (least important) to 5 (most important). Arizona ranked the following goals highest:

- Assuring a safe, affordable food supply (4.44),
- Enhancing opportunities for small and beginning farmers (4.19), and
- Reducing our dependence on non-renewable energy (4.17).

These results are similar to overall U.S. producer responses. For Arizona producers, reducing price and income risk ranked lower (3.59), although a score of 4 is still an “important” ranking. (See table 1.)

Producers generally favor pursuing free trade agreements to eliminate trade barriers. The exception is Arizona field crop producers, who oppose the World Trade Organization (WTO) ruling that the United States eliminate exports credits and Step 2 cotton payments. But all segments are strongly in favor of implementing mandatory labeling rules to identify the country of origin on food products and of integrating labor laws, environmental impacts, and food safety standards into international trade policies.

Specific Program Preferences

If we turn to specific programs, the importance Arizona producers—as a whole—placed on maintaining funding for different farm programs was similar to that of Western and U.S. producers (table 1). Yet, there were some distinct differences between different types of producers. Arizona field crop producers ranked crop commodity payments tied to price (counter-cyclical payments), crop commodity payments tied to price and production (commodity loans, LDPs, etc.), and direct payments to producers as the most important programs to continue. This is no surprise considering field crop producers are the main recipients of payments under these programs. Livestock and “other” producers (many of whom are specialty crop producers) generally do not receive these payments, so they understandably

place less importance on maintaining them. Although relatively high crop prices have resulted in low baseline numbers for Counter-Cyclical Payments and Loan Deficiency Payments for the duration of the next farm bill, Budget Committee chair Kent Conrad has noted that there is “still not enough money to fund everyone’s wants.”

Payments to support dairy producers received the lowest overall ranking in Arizona, the West, and the United States. This reflects the small number of dairy producers relative to other agricultural producers. Not surprisingly, producers favor maintaining programs that provide them the greatest direct benefits.

Both Arizona livestock and other crop producers placed the greatest importance on maintaining disaster payments. In this respect, they match the average preferences of Western and U.S. producers. There is an ongoing farm bill debate in Congress over whether or not to establish a permanent fund for disaster payments. This fall the Senate Finance Committee approved legislation authorizing a permanent trust fund to make agricultural disaster payments available on an ongoing basis for the duration of the next farm bill. The Congressional Budget Office (CBO) estimates the program would cost \$5.1 billion over five years. This is roughly equal to the annual average amount that Congress has funded for ad-hoc disaster payments over the past 20 years. Whether or not a permanent disaster fund becomes law will depend on the Senate farm bill vote and reconciliation between Senate and House versions of the Farm Bill.

Farm Demographics

Large farms, with an annual revenue of more than \$250,000, make up 7 percent of all farms, but account for nearly 60 percent of all agricultural production and receive more than 54 percent of farm program payments. Because the share of federal payments has grown faster for larger rather than smaller to mid-sized farms, we will likely see some action on capping individual farm payments or tying payments to income. As shown in figure 2, there are more small livestock producers than crop producers in Arizona. This is typical for much of the country as a whole. In general, the average U.S. producer operates on a smaller scale than producers in the West and Arizona. Not surprisingly, producers in Arizona and the West expressed less support for limiting program payments than did U.S. producers overall. Elimination of the three-entity rule and/or capping program payments would likely diminish the competitive position of irrigated agriculture in the Southwest compared to that of other regions. **AR**

Table 1 How Important Is It to Maintain Funding for ... ?

Program Area	Average Score by Commodity Area and Geography.*					
	AZ Live-stock	AZ Field Crops	AZ Other Crops	AZ All	West All	U.S. All
Direct Payments?	2.72	4.04	2.77	3.03	3.12	3.44
Counter-cyclical Payments?	2.77	4.17	2.88	3.12	3.15	3.47
Commodity Loans such as LDPs?	2.86	4.02	2.87	3.13	3.17	3.54
Milk Support/MILC Payments?	2.88	3.43	2.63	3.00	2.92	3.23
Working Land Conservation Programs (EQIP, WHIP, etc.)?	3.73	3.74	3.31	3.63	3.47	3.56
Wildlife Habitat and Ag Land Preservation Programs?	3.50	3.07	3.10	3.40	3.35	3.44
Insurance Programs?	3.48	3.69	3.28	3.48	3.47	3.58
Agricultural Credit Programs?	3.59	3.63	3.28	3.53	3.43	3.44
Disaster Assistance?	3.95	3.79	3.61	3.87	3.91	4.00

* Average scores are on a scale of 1 = least important, 2 = less important, 3 = neutral, 4 = important, and 5 = most important among agricultural producers expressing an opinion. The highest score for a group is in bold while the lowest score is noted in bold italics.

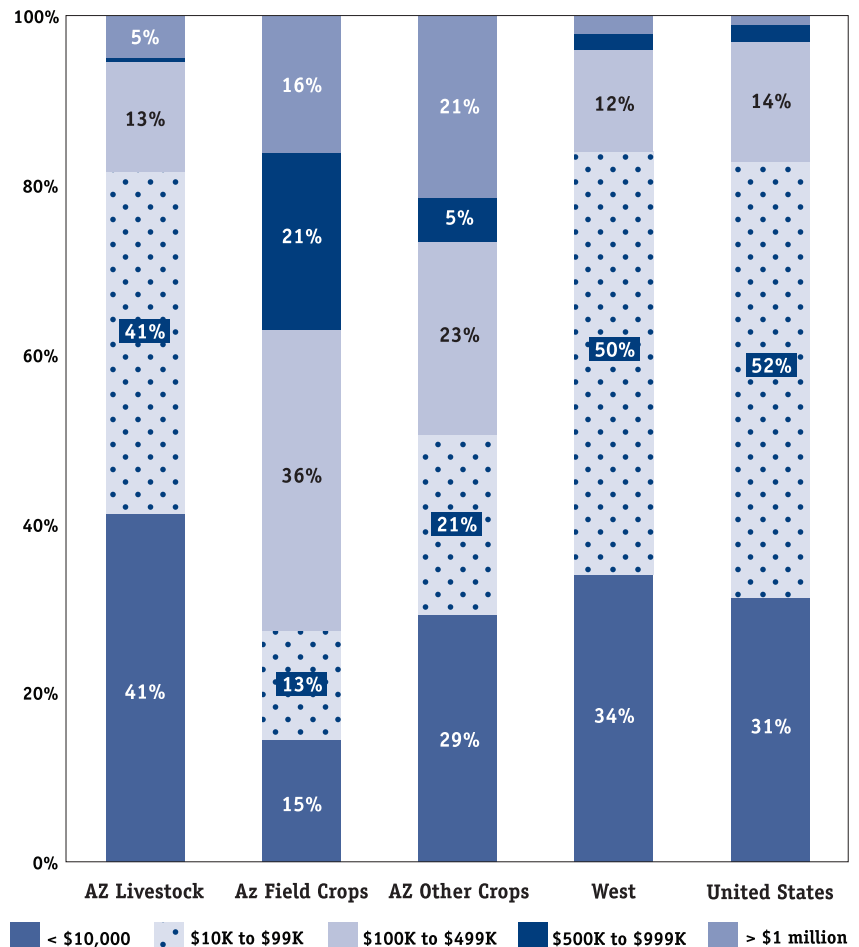


Fig. 2 Market Value of Agricultural Products Sold

What Will Happen to Farm Operations When Operators Retire?

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Like the U.S. population as a whole, Arizona's farm population is aging. A large share of Arizona agricultural producers is 65 or older. At the same time, Arizona's rapid population growth has raised Arizona's agricultural land values and increased incentives to sell land for commercial and residential real estate development. As Arizona's farm operators retire, what might happen to their operations?

U.S. and Arizona Producers Older Than Other Business Owners

Farm and ranch operators in the United States are older—on average—than other business owners. Figure 1 compares the age distribution of agricultural operators with that of business owners as a whole. The age distribution of all business owners estimated by the U.S. Census Bureau in 2002 is shown by the left column. The middle column shows the age distribution of all U.S. agricultural operators from the 2002 Census

of Agriculture. The right column shows the age distribution for the 27 states in the 2005 NPP survey (see "Arizona Farm Policy Preferences" this issue). While 11 percent of business owners were more than 64 years old, 26 percent of agricultural operators were older than 64 in the Ag Census and 32 percent in the NPP survey. At the other end of the spectrum, 14 percent of business owners were younger than 35, while only 6 percent were that young in the Ag Census and 2 percent in the NPP survey.

Two reasons might explain why the age distribution in the NPP survey differs from the one in the Ag Census. First, the NPP survey is of operators in 27 states instead of all states. So, farm operators on those 27 states may just happen to be older on average than the U.S. farm operator population. Another reason may simply be that the NPP survey was taken three years later. A 63-year-old farmer surveyed in the Ag Census would be 66 in the NPP survey. With the passage

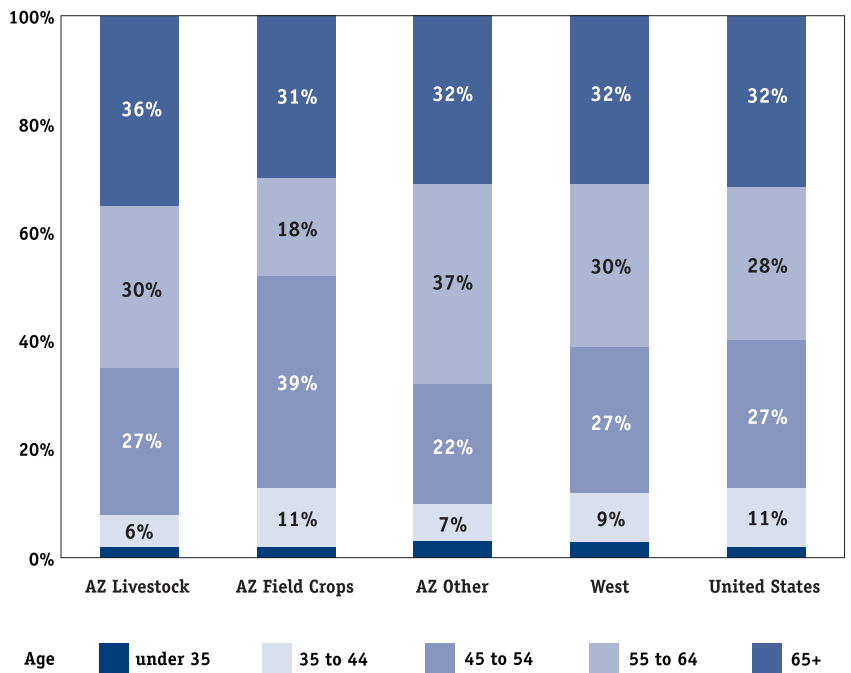
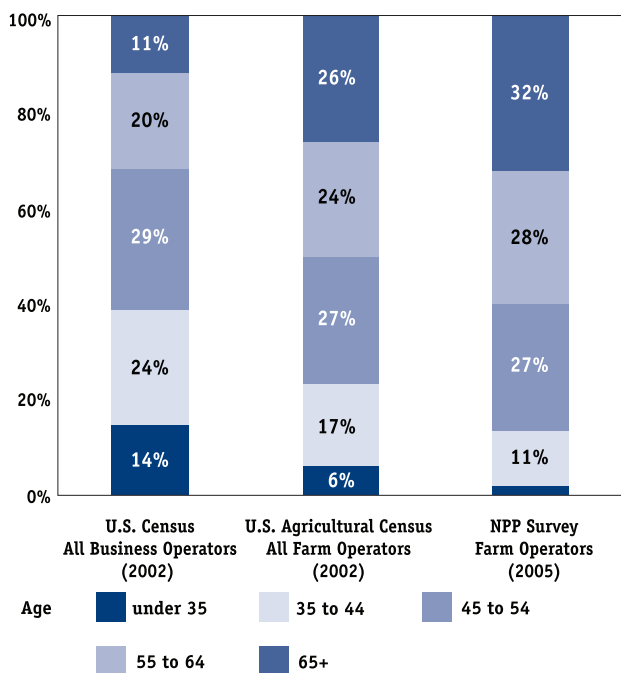


Fig. 1 Farm Operators Older Than Other Business Owners

Fig. 2 Age Demographics of Producers

of time, operators may “graduate” into an older age group. Average ages will increase over time if younger people are not becoming beginning farmers.

Figure 2 compares the age distribution of Arizona farmers with those in the 27-state survey as a whole. Arizona livestock producers had a higher percentage of respondents over 54 and over 64 than the overall survey did. They also had a lower percentage of respondents under 35. Arizona field crop producers, on the other hand, had a higher percentage of respondents in the 45–54 age range and a smaller share of respondents over 54 than the overall survey found. Other Arizona producers had a higher rate of older respondents over 54 (69%) than that in the overall survey (60%).

Farm and Ranch Transition in Arizona

The high share of producers over 64 raises questions about farm transition in the state. Who will operate these farms and ranches when the current operators retire? Which agricultural land will remain in production and which will be converted to commercial and residential uses? Selling off farmland is part of a retirement strategy of many agricultural producers.

From the NPP survey, 82 percent of producers in the 27 states believe that their land will remain in production agriculture when it transitions to the next operator (figure 3). About 57 percent of respondents expect operations to be taken over by their spouse, children, or other relatives, while 25 percent believe the operation will be taken over by a non-relative. Only 18 percent believe their operation will transition out of agriculture. In the western states surveyed, 23 percent of respondents expect their operations to transition out of agriculture. In Arizona, this expectation is even higher: 30 percent of livestock producers, 37 percent of other crop producers and 45 percent of field crop producers, expect a transition out of agriculture.

For Arizona cotton growers, the expectation that land will transition out of agriculture is higher still (figure 4). Over half of cotton producers surveyed in Arizona expect their land to be converted to non-farm use, compared to one-third of all other Arizona producers. Arizona cotton acreage fell by 46 percent between 1990 and 2006, from 350,000 acres down to 190,000 acres (figure 5). Most of this decline has come in Central Arizona—Maricopa, Pima, and Pinal counties.

Central Arizona counties have accounted for more than 80 percent of Arizona’s population growth and are projected to do so in the future. Figure 6 shows annual additions to Arizona’s population in central Arizona and the rest of the state. Figures before 2007 are based on U.S. Census Bureau estimates while future projections come from the Arizona Department of Economic

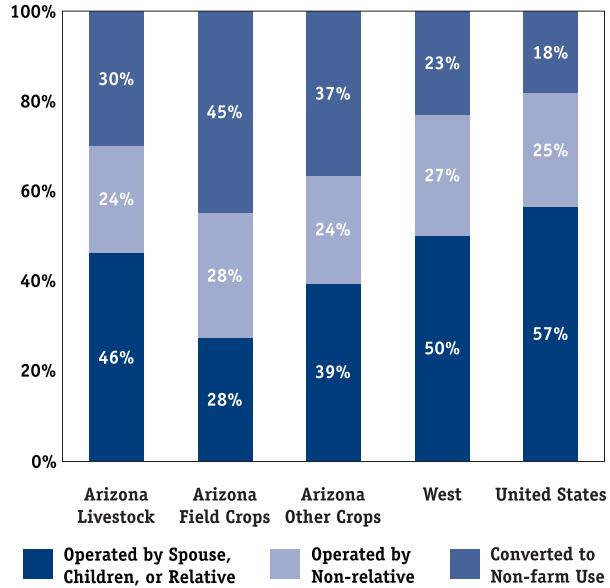


Fig. 3 Expected Transition of Farm or Ranch to Next Operator or Land Use

Security. Central Arizona is projected to continue to add more than 150,000 people per year to its population over the near future. Such growth will increase demand for land conversion.

Urban Influence, Farmland Values, and Transition Incentives

One measure of pressure to urbanize agricultural land is the cash rent-to-sales value ratio. Cash rents for agricultural land reflect the land’s capacity to produce crops and livestock. Cash rents are an indicator of current annual agricultural returns. Sales values may include agricultural production potential, but they also reflect potential for commercial and residential real estate development. In states where farmland

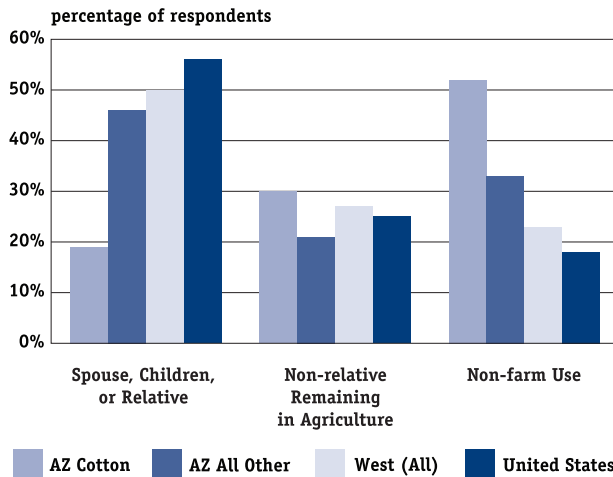


Fig. 4 Arizona Cotton Producers Have Greater Expectations That Their Land Will Transition Out of Agriculture Than Other Producers Do

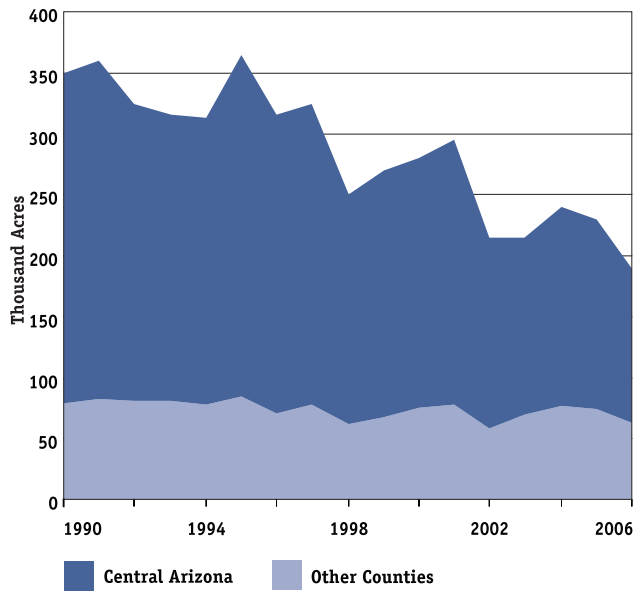


Fig. 5 Most of the Decline in AZ Cotton Acres Has Been in Central Arizona (Maricopa, Pima, and Pinal Counties)

is in great demand for conversion to urban use, this conversion potential makes up a large part of the sales value. In urbanized states, such as Maryland, cash rent-to-value ratios are low, 1 percent or less (figure 7). In contrast, in a state like North Dakota where there is less development potential, the ratio is relatively high, 6 to 9 percent. While the national average is about 3 percent, it is about 4 percent in Iowa, but only 2 percent in Arizona. These figures reflect Arizona's higher-than-average urbanization pressure.

Farm real estate values have grown enormously in Arizona, more than tripling since 1994, even when adjusting for inflation (figure 8). The largest jump in values has come since 2004. The growth rate slowed in

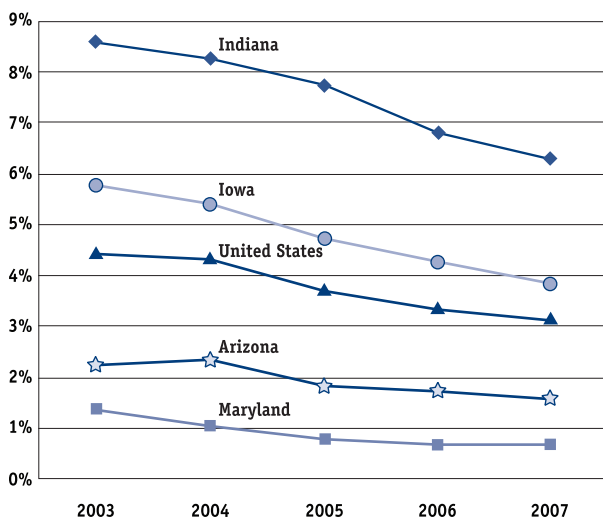
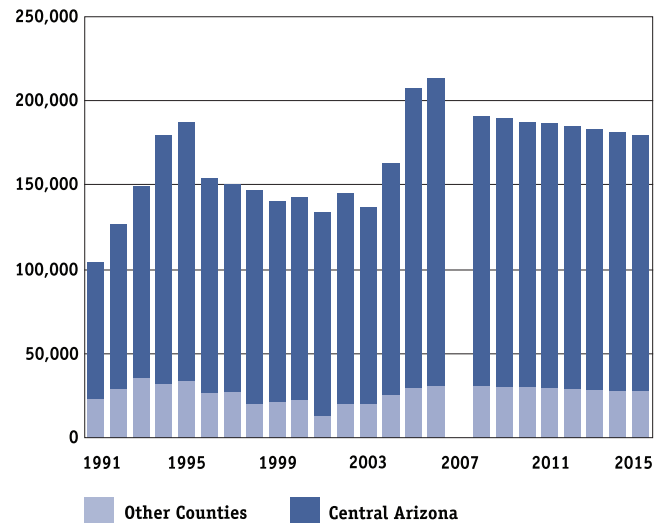


Fig. 7 Cash Rent-to-Crop Land Value Ratios (%) for Selected States



Source: 1991–2006 values from U.S. Census Bureau, Current Population Survey. 2008–2015 projections based on Arizona Department of Economic Security estimates.

Fig. 6 Annual Additions to Arizona Population (Estimated and Projected)

2007, perhaps reflecting the softening of the housing market. Still, in the last two years, Arizona farm real estate values have topped \$3,000 per acre.

Arizona NPP survey respondents were asked how many miles they lived in driving distance from Tucson or Phoenix. Not surprisingly, respondents living closer to these fast-growing metro areas were more likely to expect their land would transition out of agriculture. About 55 percent of producers within 50 miles of Tucson or Phoenix believed their land would be converted to non-farm use when they retired (figure 9). Of producers living 50 to 100 miles from the cities, 29 percent believed their land would be converted. This figure was only 17 percent for producers living further than 100 miles from Phoenix and Tucson.

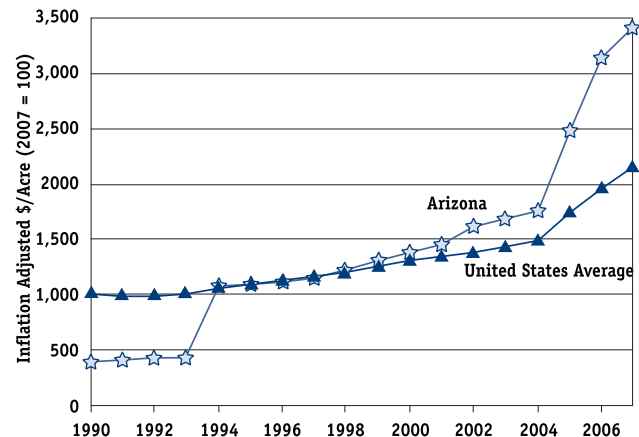
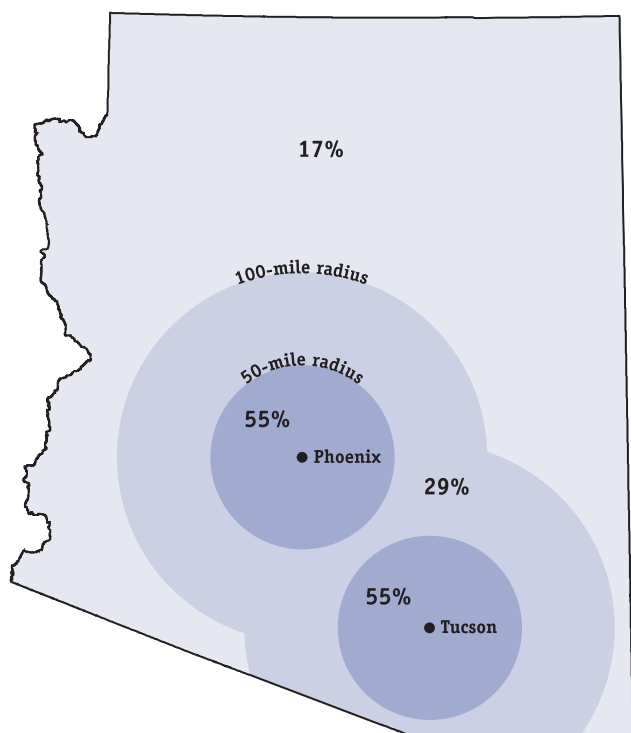


Fig. 8 Average Value per Acre of Farm Real Estate, Arizona and U.S. Average

New at AREC



Distance of Primary Land Holding from Downtown Phoenix or Tucson

- 50 miles or less (55% expect conversion)
- 50-100 miles (29% expect conversion)
- over 100 miles (17% expect conversion)

Fig. 9 Percentage of Operators Who Expect Their Land to Be Converted to Non-farm Use Decreases with Distance from Phoenix and Tucson

Projections of continued, rapid population growth in central Arizona suggest that land values and incentives to convert farmland to urban uses will continue to grow. It remains uncertain how much this long-term trend may be mediated in the short term by recent problems in U.S. housing markets. Arizona producer expectations, however, appear to match those of market indicators suggesting significant changes in the future central Arizona landscape. **AR**

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a college education. I grew up in a small rural community. My parents came from farming backgrounds. My grandfather on my mother's side was definitely a big time agricultural leader in Minnesota.

Arizona Review. *What was your family environment like growing up? How many siblings do you have and where do you fall in the birth order? What were some of the daily chores and activities around the household that you were involved in?*

Sander. I was the oldest of two children, my sister being three years younger than I. We grew up in a relatively modest family. As I mentioned, my father was a county extension agent and my mother a school teacher. During the school year I lived in a small community of about 1,000 people, Dodge Center, Minnesota, where I went to school. My chores were the usual things that kids do in rural Minnesota with a heavy emphasis on mowing lawns and shoveling snow.

Arizona Review. *What kind of an education did you receive for grade school and high school? What were your favorite subjects and most difficult ones? Were you involved in any sports or other after school activities?*

Sander. I went to a typical public school in a small rural community. My favorite subjects were science and math. English literature was not a favorite. However, I had an English teacher who insisted that I learn how to write and drilled us weekly for two years on writing, which really helped me when I got to college. In high school, I was the ninth man on an eight-man baseball team, but I was an excellent football player and was named to all-conference teams in my sophomore, junior, and senior years and to all-state in my senior year.

Arizona Review. *What were some of the first "paid jobs" you had? How do you think some of these jobs influenced the direction of your education and career path?*

Sander. Some of my first paid jobs were mowing the neighbors' lawns, an early morning paper route, and being the janitor for \$15 a month in the Congregational Church. During the summers I worked on our family farm in northwestern Minnesota where I was given room and board and \$4 a day. Agriculture was dominant on both sides of my family and so a university major in one of the agricultural sciences was almost a given by early in my high school career.

Arizona Review. *What do you think were some of the key influences behind why you went to college and the selection of your undergraduate major? Similarly, what were key influences behind your decision to pursue graduate studies? What events led to your initial involvement in administration?*

Sander. It was almost predetermined that I go to the University of Minnesota because as an all-state

football player at that period of time you were supposed to go to your state university—although I had an opportunity to go to Yale University on a football scholarship. When I got to the University of Minnesota, I began majoring in animal science. But it became apparent after my first year that I was more interested in the science than I was in the animal. Consequently, I switched to a major called science specialization which was preparatory for going to graduate school in one of the areas of agricultural science. In short, I had a very serious chemistry minor with an animal science major.

This major at Minnesota almost predetermined that I would go to graduate school and since I did fairly well I had an opportunity to attend several better ones. I elected to go to Cornell University where they had one of the very best animal nutrition programs in the nation. To avoid being drafted, I participated in Air Force ROTC, took a commission as a second lieutenant, and, after my master's degree, was called to active duty. I spent four years at the Aero-medical Laboratory in Wright Patterson Air Force Base in the early days of the manned space program.

After completing my tour of duty, I returned to Cornell University where I changed my Ph.D. major to biochemistry with minors in physical biology and organic chemistry. Then after graduation in 1965, I took a post doctoral position with Dr. Bill Jencks at Brandeis University and specialized in the general area of the chemical mechanism by which enzymes catalyze reactions.

I started my career as an assistant professor at the University of Florida in 1967. I went through the ranks and became a full professor in 1976. During those years I was blessed with a department head who didn't care for administration, so I was asked to perform many of the functions of a department head. With this experience, I then applied for and was hired as head of the Biochemistry Department at West Virginia University College of Medicine in Morgantown, West Virginia.

I think the dominant thing that led me into administration was the fact that I like to see organizations build and get better. I think I did this with two biochemistry departments at West Virginia and at Texas A&M, followed by an appointment as the first deputy chancellor for biotechnology development at Texas A&M where I developed the Institute for Biosciences and Technology in association with the Texas Medical Center in Houston, Texas.

Arizona Review. *What have been some of your most rewarding activities as a faculty member and administrator throughout your career?*

Sander. I think the most rewarding activity that any academic has is seeing his students succeed. I am

probably proudest of the careers of some of my better students and postdoctoral fellows. I have also truly enjoyed watching the College of Agriculture and Life Sciences develop over the years, especially the achievements of faculty that we managed to hire such as Brian Larkins, Vicki Chandler, Rob Innes, Soyeon Shim, etc. In short, my role has been one of making the best environment possible for faculty, staff, and students to do their best work. I think I have done some of that, and the results have shown in the careers of some truly excellent people who work in our college.

Arizona Review. *Looking back on your years of administrative experience, what are a few key principles of advice you would give to someone starting out or looking to get involved in university administration today?*

Sander. The first piece of advice is that you'd better be a people-oriented person and you need to get your satisfaction out of seeing others achieve in their careers. Your job as an administrator is to create the environment where everyone else can do their very best work. If you do that, everyone else will succeed, your organization will be a success, and you will have the satisfaction of being involved in the process. Other attributes such as communication skills and the willingness to give up the freedom of establishing your own schedule are important attributes.

Arizona Review. *As the population of Arizona grows, how should CALS at the University of Arizona position itself to better serve a changing mix of student, producer, and consumer audiences for the near-term (next 5 to 10 years) and longer-term (20 to 30 years)? What do you see as the greatest opportunities and challenges for CALS over these periods?*

Sander. As Arizona and its agricultural industry change, CALS must also change. Drivers include population growth, water use, land availability, and climate change. While the College will always feature the aspects of agriculture that are important to our state, all should realize that the life sciences are increasingly more important to the student body of the University of Arizona. Here I put activities such as our School of Family and Consumer Sciences, School of Natural Resources, and other science-related departments which will contribute to the livelihood of our students and the future of Arizona's economy. Agricultural areas that I believe will become more important include our Closed Environment Ag Program and other agricultural programs that require less land and more efficient use

of water. Currently coupled with the University outreach initiative, the College of Agriculture will continue to be the principal source of outreach to the people of our state. This will mean that some of our faculty will become more involved in rural economic development and other issues that relate to the educational enterprises in the rural parts of our state. Increasingly important will be 'two plus two' degree programs with community colleges where there is a need to have four-year degree programs.

Arizona Review. *While many individuals work at finishing up projects and getting rid of job titles and responsibilities as they approach the retirement years, you have done just the opposite. What has helped keep the "Energizer Bunny" going strong for Gene Sander in recent years? Do you have any hobbies or activities that rejuvenate you when you're not occupied with administrative duties?*

Sander. I agree that some at my age are looking to retire. On the other hand, due to good genetics and an attempt to live a healthy lifestyle, my health is good and I look to the future more than I look to the past. While I currently am the executive vice president and provost, it is for a limited period until a new person is identified for the position. At that time, I intend to return to CALS as dean and vice president for Outreach. During the past 100 days or so as provost, it has been a real pleasure to work with Robert Shelton and other senior administrators in our university. They really are a talented group of men and women. My long experience as a dean at the University of Arizona has given me some insight about some important changes that the president and I can make in the functioning of the Office of the Provost. We are well along in getting some of these done and hopefully they will make it easier for a new individual to move into the position and start tackling programmatic issues that will be important to the future of our university.

Arizona Review. *Does your assessment of "good genetics" come just from having lots of energy and good health at your age or has someone in CALS or elsewhere helped you with this assessment by evaluating your DNA as part of the Human Genome Project? If you're feeling really spry on a Saturday morning this fall, the Wildcats might be able to use some help on the football field if you have any eligibility left!!*

Sander. Thanks. No DNA profile. To understand the genetics, you had to know my folks. **AR**

Arizona's Agricultural Situation

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Risk Management Agency.

According to USDA's October crop report, the 2007 U.S. cotton crop should total 18.2 million bales, about 16 percent less than last year. Acreage harvested is expected to be 10.5 million acres for 2007, the smallest area since 1989. Although the U.S. cotton yield for 2007 is forecast to be 12 pounds above last season's at 826 pounds per acre. According to USDA/NASS, 178,000 acres of Upland and 3,000 acres of ELS cotton will be harvested in Arizona in 2007. This represents a decrease of 10,000 Upland acres and 4,000 ELS acres from last year. Total Arizona cotton production is also expected to drop to 535,500 bales, a 6 percent decrease from the 2006 level. As in 2006, Arizona cotton prices

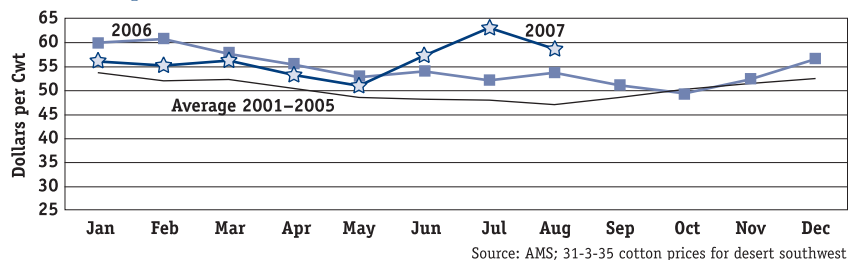
(as measured by 31-3-35 Desert Southwest prices) remained fairly flat in 2007 and have been trading between 60 and 70 cents/lb. for most of the year.

USDA expects Arizona farmers to harvest 250,000 acres of alfalfa in 2007 with an average yield of 8.3 tons/acre. With both harvested area and yield about the same as last year, alfalfa production for 2007 is expected to remain unchanged at 2.075 million tons. USDA's national forecasts indicate alfalfa production should increase by 1 percent to 72.3 million tons. Despite stable production, Arizona's alfalfa prices for 2007 have remained above the 2001-2005 average prices. Strong demand for forage from the dairy sector and higher feed grain prices continue to keep upward pressure on alfalfa prices.

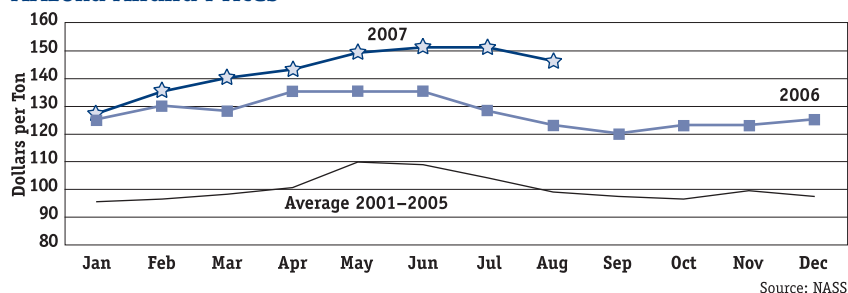
Arizona farmers harvested 2.5 million boxes of lemons in the 2006-2007 season. USDA forecasts a significantly lower production of 1.5 million boxes for the 2007-08 season for Arizona while California's production is expected to increase modestly from 16 to 16.5 million tons over the same period. With an average price of \$43/box, lemon prices for 2006-07 have been about 50 percent higher than they were in the 2000-2005 period.

Prices for Arizona feeder steers and heifers and calf prices have been running about 10 percent less than last year, but still 6 to 12 percent above their 2001-2005 five-year average. Higher prices for corn and other feeds in 2007 have kept feeder and calf prices lower this year than in 2006. The rapid expansion that occurred in the ethanol industry was a driving force in pushing corn prices higher last year. However, the double digit expansion rate of the ethanol sector increased supply in some areas that exceeded the capacity of the transportation and blending infrastructure. Profit margins for many ethanol plants are starting to turn negative and this will have a tempering effect on corn prices. But with both wheat and soybean crops working to gain acreage lost to corn in 2007, corn prices could still be strong for 2008. The farm price received for corn averaged around \$3.30 to \$3.50 per bushel for

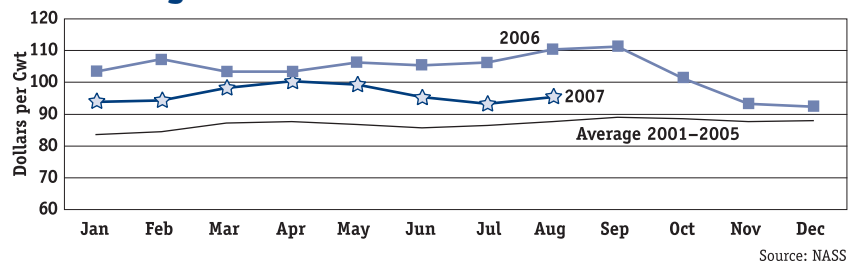
Arizona Upland Cotton Prices



Arizona Alfalfa Prices



Arizona Slaughter Steer and Heifer Prices



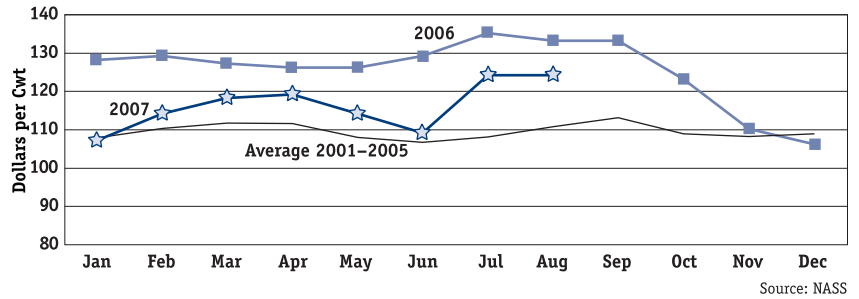
most of 2007, and the 2001–2006 five-year average was between \$2.00 to \$2.30 per bushel.

The U.S. cattle industry has experienced a cycle about every decade for many years. Recently, cyclical troughs in cattle numbers have occurred in 1979–1980, 1990–1991, and 2003–2004. Although feeder and fed cattle prices have been at relatively high levels for the last three years, the beef cow herd has been essentially flat. Adverse weather conditions, starting with the 2002 drought, restricted many areas from increasing their herd size even if they wanted to. In addition, some are suggesting that cow-calf producers may be encroaching on their resource limits available for increasing production without feeding beef cows under confinement. Overall, forage conditions improved greatly for 2007 compared to 2006. In July of 2006, over 50 percent of the forage in the U.S. was rated as poor to very poor condition while around 30 percent, close to the five-year average, was rated as such in 2007.

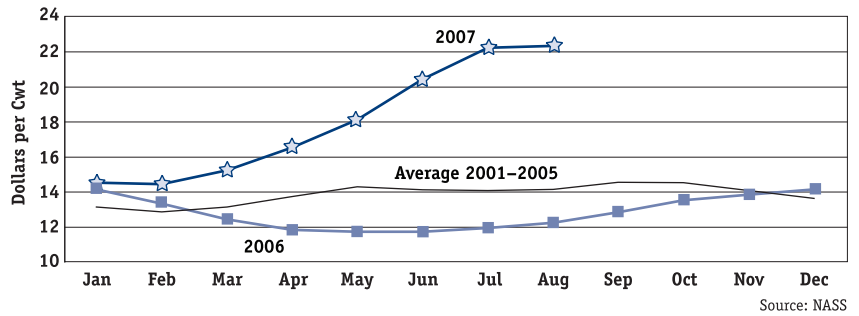
Feeder cattle imports from Canada for May through the end of September increased to almost double the volume they were the prior year while feeder imports from Mexico are running less than last year. The smaller number of imports from Mexico is attributed to a smaller cowherd while the lower cost of grain in the United States compared to Canada is increasing the flow of feeders to the United States from Canada. Beef exports to Japan and South Korea are increasing, although their imports are still a fraction of what they were prior to BSE.

The first three quarters of 2007 have witnessed a steady and steep rise in milk prices. However, production increases in the fourth quarter of 2007 and into 2008 are expected to put a downward pressure on milk prices. Falling exports and a steady domestic demand coupled with anticipated increases in production will likely see a steady or a slight decrease in milk prices. **AR**

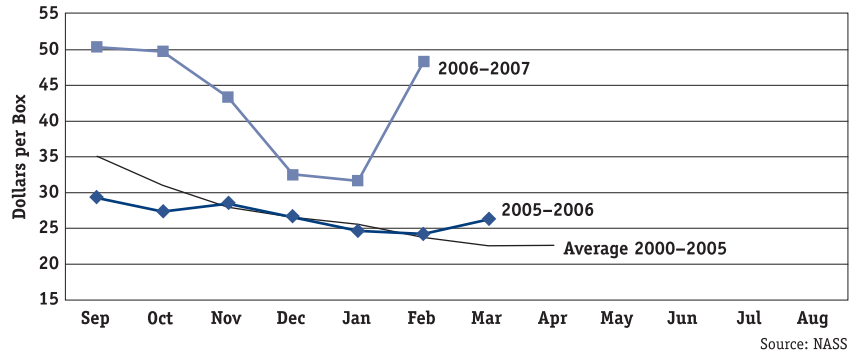
Arizona Calf Prices



Arizona Milk Prices



Arizona Lemon Prices



Costs of Illegal Immigration continued from page 5.

and 1960s. However, these guest worker programs generally suffer from selection bias and may actually increase total immigration as well as require the implementation of tougher enforcement measures. Other possible solutions would be to increase interior enforcement and tax or penalize those employers who rely on illegal labor, or to offer forms of economic assistance and development to the source country supplying the

illegal labor. But these policies would require additional U.S. oversight and would increase regulatory costs.


One thing seems certain, border issues between the United States and Mexico are not new and they show no signs of disappearing or even fading away in the future. A few U.S. citizens, ranchers in southeast Arizona, are personally bearing very large costs to their businesses due to the U.S.-Mexico border situation.

Alternative policies and future research directions on this issue need to consider the consequences to ranches in southern Arizona, even though they are a small component of the U.S. economy. **AR**

Heather Waters received her M.S. from the Department in 2007. She is now with Farm Credit Services Southwest.

Russell Tronstad's research and Extension activities focus on marketing, management, and policy issues germane to Arizona's production agriculture.

Conclusion

Without doubt agriculture is important in the United States—not only in terms of our ability to provide food and fiber at low cost, but also in terms of agriculture’s positive contribution to our nation’s balance of trade in those areas where we have comparative advantage. It is also true that agriculture matters in Arizona. In relative terms, Arizona’s agriculture is nearly as important to the Arizona economy as the nation’s agriculture is to the national economy. Further, agriculture’s relative importance in Arizona is only somewhat less than that of two of the nation’s largest agricultural producing states—California and Texas. Activity in agriculture and other agribusiness has a positive indirect impact on other sectors of the Arizona economy. And, finally, it cannot be overemphasized that when talking about an industry’s importance to an economy—be it a local, state, or national economy—it is value added, *not* gross value of production or gross receipts, that matters. With that we rest our case—and without fear of exaggeration. 

For More Information

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Bruce Beattie has broad research and outreach interests in agricultural economics, including production economics, the importance of agriculture in regional and national economies, and the role of markets in fostering economic well being.

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