UNIVERSITY OF CALIFORNIA GIANNINI FOUNDATION

UPDATE

Agricultural and Resource Economics

VOL. 5 NO. 1 FALL, 2001

Editors' Introduction

This issue begins the fifth year of publication for *ARE Update*. The current issue also inaugurates some important changes for *Update*. Whereas the first four volumes of *Update* were published by the Department of Agricultural and Resource Economics at UC Davis, publication will now be under the auspices of the UC Giannini Foundation of Agricultural Economics. The Giannini Foundation was founded in 1930 from a grant made by the Bancitaly Corporation to the University of California in tribute to its organizer and past president, Amadeo Peter Giannini. Members and associate members of the Giannini Foundation are UC faculty and cooperative extension specialists in agricultural and resource economics on the Berkeley, Davis and Riverside campuses. The new *Update* will bring to readers research and information on agricultural, resource and environmental issues from scholars throughout the UC system. The members and associate members of the Foundation, their areas of interest, and contact information are listed on pages 10-11 of this issue.

In addition, we are pleased to announce that *Update* will now be published bi-monthly, rather than quarterly as in the past. We hope that the increased frequency of publication will enable *Update* to provide even more timely information to readers on research developments and emerging issues affecting California's agriculture and natural resources.

Two new editors are also joining the *Update* staff. David Sunding is a cooperative extension economist in the Department of Agricultural and Resource Economics and Policy (DAREP) on the Berkeley campus with interests in agricultural policy, water allocation, pesticide regulation, endangered species, and technology development and adoption. See David's faculty profile contained on page 2 of this issue. David Zilberman is a professor in the DAREP at UC Berkeley, with research interests in agricultural, water, and environmental policy design, the economics of technical change and the agricultural resource base. They join continuing editors Steve Blank and Rich Sexton from the Department of Agricultural and Resource Economics (DARE) at UC Davis. Julie McNamara from the DARE at UC Davis continues as managing editor.

We are gratified by the positive response that the first four volumes of *Update* has generated and look forward to producing an even better product under the new organization. Subscriptions to *Update* are free and information for subscribing is available on page 12. Articles in *Update* can be freely reprinted, although we request that you reprint an article in its totality (including any figures, graphs and tables) and notify us where the reprinted article will appear. As always, we welcome your comments, questions and suggestions.

In this issue....

Faculty Profile

David Sunding is the Co-Director for the Center for Sustainable Resource Development in the College of Natural Resources, and a Cooperative Extension economist in the Department of Agricultural and Resource Economics at UC Berkeley.

Dave's research program focuses on agricultural and environmental policy, particularly government programs to deal with the environmental and public-health side effects of farming. His main research areas include the economics of pesticide use and regulation, water allocation (especially water markets), the generation and adoption of agricultural technologies, and the economics of endangered species preservation. He is currently active in the debates about the 2002 Farm Bill, particularly the conservation provisions which will put billions of dollars into the U.S. farm economy and generate measurable benefits for the environment. Dave is also very actively involved in the CALFED program and is currently evaluating the economics of the new round of dam construction that is being considered in California.

Dave has an extensive publication record in agricultural and resource economics. A recent paper, which he co-authored with Joshua Zivin, "Insect Population Dynamics, Pesticide Use and Farmworker Health" (*American Journal of Agricultural Economics*, 2000), received the annual Outstanding Journal Article Award from the American Agricultural Economics Association. His research is also interdisciplinary with some publications in law, policy and scientific journals which result in the most favorable exposure for his work.

Dave works frequently with federal and state legislatures and government agencies, and is regularly asked to testify and present informal briefings for members and their staffs. He is a frequent consultant to private industry on matters relating to environmental regulation and public policy. Dave also takes an active role in advising and mentoring graduate students and in departmental, university and statewide committees.

Dave has a unique background. During the Clinton Administration, he was a Senior Economist at the White House Council of Economic Advisers in the Executive Office of the President. In this role, he had responsibility for helping to develop agricultural, environmental and natural resource policy. He also teaches regularly at UC Berkeley's Boalt Hall School of Law. Early in his career, he was an Assistant Professor in the Department of Economics and School of Law at Boston College.

Dave received his Ph.D. in Agricultural and Resource Economics from UC Berkeley. Dave, his wife, and their two dogs are enjoying their 6-month old daughter. They enjoy hiking, camping and gardening.

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The Farm Bill and the Environment

by

Terry A. DeBiase and David Zilberman

The debate surrounding the integration of environmental and natural resource conservation considerations within the Farm Bill has been the research focus for agricultural economists at the University of California, working in collaboration with a multidisciplinary team of scientists from various universities and agencies. Research findings were presented in June, 2001 at a recent Washington, D.C. conference entitled "The Farm Bill and the Environment." The conference is part of an ongoing dialogue between university scientists and policymakers that aims to improve policy making and make policy research more useful and relevant.

A new farm bill is ratified approximately every four years and includes farm income support legislation, commodity storage policies, and programs for agricultural resource conservation. According to Senator Pat Roberts from Kansas, commodity programs are supposed to provide a safety net to farmers, and cheap, abundant and safe food to consumers, while improving the quality of the environment. He expects that Congress will allocate $20 billion annually over the next four years and foresees an expansion of funding to meet environmental objectives of approximately $4 billion annually.

The design of environmental provisions in the Farm Bill is an intellectual challenge. It must be conceived within an overall framework that balances the well being of farmers and their desire for more freedom and flexibility with consumers' interest in affordable and safe food, and environmental quality objectives. These concerns must also be reconciled with constraints imposed by domestic and especially international agreements and political will. The design of the Farm Bill is primarily constrained by the World Trade Organization and international trade agreements that require a shift from agricultural transfers that increase farm supply toward payments for providing environmental amenities.

Agriculture-Environment Interaction

The collaborative research consists of several elements: natural scientists identify environmental issues that can be addressed and opportunities that can be captured by policy intervention; agricultural economists investigate the effectiveness of alternative incentives and other policy interventions in modifying producer behavior towards greener practices; and agricultural economists and other policy scientists investigate how to effectively incorporate and integrate environmental provisions with other elements of farm bill legislation.

Ecologists and other natural scientists suggest that agriculture can provide several types of environmental services:

- slowing and containing processes which contribute to the deterioration of natural resources and environmental quality. Such processes include soil erosion and a depletion of water resources, water contamination problems including hypoxia, water logging problems in the West, and the loss of wildlife resources and habitat (especially aquatic wildlife);
- reducing emissions and sequestration of greenhouse gases;
- releasing resources such as water and land for restoration and enhancement of environmental amenities including wetlands, storm buffers, and wildlife habitat and endangered species; and
- maintaining and improving rural landscapes.

Agricultural practices have become more environmentally friendly over the last 20 years as farmers have adopted integrated pest management, no– and low–tillage, and similar practices. On the other hand, water depletion problems have increased. Urban sprawl and industrial development have led to the loss of prime agricultural land and the reduction of amenities associated with open space. Although the rate of decline in wetland acreage in

FARM BILL-*continued on page 4*

Cover crops are planted between tree rows in California orchards for nitrogen fixation, weed control, improved soil tilth and reduced soil erosion.

the United States has slowed in recent years, there has been a definite decline in wetland quality. The challenge remains to reduce agricultural impacts on natural resources and protect and restore wetlands and other ecosystems.

The key ingredient in the design of effective environmental policies is the quantitative knowledge of the relationship between activities and their impact on the environment. Indeed, improvements in technology enhance environmental policy making. For example, a crucial element for an effective environmental conservation program is the establishment of quantifiable objectives and measures of performance. The use of spatial data to assess agricultural productivity and to develop environmental indicators is an essential element in the design of effective land purchasing programs. While there are many environmental databases relating to agriculture, most of the data is not appropriate for solving policy problems. Further research is still needed to better interpret existing data and develop new data resources.

The increased capacity to identify relationships between production activities and environmental impacts has significant consequences. Policy research suggests that growing public concern for environmental amenities impacted by agricultural pollution could lead to restrictions on agricultural practices. As past experience suggests, major groups may use the legal system to require enforcement of environmental legislation, such as the Clean Water Act. Animal waste problems have become subject to scrutiny, and the expansion of concentrated livestock operations has been restricted. For example, the expansion of hog operations in North Carolina has been banned. In response to concerns about environmental quality, dairy farmers in California have been forced to modify their waste management practices. Enforcement of the Clean Water Act under court order has imposed restrictions on subjected livestock operations to meet total maximum daily loads to surface water bodies. An inadequate response to environmental concerns may induce tougher measures that restrict livestock and agriculture production. However, proactive efforts to reduce environmental impacts and implement sustainable practices will receive growing support. Farmers already engaged in environmentally sound practices such as integrated pest management and use of cover crops should use this to their advantage.

Agricultural economists have compiled evidence that policy actions and incentives, as well as regulation, have led to an improvement in environmental quality and can induce farmers to significantly increase the environmental amenities that agriculture provides. Financial incentives to modify agricultural operations should be incorporated in the design of future agricultural policies to achieve sustainability through improvements in environmental quality. Farmers have responded to financial incentives as demonstrated by the continuous adoption of more efficient irrigation practices in California in response to growing water scarcity. Market conditions and farm policies that increase the profitability of no–till practices have led to their adoption throughout the Midwest. There are many other examples of green payments that have increased the adoption rate of environmentally–friendly technologies, and simulations predict that adoption rates will significantly increase with small increases in payments.

Earlier policies aimed at improving environmental quality by relying on voluntary participation

in programs in response to inducements. While these programs have been largely successful, there are areas where much improvement is needed. Policy scientists have found that voluntary programs are more effective when threats of punishment or denial of benefits are exercised if certain environmental objectives are not met. Some policy analysts suggest that we are witnessing the increased use of the "stick behind a carrot" approach that aims to induce both collective action and individual initiative to improve environmental quality. Environmental agencies may be prodded to apply the "stick" through legal channels, while commodity programs provide the "carrot."

Pheromone traps are used to monitor pest outbreaks in integrated pest management programs. The goal of monitoring is to improve the timing and reduce the number of pesticide applications.

Photo by UC IPM

Understanding the relationship between farmers' behavior and the impacts on the environment has led to an increased appreciation of the heterogeneity of agriculture. All farmers are not alike and there are differences in practices, environmental conditions, and objectives across regions. A lack of consideration for farmers' situations and constraints is the major reason for failed policies. An efficient policy in economic terms is one that aims to maximize an overall social welfare that considers the well-being of producers, consumers, taxpayers and the environment, given the constraints imposed by behavioral patterns and the natural environment.

Policy studies suggest that it is crucial to establish well–defined and quantifiable policy objectives that take into account the complexity of the environment. Instead of emphasizing one objective, such as improvement in water quality, it may be more effective to also consider improvements in the health of an ecosystem, improved wildlife habitat, and/or the ability of the landscape to buffer the impacts of extreme weather conditions. There is a growing understanding of biophysical and socioeconomic processes that relate agricultural activities to environmental phenomena, and this knowledge should be communicated to the public and incorporated in environmental decision making.

Another important principle is an emphasis on flexibility in establishing environmental priorities and criteria, and whenever possible, the reliance on local institutions in the formulation and implementation of policy. New environmental policies in agriculture may consist of grants to states where the federal agency is responsible for supervision and assessment of the use of the funds. Thus, flexibility at the local level should come with greater accountability for how funds are expended. This plan is consistent with another policy finding that indicates successful implementation of policies requires an effective system of monitoring and enforcement. New policies will be unsuccessful if failure to fulfill obligations is not detected and penalized. Therefore, the design of new programs should incorporate a system of liability and accountability.

Monitoring and evaluation systems should be designed to prohibit conflict of interest. To achieve this objective, a great share of monitoring and technical assistance activities should be relegated to the private sector. Public sector institutions such as the land–grant system, cooperative extension and the Natural Resource Conservation Service should concentrate on the generation and dissemination of knowledge and certification of third–party technical providers, as well as general program design. They should work with institutions and agents in the private sector who will be responsible for the day–to–day provision of monitoring and technical assistance.

Policy researchers have discovered that there are

FARM BILL-*continued on page 6*

three main difficulties in designing an effective conservation program. First, these policies should not exclusively concentrate on providing incentives to correct undesirable behavior. By only providing support to "bad players" for changing their ways, policies may misfire by preventing incentives for conscientious farmers and limiting appropriate knowledge and inclination. Conservation programs should also emphasize acknowledging and providing support to good land stewards who are already engaged in environmentally–friendly activities. Second, geographic areas where environmental benefits can be most effectively provided are not necessarily the areas where there is political pressure to provide support. One of the challenges in the design of environmental programs is to overcome political pressure and allocate resources to locations where they will maximize environmental benefits. Finally, because of the nature of ecological processes, considerable time lags exist between the implementation of conservation practices and the measurable outcomes. While it is more desirable to reward measurable outcomes, payments have traditionally been based on activities rather than results. Improvements in technology may lead to an increased emphasis on result–based compensation, but even in the foreseeable future, a majority of the rewards will be based on activities.

Implications for California

The increased emphasis on environmental aspects of the Farm Bill bodes well for California. California farmers have gained less from federal commodity programs than farmers in the Great Plains and Mississippi Delta regions. In the past, 36 percent of landowners have received 90 percent of the money from support programs. Major commodities (rice, cotton and wheat) have been relatively large recipients of the support program, while other agricultural products (fruit and specialty crops, pork, poultry and cattle) have received less support. The existing patterns of support payments reflect the political power of certain commodity groups and states and also aim to keep farmers on the land in regions where profitability of agricultural products may be marginal. Regions where conservation funds may have higher returns have not been supported in the past. Thus, effective conservation programs may reallocate funding to farmers who have not benefited from previous programs. There is significant potential for enhancing environmental amenities on farmland and rangeland in California, and California agriculture may reap additional conservation funding as a result.

In summary, the environmental provisions of the Farm Bill must be conceived within an overall framework that takes into account such factors as the food abundance and the economic well-being of agriculture, and constraints imposed by domestic and international agreements. Several policy analysts advocate integrated farm policies to address these issues. Conservation and other farm policies that encourage farmers to provide environmental amenities have excellent potential. However, their success depends on complementary efforts to establish effective mechanisms that ensure compliance through monitoring and enforcement. The enhancement of the provision of environmental amenities by agriculture may necessitate divisions of responsibility between federal and state agencies, and increased involvement of local constituencies in establishing priorities for resource conservation, monitoring and knowledge accumulation. We are entering an era where the Farm Bill is becoming a major piece of both agricultural and environmental policy, and the research programs of economists and policy scientists should be modified accordingly.

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Guest Workers for California Agriculture?

by
Philip Martin

The farm workers of tomorrow are growing up today outside the United States. An estimated 55 percent of California's farm workers are unauthorized, and over 95 percent of new entrants to the farm work force are born abroad, which makes the terms on which farmers can employ foreign workers of keen interest. This article reviews the current situation of farm labor and the guest worker and legalization options that will be discussed by U.S. President Bush and Mexican President Fox in September 2001.

Farm Employment and Workers

In California, the Employment Development Department (EDD) reports the number of employees and their wages each quarter. In 2000, average annual wage and salary employment on the state's farms was 408,000. This is about the same as average number of state employees (444,000). However, there are far more farm workers than state employees because more workers must be hired to fill the peak seasonal labor needs. About two farm workers are hired to fill each year–round equivalent farm job, meaning that more than 800,000 California workers are employed on the state's farms each year.

The EDD data in Table 1 highlight two trends: (1) employment on California farms is increasing, up 22 percent between 1985 and 2000; and (2) farm services employment—farm services are farm labor contractors and farm management companies that bring workers to farms—has been rising, while hiring by farm operators declined. If current trends continue, farm services employers will soon account for the majority of farm worker employment.

Farm worker employment fluctuates from month to month and most farm labor issues involve seasonal workers, who are those employed during peak months such as September, but not trough months such as January. Statewide, peak employment in September rose 42,000 between 1993 and 2000, from 444,000 to 486,000, while trough employment in January rose 34,000, from 279,000 to 313,000. The peak-trough ratio (Table 2) is higher for farm services firms

The most recent national data profiling the characteristics of workers employed for wages on crop farms found that 80 percent were immigrants, and 95 percent of them were born in Mexico. There are an estimated 1.8 million U.S. crop workers, so this implies that 1.4 million were born in Mexico and 340,000 were born in the U.S. There are another 700,000 workers employed on livestock farms, and 800,000 of the estimated 2.5 million U.S. workers employed sometime during a typical year on farms are in California.

Farm workers were asked a series of questions about their place of birth and legal status, and the National Agricultural Workers' Survey (NAWS) inferred whether they were authorized to work in the U.S. from their answers. About 48 percent of the crop workers interviewed in 1997–98 were authorized to work in the U.S., and 52 percent were not. The unauthorized percentage in California is similar.

In 1989, the NAWS found that fewer than 10 percent of crop workers were unauthorized, and over one-third were Special Agricultural Workers (SAWs), mostly Mexicans who were legalized in 1987–88. During the 1990s, most SAWs left the

LABOR-Continued on page 8

Table 1. Average Employment in California Agriculture

	----------Workers Employed----------				% change
	1985	1990	1995	2000	1985-2000
Farm Production	232,700	229,700	228,400	228,500	-2%
Farm Services	102,700	133,800	145,100	179,500	75%
Total	335,400	363,500	373,500	408,000	22%
Farm Services Share	31%	37%	39%	44%	

Source: EDD Annual Wage and Salary Employment

farm work force, and they were often replaced by unauthorized workers.

The H-2A Program

There is a guest worker program available to farmers, but it is little used in California. The H-2A program, named after the section of immigration law that authorizes it, permits U.S. farmers to receive Department of Labor (DOL) permission (certification) to have foreign workers admitted to the U.S. to fill vacant farm jobs if: (1) U.S. workers are not available; and (2) the presence of the foreign workers will have no adverse effects on similar U.S. workers.

The DOL requires farmers to notify them of anticipated labor shortages at least 45 days before work is to begin. The farmer and the Employment Service attempt to recruit U.S. workers and, if this recruitment is not successful, the farmer receives certification to have H-2A foreign workers admitted to fill the jobs.

DOL will not consider applications for H-2A workers unless the farmer promises: (1) to pay the higher of the minimum, prevailing or Adverse Effect Wage Rate ($7.56 an hour in California in 2001); (2) to offer U.S. and H-2A workers free approved housing; and (3) to pay round–trip transportation. Very few California farmers use the H-2A program—481 California farm jobs were certified to be filled with foreign workers in 2000, including 440 sheepherder jobs.

Guest Workers and Legalization

Farmers have been seeking an alternative to the H-2A program for decades, and they may succeed in 2001. Bills that would create alternatives to or modify the H-2A program have been introduced in the U.S. Congress for a decade, justified by the rising percentage of unauthorized workers, which made farmers vulnerable to crop losses if the Immigration and Naturalization Service inspected their operations and removed unauthorized workers.

The common thread in these proposals was avoidance of DOL certification. Instead of certification, farmers would self–certify their need for foreign workers or, in one plan, obtain certification by asking newly established farm worker registries in each state for legally authorized workers. If a farmer requested 100 workers, and the registry could supply only 40, then the farmer would be certified to have 60 workers admitted.

In July 1998, the U.S. Senate approved one of these proposals, the Agricultural Job Opportunity Benefits and Security Act (AgJOBS). AgJOBS included farm worker registries and introduced the concept of withholding some of the foreign workers' wages to encourage them to return at the end of the season—up to 20 percent of worker earnings could be withheld, and returned only when the worker surrendered his work permit in his country of origin. President Clinton threatened a veto, and AgJOBS was not enacted.

The outlook for a guest worker program was changed by the election of Vicente Fox as president of Mexico in July 2000, and George W. Bush as U.S. president in November 2000. These election results prompted employer and worker advocates to agree on a compromise version of AgJOBS in December 2000 that introduced a new concept: earned legalization. The compromise offered temporary legal status to unauthorized workers who had done at least 100 days of farm work the previous year, and allowed them to become immigrants if they did at least 360 more days of farm work in the next six years. Earned legalization satisfied employers, who were assured that newly legalized farm workers would not immediately leave for nonfarm jobs, and worker advocates, who wanted farm workers to eventually have the same rights as other workers.

The AgJOBS compromise was blocked in Congress by Republicans who opposed "rewarding lawbreakers." Led by Senator Phil Gramm (R-TX), they instead proposed a guest worker only policy. Under Gramm's

Table 2. Monthly Employment in California Agriculture

	2000				1993			
	Max	Min	Difference	Ratio	Max	Min	Difference	Ratio
Farm Production	266,400	179,600	86,800	1.5	267,200	175,500	91,700	1.5
Farm Services	219,900	133,000	86,900	1.7	176,700	103,500	73,200	1.7
Total	486,000	312,600	173,400	1.6	443,900	279,000	164,900	1.6

Source: EDD

Table 3. Major Immigration Reform Options and their Impacts

	Farmers	Workers	Communities
Status Quo	Uncertainty, risk	Danger entering U.S.	Solo males living in worker communities
Guest Workers	Certainty, government-set wages and housing	Certainty of employment; dependence on employer	Few impacts if growers provide seasonal housing
Legalization	Workers may leave for non-farm jobs	More opportunities in US; right to unify families	Schooling impacts with family unification
Earned Legalization	Slower exit from farm jobs	Eventually earn immigrant status	Delays family unification and its impacts

proposal, unauthorized Mexicans already in the U.S. could obtain seasonal work permits that allow them to return to the U.S. indefinitely. The guest workers and their employers would continue to pay social security taxes, but these would be used to provide emergency medical care to guest workers.

A second option is legalization for all unauthorized foreigners in the U.S. before a key date. This option, favored by the AFL-CIO and most church and union groups, would repeat the legalization of 1987-88. After legalization, there are no restrictions on where foreigners can live and work.

President Fox made Mexico's wishes clear: "as many rights as possible, for as many Mexican immigrants as possible, as soon as possible." President Bush in July 2001 said he would consider guest worker and earned legalization plans that include more than Mexicans, but ruled out legalization: "when we find a willing employer and a willing employee, we ought to match the two. We ought to make it easier for people who want to employ somebody, who are looking for workers, to be able to hire people who want to work. And I know we can do so in a humane way that treats people with respect." His spokesperson said Bush also wants to "provide a way for some of the workers to achieve permanent status over time."

Table 3 summarizes the prospective impacts of the immigration decisions of 2001 on farmers, workers and rural communities. The status quo promises uncertainty and risk for farm employers, forces workers to make often dangerous crossings of the Mexico–U.S. border, and winds up with solo male workers concentrated in farm worker communities.

Guest worker programs can provide growers with a legal farm work force that must remain on their farms, but at the cost of providing housing and paying government-set wages; farm employers may also become more vulnerable to inspections by government agencies. Guest workers obtain certainty of employment, but they are dependent on their U.S. employer to remain in the U.S. There may be few community impacts, especially if guest workers are housed on farms.

Legalization is associated with speeding up the revolving door through which farm workers pass en route to the nonfarm labor market—immigrants have more opportunities, but farmers must then find replacement workers. There are also impacts on communities to which legalized workers move, especially if they unify their families. It is in this sense that earned legalization tries to slow exits from agriculture, and delay family unification impacts on communities.

Past labor supply decisions helped to shape California agriculture. The Bracero program of 1942-64 allowed labor–intensive agriculture to expand without driving farm wages up in the southwestern states. After the Bracero program ended, farm worker wages rose sharply, and there was a wave of labor–saving mechanization and union activity. Illegal immigration in the 1980s and 1990s slowed mechanization and union activities. Thus, the decisions on immigrant farm workers taken in 2001 will help to shape labor–intensive agriculture for the first decades of the 21st century.

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Giannini Foundation
Agricultural and Resource Economics Update

Co-Editors: Steve Blank, Richard Sexton, David Sunding and David Zilberman

Managing Editor and Desktop Publisher: Julie McNama

ARE Update is published six times per year by the University of California Giannini Foundation of Agricultural Economics
Subscriptions are available free of charge to interested parties.

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