

Theme Overview: The Role of Guest Workers in U.S. Agriculture

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JEL Classifications: J61, Q18, Q22

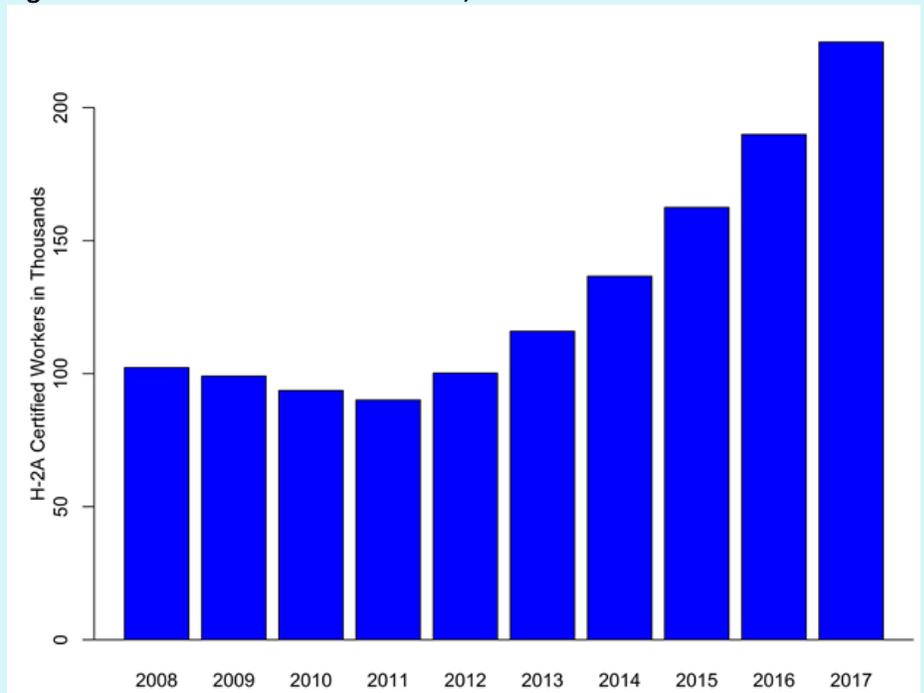
Keywords: Agriculture, H-2A program, Immigration policies, Labor shortage

The U.S. agricultural sector has endured labor shortage problems as far back as the 1940s. To alleviate these labor shortfalls, the U.S. government introduced the bracero program to ease labor woes in 1942, discontinuing the program in 1964. Ever since, farm labor scarcity and the resulting high wage rates have incentivized unauthorized migration from Mexico. U.S. agriculture and other industries (e.g., hotels, meat packing, and seafood processing) increasingly rely on undocumented workers. According to the National Center for Farmworker Health (2012), about three million migrant and seasonal farm laborers work in the U.S. agricultural sector and allied industries.

However, enforcement of tighter immigration policies through border control, domestic enforcement and deportation, employer penalties, and e-verification has caused acute labor shortages in the farm sector. Consequently, about 20% of agricultural products are unharvested nationwide (Johnson, 2007).¹ To meet this labor scarcity, growers have found the H-2A program, which brings guest workers to the United States, to be a viable employment alternative. The H-2A program has existed since the mid-1960s, but it didn't gain significant momentum until the mid-2000s. The program was originally known as the H-2 program and later reclassified by the Immigration Reform and Control Act of 1986 as the H-2A program for agricultural

workers. In recent years, U.S. farmers have relied heavily on these guest workers to complete their operations as farmers have become more familiar with securing laborers through the H-2A program, labor contractors are facilitating the hiring process, and more foreign workers prefer to work legally in the United States than as

Figure 1. Number of H-2A Jobs Certified, 2008–2017



¹ Rural Migration News (2007) provides a detailed and specific list of these shortages and how they have adversely affected crucial cultivational operations, resulting in heavy losses.

undocumented workers. As shown in Figure 1, 102,286 guest-worker jobs were certified for employment in 2008, which declined to 90,102 in 2011, and then rose rapidly to 224,637 in 2017. Because of the progress made in streamlining the guest-worker program and the stricter domestic enforcement of and deportation of undocumented workers, the H-2A workforce could reach up to 20% of U.S. farmworkers, signifying the importance of these workers to agriculture.

The H-2A worker program has become more popular partly because lower birth rates, improved education, and transition of rural workers to higher paid jobs in the nonfarm sector in Mexico have tightened the undocumented labor supply to the United States (Charlton and Taylor, 2016), resulting in higher wage rates, particularly in fruit and vegetable cultivation. Consequently, growers are increasingly turning toward employing guest workers. The H-2A workers contribute significantly to the U.S. agricultural economy. Without these workers, farmers will incur higher costs of production, crop loss, and quality deterioration (Clark, 2017). The economic contribution of guest workers varies across states depending on the labor-intensive agriculture. For example, in 2015, the contribution of guest workers to fruit production in Washington State through various economic activities was valued at \$619 million (ECONorthwest, 2017).

The articles in this *Choices* theme cover the history of guest workers, recent trends in the growth of H-2A employment, and the importance of these workers in labor-intensive agriculture such as fruit and vegetable production and fisheries. Luckstead and Devadoss review the H-2A program, the lengthy paperwork required to employ H-2A workers, the employment of these workers in various states and agricultural sectors, wages paid to these workers, substitutability of undocumented workers and guest workers, and the contribution of these workers to U.S. agriculture.

Martin covers H-2A employment, focusing on California, the U.S. leader in fruit and vegetable production. The H-2A program allows U.S. farm employers who anticipate too few workers to request certification from the U.S. Department of Labor of their need to recruit and employ foreign guest workers to fill seasonal jobs. There are a million year-round full-time equivalent jobs in U.S. crop agriculture, including a third in California. Until 2004–2005, the number of U.S. farm jobs certified to be filled by H-2A workers was below 50,000, and less than 5,000 in California. Over the past decade, the number of certified H-2A jobs has quadrupled to over 200,000, rising especially fast in California. California offers a contrast in how farmers obtain H-2A guest workers. Most California H-2A workers are recruited and deployed by labor contractors.

Bampasidou and Salassi cover trends in U.S. farm labor and the extent to which the H-2A program is utilized in the United States. They discuss the changing profile of agricultural farmworkers and propose that the agricultural sector may face future labor shortages and imminent policy changes, such as the H-2C program and immigration reforms.

Osti, Bampasidou, and Fannin discuss production and efficiency under the scope of the H-2A guest worker program. Given recent trends in the utilization of the H-2A program and restrictions regarding the employment period under the program, they revisit production efficiency and discuss labor management practices.

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The Importance of H-2A Guest Workers in Agriculture

Jeff Luckstead and Stephen Devadoss

JEL Classifications: J61, Q18

Keywords: Agriculture, Farmworkers, H-2A program, Wages

Introduction

Shortages of seasonal labor in the agricultural sector have been a problem as far back as the 1940s. To address this labor scarcity, the United States and Mexico reached a formal agreement on seasonal farm labor in 1942 known as the bracero program.¹ This agreement helped resolve labor scarcity in U.S. agriculture and provided thousands of seasonal jobs to rural Mexicans. For 22 years, 2 million Mexican men worked on U.S. farms under this program, which ended in 1964 due to unjust labor practices (Onel and Farnsworth, 2016; Newman et al., 2018). The culmination of the bracero program signified the beginning of the flow of unauthorized migration, partly because of the end of U.S. farm employment for bracero workers. Returned workers assisted new migrants with crossing the border through their established networks. The H-2 temporary work visa program, which also had its genesis during World War II, was officially codified by the Immigration and Nationality Act of 1952, which combined all previous immigration and naturalization laws. The operation of H-2 was similar to the bracero program but without an inter-governmental agreement. Unlike the bracero program, the H-2 program was not terminated in the 1960s. Workers were brought through the H-2 program on a limited basis, primarily for work on apple farms in New York and sugarcane farms in Florida.

As labor-intensive agriculture—fruit and vegetable production—expanded, particularly in the western United States, labor shortages began to emerge, which created employment opportunities for Mexican workers. Increasing demand for farmworkers, the high cost of hiring H-2 workers, and the ease of crossing the border paved the way for unauthorized migrants to enter the United States. In the mid-1980s, the mistreatment of undocumented farm laborers and an increasing number of immigrant workers residing in the United States led to Congress passing the 1986 Immigration Reform and Control Act (IRCA). This act provided a one-time pathway to citizenship for the existing unauthorized workers and separated H-2 temporary work visas into two categories: H-2A for agricultural workers and H-2B for nonagricultural workers. This article explains how the H-2A program operates and highlights the importance of guest workers by examining their employment in various agricultural operations and states.

In the late 1980s and 1990s, more undocumented workers sought employment in agriculture.² The number of undocumented immigrants in the United States peaked at about 12 million in 2007 (Passel and Cohn, 2011, 2016). The unprecedented flow and number of undocumented workers have been intensively debated for the last two decades. As a result, Congress and several presidents have attempted to reform immigration policies but have not found common ground to pass immigration laws.³ Instead, the U.S. Immigration and Customs Enforcement agency has intensified the enforcement of existing laws by deporting undocumented workers through domestic enforcement, and the U.S. Customs and Border Protection agency has apprehended unauthorized migrants

¹ Newman et al. (2018) provide a detailed discussion of the success and failure of the bracero program.

² Hotel, construction, service, and meat-packing sectors in the United States also have increasingly employed undocumented workers.

³ However, many states (e.g., Arizona, Alabama, and Georgia) passed state-level laws to curb the employment of undocumented workers.

through stricter border control. These heightened controls and the 2008 Great Recession reduced the number of unauthorized migrant workers, which have further exacerbated the ongoing farm labor shortages, particularly during peak demand. In recent years, farmers, seafood processors, and meat packers have petitioned the U.S. government to bring in more guest workers through the H-2A program to meet the labor shortages created by stricter enforcement of immigration policies.

Through the H-2A guest-worker program, agricultural employers can hire foreign workers for seasonal jobs using temporary work permits. Before hiring guest workers, employers have to prove that the employment is temporary or seasonal and that no qualified U.S. workers are available to perform the job. The employment of H-2A workers should not adversely impact wages and working conditions of U.S. workers (Farmworker Justice, 2018). Employers are also required to provide U.S. workers with the same amenities, such as free housing and transportation that are offered to guest workers.

The H-2A Program⁴

For employers to hire guest workers under H-2A nonimmigrant classification, they must petition the U.S. Department of Labor (DOL) by (i) showing a temporary or seasonal job offer to foreign workers, (ii) proving that U.S. domestic workers are unavailable to perform seasonal and time-sensitive agricultural operations, (iii) demonstrating that hiring guest workers will not lower the prevailing wage rates and working conditions of U.S. domestic workers, and (iv) filing a H-2A petition with the DOL to obtain labor certification.

Hiring guest workers involves several steps and detailed paperwork.^{5,6} The first step, as indicated above, is that an employer must obtain a temporary labor certification for H-2A workers by petitioning the DOL. The second step requires, upon approval of labor certification, a petitioner to file Form I-129 with U.S. Citizenship and Immigration Services (CIS). The third step is for potential H-2A workers residing outside the United States to obtain an H-2A visa at a U.S. embassy or consulate abroad to enter the United States. Once the visa is issued, these workers can enter the United States and will be verified for H-2A authentication at a port of entry by U.S. Customs and Border Protection. If workers already have an H-2A visa, they can directly request admission to the United States through Customs and Border Protection. These steps—certification, Form I-129, and visa issuance—link employers and workers. The number of workers applied for by growers is generally more than the number of jobs certified, and the number of jobs certified is greater than the number of visas issued. Consequently, the actual number of workers employed is less than the number of workers applied for, jobs certified, and visas issued.

U.S. Citizenship and Immigration Services generally allows guest workers to stay up to the period authorized in the labor certification.⁷ However, the period of stay may be extended one year at a time for a maximum of three years and must be supported by a new labor certification. A guest worker who exhausts the 3-year work permit must exit and reside outside the United States for three months before seeking new employment under the H-2A program. If workers leave the United States during their H-2A authorized period, the time spent outside the country will not count toward their 3-year limit.

The H-2A program requires considerable time and paperwork to find workers, even though hiring workers in a timely manner is critical to complete the seasonal tasks such as harvesting fruits and vegetables. Since this program mandates that employers provide free housing and transportation for H-2A workers, this additional cost can be too expensive for small- and medium-size farmers. Thus, guest workers are expensive and often viewed as a last source of labor. Moreover, the wage rate paid to guest workers is dictated by federal/state minimum wage,

⁴ The following discussion is drawn largely from the US Citizenship and Immigration Service (U.S. Citizenship and Immigration Service, 2018).

⁵ Since the paperwork requires considerable detail, it created new business for attorneys, law firms, and labor contractors specializing in hiring and labor relations, and their services are increasingly utilized by the growers and their associates to ease the hiring process.

⁶ See Charlton, Castillo, and Hertz (2018) for a detailed schematic explanation of this process.

⁷ According to Rural Migration News (2018), H-2A workers typically stay less than the maximum allowable duration of 10 months.

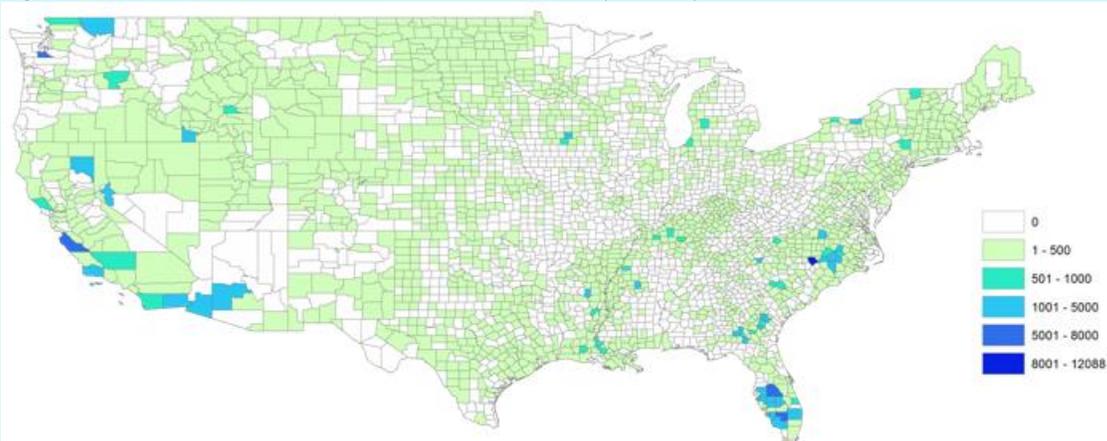
the prevailing wage rate, and the adverse effect wage rate (AEWR). The AEWR is the minimum wage that will not adversely impact the employment opportunities for U.S. workers. In a recent study, Devadoss and Luckstead (2018) found guest workers replace undocumented workers with a one-to-one ratio; consequently, the H-2A program does not depress the wage rate for undocumented workers. They also concluded that H-2A workers do not lower the wage rate for U.S. domestic workers, which is required under the H-2A program.

As of 2017, H-2A workers comprise 10% of the agricultural labor force (Martin, 2017b). Because of the progress made in streamlining the guest-worker program and the stricter domestic enforcement and deportation of undocumented workers, many producers rely on guest workers. Consequently, this group could reach 20% of the agricultural workforce in the next few years. Devadoss and Luckstead (2018) concluded that the H-2A program is more cost effective than stricter immigration policies to curb the number of undocumented workers through border surveillance and domestic enforcement. Their findings also showed that these latter immigration policies exacerbate the severe labor shortages faced by growers, while the guest-worker program provides a better alternative to meet the labor scarcity.

Certified H-2A Workers

Over the last few years, H-2A guest workers have become an increasingly important source of farm labor. This trend has been driven by the decreases in the number of undocumented workers due to the Great Recession and stricter enforcement of U.S. immigration policy. The number of H-2A certified jobs has risen, expanding by about 18% every year since 2014 and reaching 224,637 in 2017 (U.S. Department of Labor, 2018). According to Devadoss and Luckstead (2018), the number of full-time equivalent farmworkers employed in 2016 was about 909,000, implying that H-2A certified jobs account for about 25% of total farmworkers. Figure 1 illustrates the concentration of H-2A certified jobs at the county level. Some counties in Florida, California, Arizona, North Carolina, Georgia, and Washington have applied for more certified jobs than other counties. Guest workers are more prevalent in the eastern and western part of the country, which grow more vegetables and fruits, than in the Midwest. Guest workers may migrate from state to state as work ends in a state. For example, a guest worker may harvest citrus in Florida, then move to North Carolina to pick berries and later to New York to harvest apples.

Figure 1. Number of Certified H-2A Guest Workers by County, 2017



Source: Data for this figure were obtained from the U.S. Department of Labor (2018).

Table 1 presents the 10 leading states that apply for H-2A certifications, total certified jobs for the United States for even years from 2008 to 2016 and for 2017, and the change in the number of certifications between 2008 and 2017. As this table reveals, North Carolina was the leading state in certified jobs from 2008 to 2015, with considerably more than any other state. In the last two years, Florida surpassed North Carolina in the total number

of H-2A jobs certified, and Washington, Georgia, and California have consistently ranked third, fourth, and fifth, respectively, since 2014.

Table 1. Number of Certified H-2A Guest-Worker Jobs for the Top 10 States, 2008–2017

2008		2010		2012		2014		2016		2017		Change from 2008 to 2017	
State	Jobs	State	Jobs	State	Jobs	State	Jobs	State	Jobs	State	Jobs	State	Jobs
NC	16,977	NC	18,592	NC	18,894	NC	24,136	FL	32,697	FL	39,397	FL	33,738
GA	6,342	LA	6,641	FL	8,373	FL	17,033	NC	29,495	NC	31,301	WA	25,600
LA	5,761	KY	5,647	GA	8,172	WA	14,922	WA	22,676	WA	28,391	NC	14,324
KY	5,756	GA	4,784	WA	7,126	GA	9,681	GA	14,894	GA	20,291	GA	13,949
FL	5,659	FL	4,772	LA	6,399	CA	7,372	CA	12,546	CA	17,112	CA	11,867
CA	5,245	ID	4,286	KY	4,953	KY	6,680	LA	7,257	LA	7,673	MI	3,572
NY	4,239	WA	4,262	CA	3,946	LA	6,527	KY	6,720	KY	7,359	NY	2,690
VA	4,217	CA	4,048	VA	3,754	VA	5,031	NY	5,590	NY	6,929	MS	2,329
AZ	4,062	NY	3,964	NY	3,595	NY	4,764	VA	5,014	VA	4,872	IA	2,219
ID	3,877	VA	3,371	AR	3,229	MS	3,723	MS	4,910	MS	4,689	LA	1,912
USA	102,286	USA	93,656	USA	100,213	USA	136,615	USA	189,926	USA	224,637	USA	122,351

Notes: These data are from the U.S. Department of Labor (2018). The last column computes the increase in the number of certified jobs from 2008 to 2017.

Even though Florida and Washington were not among the top three states in applying for guest workers in 2008, they were the leading states in 2017. The increases in the number of guest-worker jobs certified in these two states are the largest: 33,738 for Florida and 25,600 for Washington. Because these two states rank third and second in labor-intensive fruit and nut production (U.S. Department of Agriculture, 2018) and they are not border states—where undocumented labor tends to be higher (Pew Research, 2016)—they apply for more guest workers than border states such as California and Texas. North Carolina, Georgia, and California also rank among the top five states in the growth of applications for guest workers from 2008 to 2017.

According to the 2012 Agricultural Census, though North Carolina ranked only tenth at 2.5% in the total value of vegetable production (U.S. Department of Agriculture, 2018),⁸ a highly labor-intensive segment of agriculture, this state accounted for 18.5% of all H-2A certified jobs in that year. North Carolina farmers recognized early on that hiring foreign workers through the H-2A program was expensive, with onerous paperwork (Clemens, 2013), leading them to establish the North Carolina Growers Association in 1989 to facilitate the H-2A application process and legal compliance. This association was established three years after the H-2A guest-worker program was classified from H-2 by the 1986 IRCA and is consistently the largest applicant for H-2A workers in the nation, accounting for about 40% of all H-2A workers in North Carolina in 2012. Consequently, North Carolina farmers have had greater access to guest workers (Clemens, 2013). This corroborates the findings of Charlton, Castillo, and Hertz (2018), who shows that pooling the effort to acquire H-2A workers through farm labor contractors and employer organizations is key to reducing costs and paperwork.

⁸ For comparison, California, Florida, and Washington State ranked first, second, and third at 38.6%, 8.2%, and 6.4%, respectively, of the total value of vegetable production.

While North Carolina established the growers' association to assist with hiring H-2A workers, Florida growers relied more heavily on domestic and undocumented workers until recent years (Onel and Farnsworth, 2016). With an inadequate supply of seasonal labor and the labor shortage only worsening with stricter immigration policies, Florida growers have followed North Carolina's approach by expanding the use of farm labor contractors to employ H-2A workers for citrus production (Onel and Farnsworth, 2016; Martin, 2017a; Florida Fruit & Vegetable Association, 2018). With a large labor-intensive agricultural sector, Florida has surpassed North Carolina in applying for H-2A certification. About 85% of the H-2A workers in Florida are employed by citrus growers, and the remaining guest workers are employed in other fruit and vegetable cultivation.

Among the leading 10 states that employ guest workers, seven of them (North Carolina, Florida, Georgia, Louisiana, Kentucky, Virginia, and Mississippi) are southeastern states that do not share a border with Mexico. In contrast, border states such as California (the leading producer of fruits and vegetables) and Texas employ considerably fewer guest workers, likely for two reasons: Farmers in these states employ more undocumented workers,⁹ and a large portion of legal immigrants working in agriculture reside in these states (U.S. Census Bureau, 2017). Consequently, the demand for guest workers by agricultural producers in these states is considerably less. Washington, a leading producer of apples and other fruits, ranks third in recent years in employing guest workers, while New York is consistently among the top 10 states in hiring guest workers because of its large dairy sector.

Table 2. Occupations of Certified Guest Workers

Type of Work	National		FL		NC		WA		GA		CA	
	2016	2017	2016	2017	2016	2017	2016	2017	2016	2017	2016	2017
Fruits & Nuts	58,064	79,963	20,583	18,973	1,594	6,125	13,886	24,320	3,489	6,859	5,272	8,264
Vegetables	51,431	59,097	7,104	9,625	9,969	7,279	860	751	10,468	12,224	6,570	8,039
Grains & Row Crops	41,748	44,845	2,965	5,372	15,869	12,729	355	663	664	622	59	16
Other ^a	28,856	30,418	2,037	5,414	2,063	5,167	7,542	2,632	269	586	224	367
Meat & Dairy	9,827	10,314	8	13	0	1	33	25	4	0	421	426

Notes: These data are from the U.S. Department of Labor (2018).

^a Workers under the category "Other" perform a variety of farm activities ranging from general farm, nursery, greenhouse, Christmas trees, agricultural equipment operators, ..., grass turf work.

Guest Workers in Various Agricultural Occupations

This section examines the number of certified guest-worker jobs in major agricultural sectors nationally and among the leading five states (as shown in the first column of Table 2). Nationally, for both 2016 and 2017, the Fruits & Nuts segment applied for the most guest workers, followed by Vegetables; Grains & Row Crops; Other (these farm activities cover general farm, nursery, greenhouse, Christmas tree, agricultural equipment operation, grass turf work, etc.), and finally Meat & Dairy. Between 2016 and 2017, the number of jobs certified nationally expanded by only 487 (or 5%) for Meat & Dairy but by 21,899 (or 37.7%) in Fruits & Nuts.

While the number of certified guest-worker jobs expanded nationally for all five categories, this is not the case in the top five states. In Florida, the majority of guest workers are employed in fruit and nut cultivation because of the large citrus industry; however, between 2016 and 2017, H-2A workers moved from fruit and nut cultivation to vegetable production (as reported in the FL columns of Table 2). This shift was likely due to citrus greening, which damaged the trees and reduced production; as a result, many farmers have switched to crops such as artichokes, hops, etc. (Murphy, 2017). In North Carolina, while Grain & Row Crops employed the most H-2A workers, the Fruits & Nuts segment experienced an expansion while Vegetables and Grain & Row Crops faced a contraction in H-2A

⁹ According to the Pew Research Center (2016), California employs 2.35 million or 21% of undocumented workers and Texas employs 1.65 million (12%).

employment (NC columns in Table 2). Washington, a primarily fruit- and nut-growing state, increased employment of guest workers in this segment from 2016 to 2017 (WA columns in Table 2). In California, growth in guest workers primarily came from Fruit & Nut and Vegetable cultivation (CA columns in Table 2). The top five states that used the H-2A program employ no or very few guest workers in Meat & Dairy.

Wage Rates

As shown in Table 3, 87% of workers are contracted for hourly work and paid hourly wage rates, which remained stable over the last 10 years, and the remaining guest workers have weekly, bi-weekly, and monthly contracts. The second column of Table 3 shows that the hourly wage rate rose from \$9.30/hour in 2008 to \$12.04/hour by 2017, a 29.50% increase.

Table 4 reports hourly wages for the top and bottom five states and the number of guest workers in these states. While the states in the top five are generally in the Northeast and Midwest (particularly in 2012 and 2017), the states in the bottom five are generally in the South. In 2008, Delaware and Hawaii had the highest average wage rates, at \$12.66/hour and \$10.68/hour, while Arkansas and Alaska had the lowest, at \$8.12/hour and \$8.00/hour. In 2012, North Dakota and Delaware led the country in paying guest workers \$14.00/hour and \$13.79/hour, while Louisiana and Alaska paid the lowest wages, at \$9.19/hour and \$8.50/hour. The highest wage rate in North Dakota is likely due to the demand for labor arising from the oil boom (Wegmann, 2014). In 2017, Maine and North Dakota had the highest average wages, at \$14.10/hour and \$13.77/hour, while Louisiana and Alaska had the lowest wages, at \$10.55/hour and \$10.40/hour. The minimum wages paid to guest workers are above the federal minimum wages of \$6.55/hour in 2008 and \$7.25/hour in 2009. A comparison of the guest-worker wage rates to AEWR (Newman et al., 2018) shows

Table 3. Average National Wage Data for H-2A Program

	Percentage of Workers Paid Hourly (%)	Mean Hourly Wage Rate (\$)ª
2008	87.65	9.30
2012	87.06	10.51
2017	87.28	12.04

Notes: These data are from U.S. Department of Labor (2018).

ª Calculated as a national average of the wage rates of all H-2A workers.

Table 4. Wage Data by State for H-2A Workers

Rank	2008			2012			2017			
	State	Mean Hourly Wage Rateª	No. of Workers	State	Mean Hourly Wage Rateª	No. of Workers	State	Mean Hourly Wage Rateª	No. of Workers	No. of AEWRª
1	DE	12.66	5	ND	14.00	239	ME	14.10	66	12.38
2	HI	10.68	14	DE	13.79	3	ND	13.77	460	13.79
3	IA	10.23	42	ME	12.28	63	SD	13.61	160	13.79
4	MO	10.11	32	KS	11.95	143	KS	13.39	125	13.79
5	WA	9.97	56	HI	11.76	5	NE	13.38	85	13.79
⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮
46	AL	8.51	40	SC	9.3	43	GA	10.72	248	10.62
47	LA	8.17	472	MS	9.26	101	AR	10.57	273	10.38
48	MS	8.16	130	AR	9.25	155	MS	10.55	231	10.38
49	AR	8.12	157	LA	9.19	597	LA	10.55	849	10.38
50	AK	8.00	2	AK	8.50	1	AK	10.40	3	N/A

Sources: ª U.S. Department of Labor (2018).

ª Newman et al. (2018).

that guest workers are generally paid near or above the AEWR for most states, which is in line with government requirement that domestic workers should not be adversely impacted by the H-2A program. However, in some states, guest worker wage rates are slightly below the AEWR in 2017, as reported in Table 4.

Nationally, guest workers' hourly wage rate for 2017 was fairly similar across different agricultural sectors, with the highest average hourly wage rate of \$12.01/hour for Meat & Dairy and the lowest wage rate of \$11.37/hour for Grains & Row Crops (U.S. Department of Labor, 2018).

Conclusion

This article reviews the H-2A program, practical issues and difficulties in hiring guest workers, and trends in certified H-2A workers and wages paid. In doing so, it highlights the importance of guest workers for U.S. agriculture, particularly for labor-intensive sectors. Labor scarcity in the U.S. farm sector is a perpetual problem and the H-2A program helps to fill the labor shortages. Although the process of hiring H-2A workers has become easier, further streamlining the H-2A program would assist farmers to facilitate the hiring process for timely agricultural operations, which would mitigate crop losses experienced by farmers. Furthermore, as observed by Devadoss and Luckstead (2018), a better functioning H-2A program is considerably less expensive than immigration control policies. It will also provide an incentive for employers to secure more guest workers, which not only addresses labor shortages but also lessens the incentives for unauthorized entry.

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Acknowledgments: We greatly appreciate the useful comments of two anonymous reviewers.

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The Role of the H-2A Program in California Agriculture

Philip Martin

JEL Classifications: J41, J61

Keywords: California, Farm labor, Guestworker, H-2A

Introduction

The H-2A program allows U.S. farm employers to request certification from the U.S. Department of Labor (DOL) to have foreign workers admitted “temporarily to the United States to perform agricultural labor... of a temporary or seasonal nature.” Farmers seek certification from DOL to fill particular jobs with H-2A guest workers by ensuring that two conditions are satisfied:

1. There are an insufficient number of U.S. workers who are able, willing, and qualified and who will be available at the time and place needed to perform the labor or services involved in the employer petition.
2. The employment of the H-2A worker will not adversely affect the wages and working conditions of U.S. workers who are similarly employed.

After these threshold tests are satisfied, farmers who want to employ H-2A workers must satisfy three other tests to be certified: First, they must try to recruit U.S. workers and provide reasons why any U.S. workers who applied for jobs were not hired. Farmers must begin the recruitment process 45 days before they expect work to begin. Many farmers are convinced that U.S. workers will not show up when needed or remain for the entire season, so some employers discourage U.S. workers from applying.

Second, farmers must provide free housing to H-2A guest workers and out-of-area U.S. workers. Most labor-intensive agriculture is in metro countries with relatively high housing prices. For example, the 40th-percentile, fair-market rent for a two-bedroom apartment in the U.S. salad bowl of Monterey County, CA, in 2018 was \$1,433/month, meaning that 60% of two-bedroom units rent for more than \$1,433. A farmworker employed 160 hours at the state’s minimum wage of \$11/hour would earn \$1,760/month, which means that a one-earner family would, after taxes, spend almost all earnings on rent. High rents relative to earnings help explain why the employment of H-2A guest workers has risen rapidly in Monterey County, where guest workers are often housed in motels that are converted into bunk houses, with four workers to a room.

Third, DOL enforces the no-adverse-effect requirement of H-2A workers by setting a super-minimum wage that must be paid to H-2A workers and any U.S. workers employed alongside them, called the Adverse Effect Wage Rate (AEWR), which varies by state but is always above the minimum wage, such as \$13.18/hour in California in 2018, almost 20% above the state’s \$11/hour minimum wage. The AEWR is the average hourly earnings of nonsupervisory field and livestock workers for the state or region during the previous year, as determined by the U.S. Department of Agriculture (USDA) National Agricultural Statistics Service *Farm Labor* survey.

The H-2 program was created in the 1952 Immigration and Nationality Act and used primarily by sugar cane growers in Florida and apple growers along the East Coast until the mid-1990s. For example, in 1985, fewer than 21,000 farm jobs were certified to be filled by then H-2 workers, including 10,000 in Florida sugarcane. The program was revised by the Immigration Reform and Control Act (IRCA) of 1986 and renamed H-2A, with H-2B for nonfarm seasonal jobs, but the number of farm employer requests fell after IRCA rather than expanding, as was

anticipated, because of rising unauthorized migration and the mechanization of the Florida sugarcane harvest (Martin, 2009).

The number of jobs certified to be filled with H-2A workers began to rise in the mid-1990s, after former government officials created the North Carolina Growers Association (NCGA) to allow tobacco and vegetable growers to pay the NCGA a fee to recruit and transport Mexican guest workers to their farms. Turn-key and loyal H-2A guest workers proved very attractive to farmers, especially as the H-2A workers gained experience by returning year after year. The NCGA has been the largest single employer of H-2A workers for the past two decades, certified to fill over 10,000 jobs a year with H-2A workers.

The H-2A program began to expand during the housing boom of 2005–2006, as some farmworkers found jobs in construction, farm-related processing, and services. As the number of Border Patrol agents increased, vegetable growers operating in Yuma, AZ, complained of labor shortages; border-area workers are almost all legally authorized to work because the Border Patrol often stops the buses used to carry workers to fields and checks worker documents. When these Salinas-based growers had difficulty finding workers in Monterey County, CA, in the summer months, they requested certification to employ the H-2A workers who harvested vegetables during the winter months for them in Arizona.

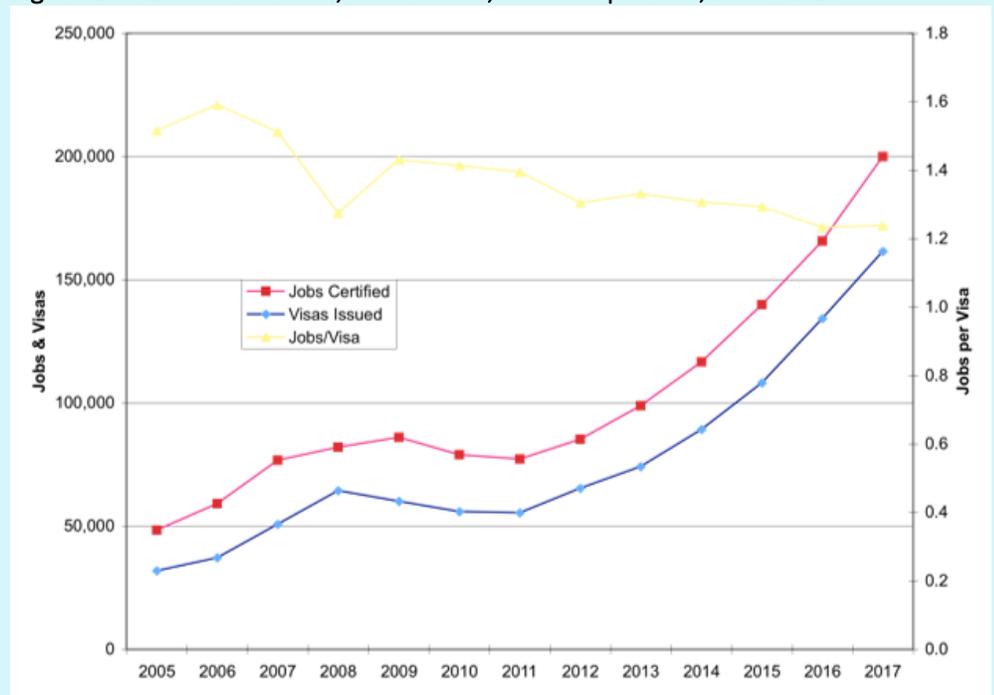
The H-2A program expanded in other states as well, and Florida and Georgia replaced North Carolina as the states with the most farm jobs certified. The DOL certified 200,049 jobs to be filled with H-2A workers in fiscal year (FY) 2017, up over 20% from 165,000 in FY2016. Five states accounted for 52% of all jobs certified: Florida had 13% of certifications; Georgia, 12%; North Carolina, 10%; Washington, 9%; and California, 8%.

Fewer than 10,000 farms hire H-2A workers. Over 550,000 U.S. farms reported hiring labor in the 2012 Census of Agriculture, and over 100,000 are enrolled in state unemployment insurance systems that provide benefits to laid off workers. Fewer than 10,000 farm employers request H-2A workers, but it is hard to determine the exact number of participating farms because some make multiple requests and some request workers under different names, as when a farm and its associated labor contractor make separate requests.

The top requesters of certification to fill jobs with H-2A workers are employer associations and labor contractors, including the NCGA, with 12,000 jobs certified in FY2017, WAFLA with 7,100, California labor contractor Fresh Harvest with 4,600, and Florida labor contractor R&R Harvesting with 2,000. Contractors must submit documentation to DOL of their arrangements to provide workers to farmers, but Farm Labor Contractor (FLC)–farmer contracts are not made public.

Some jobs that DOL certifies are not filled by H-2A workers, and some

Figure 1. H-2A Jobs Certified, Visas Issued, and Jobs per Visa, 2005–2017



H-2A workers fill more than one job, so there are more jobs certified than H-2A visas issued. In recent years, for every 120 farm jobs certified, DOS issued 100 H-2A visas. H-2A admissions data published by the U.S. Department of Homeland Security (DHS) are not useful because they record each entry, so that an H-2A worker living in Mexico and working in the Yuma, AZ, area creates a DHS admission each day the worker enters the United States, so that one worker entering daily for 60 days becomes 60 admissions.

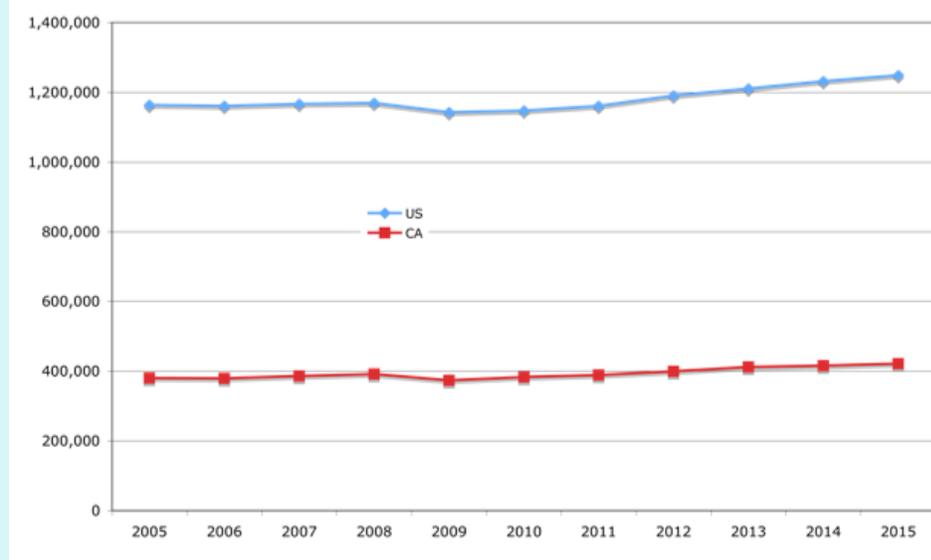
Farm Employment

Farmworker employment involves several concepts. First is average employment, the number of workers employed each month, summed, and divided by 12 months. (Average employment data are from the U.S. Bureau of Labor Statistics *Quarterly Census of Employment and Wages* [www.bls.gov/cew] and include workers on the payroll for the period that includes the 12th of the month.) Average U.S. farm employment, as measured by employer reports when paying unemployment insurance (UI) taxes, was over 1.2 million in 2015. Some states do not require smaller farmers to pay UI taxes on farmworker wages, so UI covers an estimated 86% of US hired farmworkers, for an average U.S. farmworker employment of 1.4 million. Federal law requires farm employers to provide UI coverage to wage and salary farmworkers if they paid \$20,000 or more in wages in a calendar quarter or employed at least 10 farmworkers on each of 20 days in 20 different weeks during the current or preceding calendar year.

California requires all employers to participate in UI, and its average agricultural employment of 420,000 in 2015 was 30% of average U.S. agricultural employment. Over the past decade, average UI-covered farmworker employment increased in both the United States and California.

There are more farmworkers than average employment because of seasonality that generates peaks and troughs. UI-covered farmworker employment across the United States ranged from a high of 1.4 million in July 2015 to a low of 1.1 million in January, for a peak–trough ratio of 1.3. California had a peak 475,000 workers in August and 354,000 in January, for a ratio of 1.3. The peak–trough ratio increases as the geographic unit decreases. At the county level, the peak–trough ratio may be 2, and on an individual farm as high as 100 to 1, as when 200 workers are hired for harvesting but only 2 during the winter.

Figure 2. Average UI-Covered Agricultural Employment, U.S. and CA, 2005–2015



Farm employment concepts are often confused. Average employment and peak–trough ratios are measures of jobs, not the number of unique workers who fill them. Just as there are more farms than full-time equivalent farmers, so are there more farmworkers than full-time equivalent jobs for hired workers. On the 2.2 million U.S. farms, there are only 750,000 full-time equivalent farmers. Many farmers work off the farm full or part time.

The ratio of workers to jobs cannot be determined easily. During the 1980s, when the *Current Population Survey* (CPS) included questions in December asking whether anyone in the household worked for wages on a farm during the year, CPS reported 2.6 million unique farmworkers when average farm employment was 1.3 million, suggesting

two unique workers per job. These workers were grouped at the ends of the days-of-farm work spectrum. A third did fewer than 25 days of farm work during the year, while 20% worked year-round (see <http://naldc.nal.usda.gov/download/IND20402024/> for an example of the 1980s CPS reports).

Table 1. California Farmworkers and Earnings, 2014

NAICS Code	Industry	Primary Workers	Earnings (\$millions)	Average Earnings (\$)	Only Job	Share
	Total agriculture	691,615	11,430	\$16,527	499,440	72%
1111	Oilseed and grain farming	4,587	116	\$25,363	3,144	69%
1112	Vegetable and melon farming	44,878	1,068	\$23,789	30,760	69%
1113	Fruit and tree nut farming	153,999	2,710	\$17,600	102,805	67%
1114	Greenhouse and nursery production	34,715	884	\$25,452	26,530	76%
1119	Other crop farming	19,052	446	\$23,414	14,244	75%
1121	Cattle ranching and farming	25,224	737	\$29,223	19,817	79%
1122	Hog and pig farming	132	4	\$26,804	109	83%
1123	Poultry and egg production	2,851	83	\$29,143	2,123	74%
1124	Sheep and goat farming	543	12	\$21,759	465	86%
1125	Animal aquaculture	441	13	\$30,104	324	73%
1129	Other animal production	3,069	77	\$25,144	2,308	75%
1151	Support activities for crop production	391,711	4,982	\$12,719	288,435	74%
1152	Support activities for animal production	3,156	81	\$25,765	2,585	82%
1153	Support activities for forestry	2,589	76	\$29,217	2,012	78%
Nonfarm		137,711	4,548	\$33,025	—	—
All workers with at least one ag job		829,326	15,978	\$19,266	—	—

Source: Martin, Hooker and Stockton (2018).

There are no national data on the number of individuals who work for wages on farms sometime during the year. California extracted the social security numbers (SSNs) of all workers reported by farmers sometime during the year, allowing a comparison between unique farmworkers and average employment. In 2014, when average agricultural employment was 411,000, some 829,000 unique SSNs were reported by California farm employers, suggesting the same two workers for each average job as in the 1980s (Martin, Hooker, and Stockton, 2018).

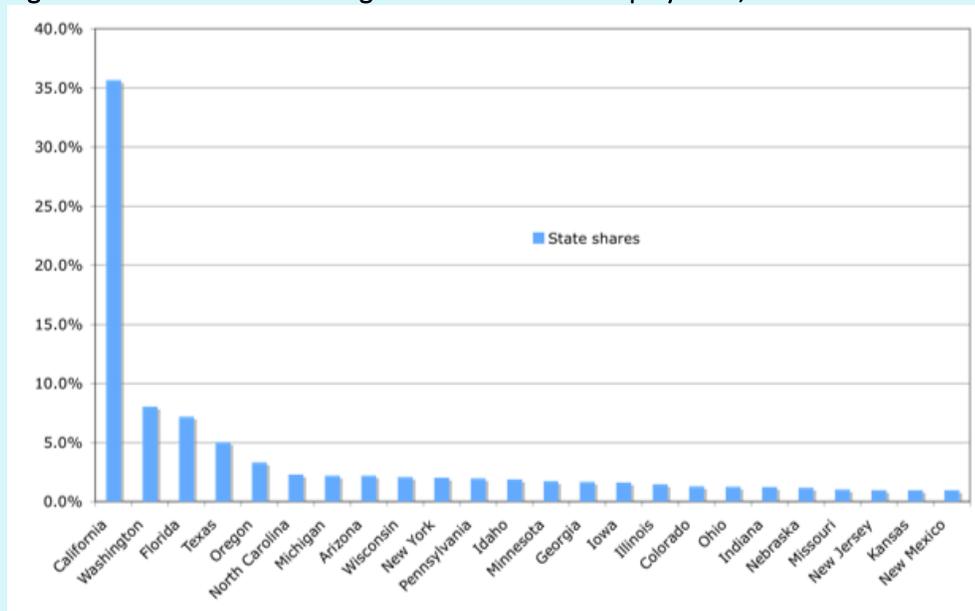
These 829,000 farmworkers earned a total \$16 billion, including \$11.4 billion or over 70% from agricultural employers (North American Industry Classification System [NAICS) code 11. NAICS classifies business establishments according to type of economic activity. NAICS 11 is Agriculture, Forestry, Fishing and Hunting). The average earnings of all workers with at least one farm employer were over \$19,000 in 2014, while the average earnings of primary farmworkers, those who had their maximum earnings in agriculture, were \$16,500.

Crop support employers (NAICS 1151), many of whom are farm labor contractors, stand out as employing the most primary farmworkers. Almost 392,000 or 57% of primary farmworkers were employed by crop support employers, followed by 22% who were employed by fruit and nut farming establishments (NAICS 1113 in Table 1). Crop support workers had the lowest average earnings, \$12,700, explaining why the overall average earnings of primary farmworkers were only \$16,500 even though all commodities except crop support and fruit and nut farming had higher average earnings.

Average employment, peak–trough ratios, and unique farmworkers provide three windows into hired farm work. There are other windows as well, including which states and commodities have the most farmworkers. Farmworker employment is concentrated in a few states. In 2012, California had 36% of average UI-covered farm employment, followed by Washington, Florida, Texas, and Oregon, which each had 3%–8% of average employment. Another 19 states had 1%–2% of average farm employment, which means that over half of states had less than 1% of U.S. farmworker employment.

Farmworker employment is concentrated by commodity. U.S. crop employment averaged 560,000 in 2015, including almost 200,000 in fruits and nuts, almost 100,000 in vegetables and melons, and 150,000 in greenhouse and nursery production, so that 80% of average crop employment was in fruits and nuts, vegetables and melons, and horticultural specialty (FVH) crops. By commodity, average employment was 40,000 in apples, 32,000 in strawberries, 30,000 in grapes, 22,000 in other berries such as blueberries, and 20,000 in nuts.

Figure 3. State Shares of Average U.S. Farmworker Employment, 2012



California

California farm employers have traditionally shunned the H-2A program, arguing that the state’s wide array of labor-intensive crops and complex farm labor market were ill-suited for a guest worker program requiring advance planning and employer-provided housing. Testifying in 2013, the CEO of the California-based Western Growers

Association said that “H-2A does not afford any ability for workers to follow cropping patterns because their status is tied to a single employer” (Nassif, 2013, p. 59). Nassif also noted that some California vegetable growers produce in different parts of the state to supply fresh vegetables year-round, so that workers could work for one employer in different areas if the employer was certified to hire H-2A workers in each area.

Imperial Valley–based Fresh Harvest is California’s largest employer of H-2A workers and places most of 5,000 H-2A workers in Salinas-area berry and vegetable fields. Fresh Harvest, part of a larger logistics and farming enterprise with operations in Mexico and the United States, houses many of its H-2A workers in Salinas-area motels, although Fresh Harvest was able to convert a closed King City tomato packing shed into worker housing that it owns. Fresh Harvest has 75 buses and 50 vans to transport workers from their temporary housing to fields.

Fresh Harvest began as a custom harvester for Fresh Express, a bagged salad firm, and evolved into the supplier of labor to harvest 20% of the state’s lettuce for bagged salads and 20% of the state’s berries. The Salinas area has the highest number and share of H-2A workers, a peak 10,000 H-2A workers among a total of 82,000 farmworkers. Some settled workers in the Salinas area complain that younger H-2A workers are able to earn more at prevailing piece rates and have more take home pay because the H-2A workers receive free housing and transportation to work.

ISA Contracting, by contrast, hires mostly local workers to harvest mature green tomatoes for \$0.72 per 5-gallon bucket, a piece rate that enables many workers to earn \$20/hour or more for 5–6 hour days picking at an intense pace (see comments by ISA CEO Ileana Arvizu, April 13, 2018 at <https://gifford.ucdavis.edu/events/>). ISA serves several of California’s eight major tomato grower–shippers and began to recruit H-2A workers in 2017, using current workers from Oaxaca to recruit 45 additional workers in their home state. ISA and the workers had good experiences: 300 more Oaxacan workers wanted to come as H-2A workers in 2018.

Mexican worker interest in U.S. jobs paying \$13/hour and offering transportation and housing is very high, but many of the workers who want to become H-2As are not productive enough to justify U.S. wages that are 10 times more than prevailing farm wages in Mexico. Fresh Harvest has farming operations in Mexico and selects some of its best workers in Mexico for H-2A visas to work in the United States; it tests other workers by having them climb a ladder with a 60-pound weight to see whether they can pick avocados and wheel a strawberry cart to determine whether they will be productive berry pickers (see comments by Fresh Harvest CEO Steve Scaroni, April 13, 2018, at <https://gifford.ucdavis.edu/events/>).

Conclusions

Fewer than 10% of the 100,000 U.S. farms that pay UI taxes, and less than 2% of the 500,000 farms that report hiring workers to the Census of Agriculture, are certified to employ H-2A guest workers. Farm employers want three major changes to the H-2A program, viz, (i) an end certification of need or DOL-oversight of efforts to recruit U.S. workers, (ii) elimination of the requirement to provide free housing to H-2A workers, and (iii) a reduction of the AEWR, \$13.18/hour in California in 2018, when the state’s minimum wage was \$11/hour.

There have been several efforts to provide farm employers with an alternative to the H-2A program. In 1986, IRCA included a Replenishment Agricultural Worker (RAW) program with no certification, housing, and AEWR requirements. However, usage of the RAW program was contingent on DOL and USDA agreeing that there was a farm labor shortage, which these agencies did not find, so the RAW program expired in 1993 without ever having been used (Martin, 1994).

Farmers in the 1990s tried to persuade Congress to enact a non–H-2A alternative guest worker program for agriculture (Martin, 1998; Rural Migration News, 1995, 1996, 2000), but none was enacted, in part because President Clinton threatened to veto any new guest worker program. However, after the election of Mexican President Fox and US President Bush in 2000, worker advocates feared there could be a new Mexico–United States guest worker program (Migration News, 2001). Instead of waiting for Fox–Bush negotiations, they met with farm employers and agreed to the Agricultural Job Opportunity Benefits and Security Act (AgJOBS), which would have

repeated IRCA's compromise of legalization for currently unauthorized farmworkers and easier access to guest workers for farmers in the future (Martin, 2003).

AgJOBS would have ended or modified H-2A certification, housing, and AEWB requirements while legalizing currently unauthorized farmworkers. AgJOBS was revised several times and included in immigration reform bills approved by the Senate in 2006 and 2013 but was never enacted (Rural Migration News, 2009).

AgJOBS would have legalized unauthorized workers, whose average age was 28 in 2000, and required them to continue to work in agriculture for three to five years in order to earn immigrant status. The farm workforce has since aged, with the average age of crop workers interviewed in the National Agricultural Worker Survey approaching 40, reducing employer support for a legalization and guest worker package. The fresh blood in the farm workforce today is H-2A workers, who are a decade younger than unauthorized crop workers (Rural Migration News Blog, 2018).

Instead of legalization and guest workers, most farm employers support Representative Bob Goodlatte's (R-VA) Agricultural Guestworker Act, which would make it easier for farmers to hire guest workers by, *inter alia*, allowing the USDA to administer an H-2C guest worker program that admitted up to 450,000 guest workers a year for up to two years, after which the guest workers would have to leave the United States for at least 45 days. These workers could be employed in year-round jobs, including in livestock and meatpacking. There could be 900,000 H-2C workers in the United States during the program's second year and even more thereafter, since previously unauthorized workers who obtain H-2C visas would not count against the cap.

The ability of currently unauthorized workers to obtain H-2C visas has divided California from the rest of U.S. agriculture. The Agricultural Guestworker Act would require currently unauthorized workers to leave the United States and return legally with H-2C visas. Many California farmers do not believe that unauthorized workers with U.S.-born children would risk leaving the United States with only a promise of being able to return legally, and their opposition likely dooms Goodlatte's bill.

President Trump's winery in Virginia and his hotel operations around the United States employ H-2A and H-2B workers, which made many farmers confident that Trump would persuade Congress to enact an easy-to-use guest worker program. In April 2018 in Michigan, Trump said: "For the farmers, OK, it's going to get good. We're going to let your guest workers come in...They're going to come in, they're going to work on your farms... but then they have to go out" (Rural Migration News, 2018).

Perhaps the major surprise almost two years into the Trump presidency is the absence of a new farm or nonfarm guest worker program. Instead, stepped-up border enforcement has deterred the entry of newcomers who in the past were willing to do farm work, and the increased enforcement of immigration laws has spread fear among farmworkers. The dim prospects for enactment of a new or modified H-2A program, coupled with rising minimum wages in major farm labor states, has many farmers convinced that their options are labor-saving mechanization or accommodating current regulations and employing H-2A guest workers.

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Trends in U.S. Farm Labor and H-2A Hired Labor: Policy and Related Issues

Maria Bampasidou and Michael E. Salassi

JEL Classifications: J61, Q18

Keywords: Farm labor, H-2A program, Trends, Policy

Introduction

The U.S. agricultural sector depends to a significant degree on a stable supply of farmworkers. Regardless of the prevalence of mechanization in many agricultural industries, labor demand is still strong during peak seasons, when the marginal returns from hiring labor are substantial, especially if no other labor is available. Since 2003, the number of U.S. farmworkers has continuously declined (U.S. Department of Agriculture, multiple years), which is of great concern to labor-intensive agricultural industries such as the fruits and vegetable industry (Turnbull, 2011; Honig, 2018) as well as high-value specialty crops that require hand harvesting (Wu and Guan, 2016; Hill, 2018). The decline in the number of U.S. farmworkers has been coupled with a decrease in the supply of local labor in rural areas and firmer enforcement of immigration policies such as border patrol and deportation, which mainly affect the labor supply of undocumented workers (Escalante and Luo, 2017; Martin, 2017).

Agricultural operations facing labor shortages have turned to the H-2A guest-worker program to secure needed farmworkers. These shortages are mainly the result of an insufficiently able and willing supply of local and domestic labor. Though the program offers a solution by mitigating risk associated with insufficient labor, documenting a need for H-2A workers can be cumbersome (Guan, Roka, and Whidden, 2015; Devadoss and Luckstead, 2018; Bampasidou and Salassi, 2019). Farm operators using the H-2A program need to show that (i) the nature of the tasks performed is seasonal, temporary, and tied to the agricultural operation and the labor certification period of employment, (ii) prove that they will not be able to secure local or domestic labor, (iii) demonstrate that the hiring of H-2A workers should not hinder the employment of domestic workers or adversely affect their wage pay scheme in similar jobs.

Whether the H-2A program is a solution to the decreasing farm labor force is still a matter of discussion. The program has been considered as a substitute to local communities or a supplement to the existing workforce (Devadoss and Luckstead, 2008; Wei et al. 2016; Krumel, 2017) and as an imperfect substitute for undocumented workers (Devadoss and Luckstead, 2018). Nevertheless, it must be acknowledged that the profile of the U.S. farm labor force is changing. This article reviews trends in U.S. farm hired labor and the H-2A program, highlighting a changing worker profile in U.S. agriculture. In addition, we present topics of discussion over which policy making can have influence.

Trends in U.S. Farm Labor and Wages

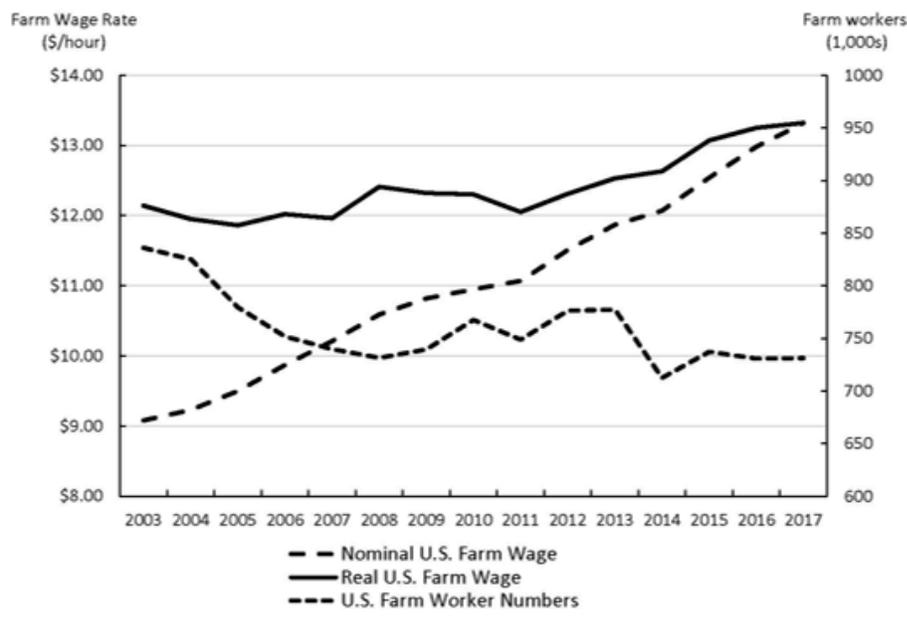
Over the past 15 years, the number of U.S. farmworkers has declined by approximately 12%, representing a loss of over 104,000 workers (Figure 1).¹ The greatest decline, in terms of worker numbers, occurred in California and Florida. In 2017, there were 731,300 farmworkers in the United States, down from 836,000 in 2003. California, comprising the largest share of U.S. farmworkers, accounted for the greatest portion of this decline. In 2003, California employed 227,500 farmworkers representing 27.2% of total U.S. farmworkers. In 2017, there were

¹ The information in this section comes from the U.S. Department of Agriculture's National Agricultural Statistics Services, as reported in issues of *Farm Labor*.

153,800 farmworkers in California, down 73,700, representing 21.0% of total U.S. farmworkers. In Florida, farmworker numbers declined over the same period by 17,400, from 54,200 in 2003 to 36,800 in 2017.

Changes in farm wages since 2003 are illustrated in Figure 1. Average farm wages have responded to the decline in farmworker numbers over this period. In 2017, the average U.S. nominal farm wage rate was \$13.32/hour, up from \$9.08/hour in 2003 (USDA). This average nominal farm wage rate has risen steadily over the period by an annual average of \$0.30/hour. In 2017, the highest average farm wage rates were observed in the Pacific region (Oregon and Washington) at \$14.64/hour, California at \$14.46/hour, and the Northern Plains region (Kansas, Nebraska, North Dakota, and South Dakota) at \$14.18/hour. The lowest average nominal farm wage rates in 2017 were observed in the Delta region (Arkansas, Louisiana, and Mississippi) at \$11.15/hour, the Mountain III region (Colorado, Nevada, and Utah) at \$11.20/hour, and the Southeast region (Alabama, Georgia, and South Carolina) at \$11.55/hour (Bampasidou and Salassi, 2019).

Figure 1. U.S. Farm Wages and Farmworker Numbers, 2003–2017



Source: U.S. Department of Agriculture (multiple years).

The recent rise in real farm wages is likely a response to the decline in farmworker numbers. From 2003 to 2010, the real U.S. average farm wage rate increased by only \$0.16/hour to \$12.30/hour in 2010. After a drop to a real wage of \$12.05/hour in 2011, U.S. real farm wages increased steadily to \$13.32/hour by 2017. The greatest increases in real average farm wages rates since 2010 have occurred in California, the Pacific region, and the Northeast I region (Connecticut, Maine, Massachusetts, New Hampshire, New York, Rhode Island, and Vermont), with annual estimated trend increases in real wages of \$0.42/hour, \$0.30/hour, and \$0.28/hour, respectively (Bampasidou and Salassi, 2019).

Trends in H-2A Program Use

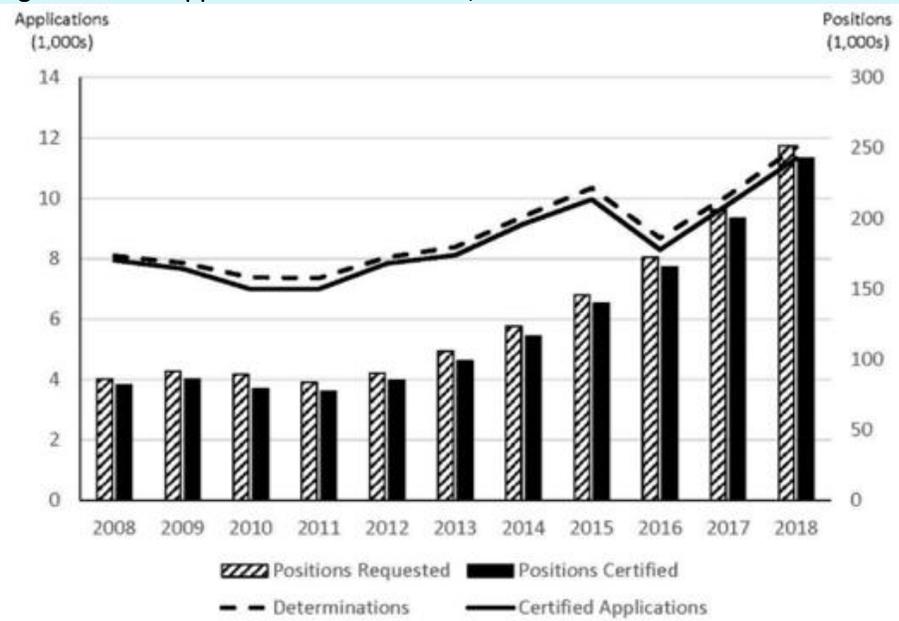
The H-2A program has been active in its most recent form since 1986.² H-2A workers account for about 10% of farmworkers in the U.S. agricultural sector (Martin, 2017). Over 2008–2018, use of the H-2A program has increased substantially (Figure 2), implying an increased dependency on the program. In fiscal year (FY) 2008, the U.S. Department of Labor received 8,096 H-2A applications, of which 7,944 were certified. From these applications, 86,134 positions were requested and a total of 82,099 H-2A workers were employed during FY2008. The program gained momentum after 2014, when a steady increase in the number of applications was observed; 2018 was a record year, with 11,698 applications received, an increase of 44%, from which 11,319 applications were certified, an increase of about 42% since 2008. An upward trend in the number of certified workers is observed throughout the 10-year period and is more profound after FY2016. The most workers were requested in FY2018—251,679

² The data on 2008–2018 trends presented in this section are based on figures from the U.S. Department of Labor.

total H-2A positions—of which 242,762 were certified positions, an increase of 196% (U.S. Department of Labor, 2018).

The increased interest and use of the H-2A program can be attributed to the success of the program in providing farm operators with workers in times during which securing native labor has not been guaranteed. States that show an increased dependency on the program (including California, Florida, Washington, Georgia) produce mainly specialty crops, fruits, and vegetables—perishable and high-value crops that require hand-picking or hand-harvesting. The article by Luckstead and Devadoss (2019) in this theme presents more information on the H-2A program and reports on leading states and major agricultural industries employing H-2A workers.

Figure 2. H-2A Applications and Positions, 2008–2018



Source: U.S. Department of Labor, 2018.

Policy and Related Issues

Maintaining a steady farm workforce is an important policy consideration. Securing and retaining farmworkers is one of the main challenges faced by the U.S. agricultural sector. While they may not require specialized training, agricultural jobs are physically demanding, and workers experience heavy workloads, which may deter natives from applying for them. This results in opportunities for guest workers, demonstrated by the decreased number of farmworkers and the increased use of H-2A. In recent years, the H-2A program has attracted a lot of attention as it has gained momentum and more producers have used it to guarantee timely and sufficient labor. The turn toward guest-worker programs has led to a change in the profile of the farmworker in the United States, which requires new perspectives in how farm operators view farm labor and existing policies.

A decrease in farm labor requires farm operators to consider ways to cope with future labor shortages or the continuation of labor shortages. Farm operations that traditionally depend on labor could either switch to non-labor-intensive crops and further introduce technology and mechanization or invest in guest-worker programs (Rosenberg, 2004; Huffman, 2012; Onel and Farnsworth, 2016). Those investing in a guest-worker program need to introduce ways to comply with work regulations and health provisions to workers (Escalante and Luo, 2017) and to educate personnel to supervise guest workers.

Switching to H-2A will also renew discussions on potential adverse effects in the local labor market. The farm sector mainly employs low-skilled workers, which means that the sector draws from the same labor pool as other less labor-intensive industries. Considering also the seasonal and temporary nature of the farm activities, the farm sector may not be the first employment choice for these workers. Still, it is unclear whether the program substitutes away from local labor or supplements it. Moreover, to counter labor shortages, producers tend to offer higher wages (Ifft and Jodlowski, 2016; Wu and Guan, 2016). The real farm wage has increased in recent years; in many cases, farm wages are above the federal or state-level minimum wage. In reality, many of the farm operations employing through the H-2A program offer a higher wage as they need to satisfy the adverse effect wage rate restriction. With many states moving toward a higher minimum wage (e.g., California and Florida),

adjustments to guest-worker programs may need to take place as an increase in the minimum wage will affect the industries using the H-2A program even more.

Employing through a guest-worker program means additional labor costs associated with worker search costs, including advertising, listing agents, and immigration lawyers. There has been an increase in the number of operations that rely on law firms to deal with the paperwork associated with applying to the program, particularly in recent years (Bampasidou and Salassi, 2019). These costs lead to questions about the H-2A program's effectiveness and efficiency. Recommendations for a revised, more flexible guest-worker program have regularly been brought up as a topic of discussion in the U.S. Senate. Some of the latest recommendations include the introduction of the H-2C program as a way to extend the H-2A program. Still, there are hurdles regarding the proposed bill (Rural Migration News, 2018b).

Main items on the agenda for the H-2C program included (i) extending the period of employment to satisfy seasonal and year-round jobs; (ii) easing the cost of employment and the burden of providing benefits, housing, and transportation to guest workers; (iii) allowing experienced undocumented workers to participate in the H-2C program. The H-2C program has a cap of 450,000 jobs, including 40,000 in the meat and poultry processing industry. The program will allow guest-workers to stay year-round on a 36-month, renewable visa. These workers will have to return to their country for at least 60 days before re-entering the United States. Regarding employment costs, employers do not have to use the adverse-effect wage rate but must pay at least 115% of the federal and state minimum wage. Also, employers can opt to provide housing and transportation for their workers. H-2C workers cannot bring spouses and minor children unless they also participate in a guest-worker program. In addition, H-2C workers are not eligible for federal public benefits or for federal refundable tax credits. Regarding unauthorized immigrants, the program provides the opportunity for them to adjust to lawful status and participate in the program legally (Rural Migration News, 2018a,b).

As the discussions over introducing a new guest-worker program continue, so do discussions over immigration policies. Unauthorized immigrants were a major topic in the policy agenda during the last presidential election. Measures proposed to counter undocumented immigration include increased border patrol, deportations, and building a wall on the Mexico–U.S. border. Despite the rhetoric, a large share of agricultural labor is provided by undocumented workers (Zahniser et al., 2012; Wei et al., 2016; Martin, 2017). With hired labor in the farm sector accounting for about 60% (Henderson, 2013) and the H-2A program providing about 10% of farm labor in the United States, any effort to further understand how immigration policies can affect labor shortages could help to move policy making forward.

Discussion

Labor shortages are an essential concern of agricultural producers and farm managers. The decrease in the number of U.S. hired farm labor and the increasing dependence on nondomestic and nonlocal hired labor is well documented in articles, reports, mass-media coverage, and research outlets. The trends pointed out in this article indicate changes in the agricultural workforce. The decreasing number of workers, followed by increasing wage rates, could be alarming for the economic wellbeing of several labor-intensive agricultural industries. The goal of sustaining a viable farm sector depends on the timely supply of farm labor, and the guest-worker programs can be part of the solution. Nevertheless, labor market conditions and immigration reforms could present challenges for operations that opt to secure labor via the H-2A program and via the traditional labor market. Discussions over the H-2A program could benefit from quantifying the demand for H-2A labor. Labor shortages remain a complex issue and coping with them requires further investigation from policy makers and researchers.

This article discussed some aspects that could be of concern to farm operators and farm managers. A more comprehensive investigation of labor shortages, the reasons they are more prominent, and potential solutions is needed. In addition, a discussion over immigration policies and possible adverse labor market effects from an increasing H-2A labor force should continue; to date, no measure providing a solid solution has been introduced. Increases in the minimum wage to match a living wage will be evaluated as to how they trickle down to already higher-paying farm jobs. From a policy-making perspective, efforts should be directed towards the development and evaluation of guest worker programs, in order to introduce more effective and efficient solutions to labor

shortages. To date, the majority of the discussions have focused on the increased paperwork that H-2A requires, the length of time needed for applications to be examined, and the term of employment for the H-2A workers.

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Acknowledgments: We thank two anonymous referees for providing comments.

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Labor-Intensive Multiple Cropping Systems and the H-2A Program: Evidence from the Crawfish Industry

Surendra Osti, Maria Bampasidou, and J. Matthew Fannin

JEL Classifications: J61, Q18

Keywords: Efficiency, Guest workers, H-2A, Intercropping, Multicropping

Introduction

Rotations, multi-cropping, and intercropping are examples of multiple cropping, the practice of growing two or more crops in the same growing season or sequential growing seasons, which is commonly practiced in the United States. In the particular case of labor-intensive multiple-cropping systems, labor availability affects the choice of production technologies, cropping patterns, and the competitiveness of U.S. producers relative to low-cost foreign producers (Boucher and Taylor, 2007; Guan et al., 2015). Due to the increasing unwillingness and unavailability of local labor to work in U.S. farm operations, these labor-intensive production systems have had an increasingly difficult time obtaining domestic farmworkers and are relying more on H-2A workers. This is the case for high-value crops such as strawberries, lettuce, asparagus, and crawfish, among others.

To increase revenue and mitigate price risk, some farms plant multiple crops in a given field-year, whether sequentially (multi-crop/double crop) or at the same time (intercrop). However, multi-cropping and intercropping systems, which combine more continuous labor demand over greater than a 10-month window without seasonal downtime, create additional transaction costs for a program (H-2A) that was set up to provide only short-term seasonal labor in small pockets of planting or harvesting times for individual commodities. Hence, the 10-month limit of H-2A workers to work on the same farm has the potential to affect systems producing multiple crops more than traditional systems.

The ability to maintain an adequate supply of these commodities may depend on producers' ability to fit seasonal workers into intercropping and multi-cropping systems to minimize the cost of production and yield risk. Many farmers have realized this, and increased use of the H-2A program has been noticeable in production systems where the rotational crop is labor intensive, including the crawfish industry.

Hired Labor and the H-2A Program

There are three main categories of farmworkers in the United States: farm operators, unpaid family members/owners, and hired workers (Martin et al., 2013). Historically, unpaid family members/owners provided most of the total labor hours on U.S. farms. However, the turn toward relying on paid employees rather than family labor is well documented (Dubofsky and McCartin, 2017). Hired workers now account for almost 60% of total labor hours on the farms, and their share is increasing steadily (Henderson, 2012). Labor shortages have led to the use of the H-2A guest worker program, through which farm operators can fill temporary and seasonal positions. These workers are allowed to stay under a contract for a maximum of 10 months. Employers can renew the working status of these H-2A workers for up to three years.

The management of hired labor either domestic or through guest worker programs is crucial in high-value crops, which have extreme, labor-intensive periods for planting and picking or harvesting. Crops requiring almost daily

picking/harvesting during peak season to secure higher quality and higher prices include strawberries (3 weeks), blueberries (2 weeks), peas (2 weeks), asparagus (1 month), and crawfish (2 months). The sensitivity of these industries to securing able and available domestic labor in peak harvesting seasons has led their operators to consider hiring through the H-2A guest-worker program (Charlton, Castillo, and Hertz, 2018). Berries, fruits and vegetables, and crawfish are commodities featured at the top of the list of crops that hire H-2A workers.

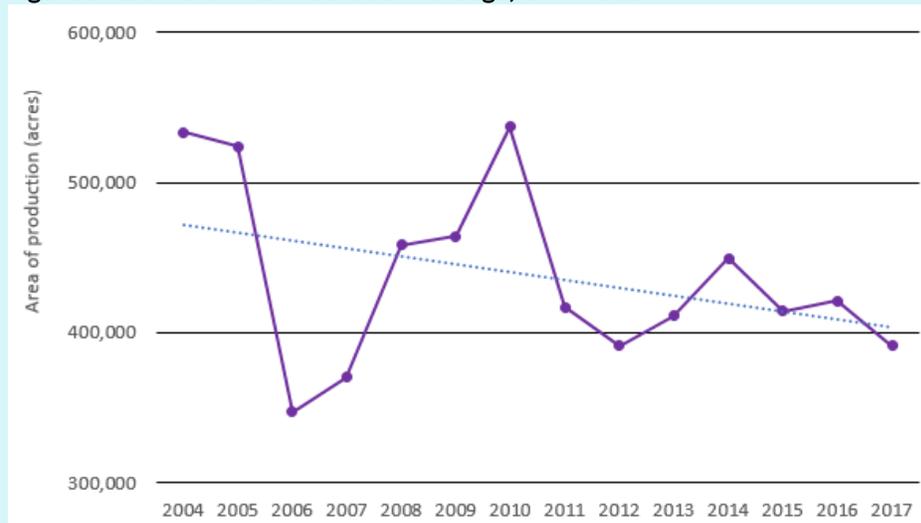
Hiring H-2A workers entails many regulations that go into determining a wage rate. According to the DOL’s H-2A regulations 20 CFR 655.120(l), employers must pay their H-2A workers in corresponding employment at least the highest of (i) the Adverse Effect Wage Rate (AEWR); (ii) the prevailing wage; (iii) the prevailing piece rate; (iv) the agreed-upon collective bargaining wage, if applicable; or (v) the federal or state minimum wage, in effect the time the work is performed (Kushmer, 2017). Also, the employer should be responsible for covering costs that include transportation from the employee’s home to worksite, housing for the workers, and the cost of the visa, H-2A petition, and recruitment.

The cost of hiring through H-2A is not insignificant. Employers tend to pay their workers more than the prevailing wage to secure them. Filing and attorney fees and housing costs add to total wage outlays. Based on the data collected from citrus harvesters in Florida, the pre-employment costs associated with the guest workers that include filing fees, advertisement, surety bonds, travel, and housing are estimated to be nearly \$2,000 per worker (Roka et al., 2017). This cost can deter producers from employing through the program, especially when the operation is small and the harvesting window is short, requiring few workers. For example, between 2015 and the third quarter of 2018, the average farm application requested 38 guest workers under the H-2A program for asparagus as a primary crop and 54 guest workers for strawberries as a primary crop. These numbers per application increase under multi-cropping/intercropping scenarios. For example, the average number of guest workers requested by farms listing strawberries, eggplant, and asparagus jointly as their primary crop was 70 workers per application.

Growing H-2A Demand: The Case of Rice–Crawfish Production in Louisiana

Producers turn to multiple cropping systems to increase income and mitigate production and market risk. Such is the case for Louisiana rice producers, who have moved away from double-cropping of rice to a rotation of rice and crawfish (Salassi, Diliberto, and Webster, 2008). In the 2017 growing season, Louisiana rice producers produced 26.7 million hundredweight (cwt) of rice on 390,803 harvested acres, with an average yield of 68.4 cwt/acre, up from 66.9 cwt/acre reported in 2016. Due to lower calendar-year prices for rice from the previous year, the gross farm value of the rice crop in Louisiana fell from \$305.5 million in 2016 to \$297.6 million in 2017. Figure 1 depicts a decreasing trend in land allocation for rice production in Louisiana.

Figure 1. Louisiana Rice Production Acreage, 2004–2017



Source: LSU AgCenter (2018), multiple issues.

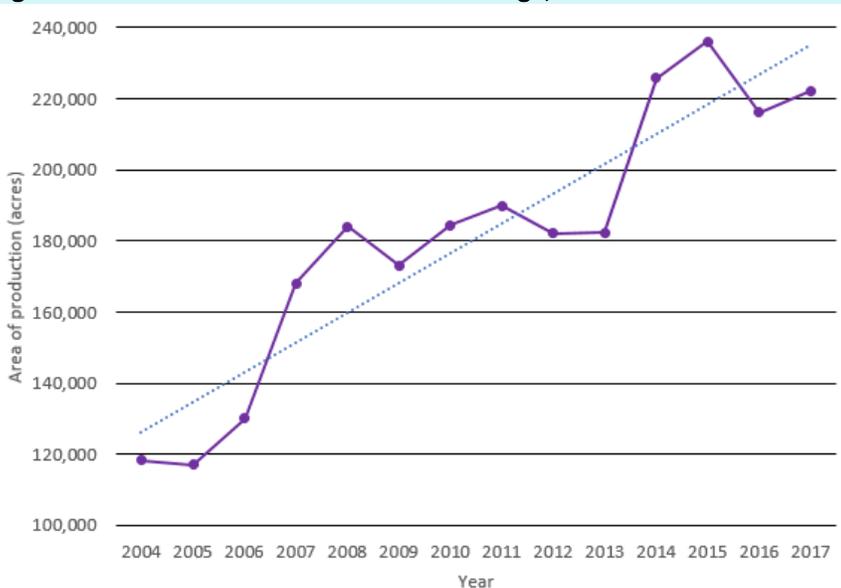
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At the same time, increasing state and regional demand for crawfish has incentivized the expansion of acreage and production over the last several years. Figure 2 shows the increasing trend in Louisiana crawfish production. Notably, in 2014, farm-raised crawfish production totaled 225,789 acres, up 40,000 acres from the previous year, and reached 236,095 acres of land with a gross farm value of \$189 million in 2015. In 2016, producers were estimated to produce 135 million pounds of crawfish on 216,000 acres, up 2% over 2015, which generated a gross farm value of \$196 million. Estimates from the field in 2017 indicated farm-raised crawfish production area increased by 3% more than in 2016 (LSU AgCenter, 2017).

Crawfish producers rely predominately on H-2A labor. The number of Louisiana rice and crawfish farmers employing through the H-2A program has increased between 2015 and 2018 (Figure 3). Also, the number of H-2A workers certified to work on rice and crawfish farms in Louisiana has increased in the same period (Figure 4). Rice–crawfish producers employing through the H-2A program could be harmed by the 10-month limit on the H-2A guest worker visa, as they need to reapply to secure workers.

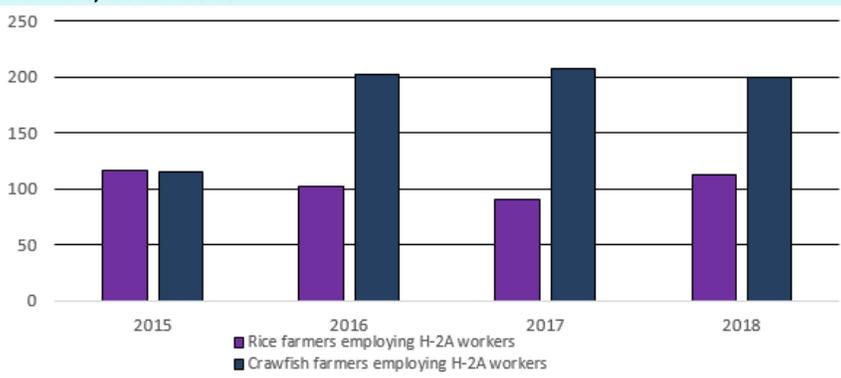
Combined U.S. Office of Foreign Labor Certification (OFLC) data from 2015–2018 (Q3) show that among rice and crawfish producers employing H-2A workers in Louisiana, 200 farmers self-reported growing both crawfish and rice, 77 farmers grow crawfish only, and 47 farmers grow rice only. For the period 2015 to 2018 (Q3), farmers that requested H-2A guest workers and listed rice, crawfish, or a rice/crawfish joint primary crop only requested between four and six guest workers per application. Along with the increase in the number of H-2A workers certified for Louisiana rice and crawfish farms (Figure 4), the average number of H-2A workers requested per application is also increasing. According to OFLC

Figure 2. Louisiana Crawfish Production Acreage, 2004–2017



Source: LSU AgCenter (2018), multiple issues.

Figure 3. Number of Louisiana Rice and Crawfish Farmers Employing H-2A Workers, 2015–2018



Note: Data from the U.S. Office of Foreign Labor Certification (2018). Figure reports the number of farmers employing through the H-2A program. Data filtered by primary crop, accounting for multiple entries per farmer.

data for fiscal year (FY) 2015, the average number of H-2A guest workers per application requested by Louisiana rice and crawfish farmers was 5.95, which increased by 2% in FY2018, reaching 6.07.

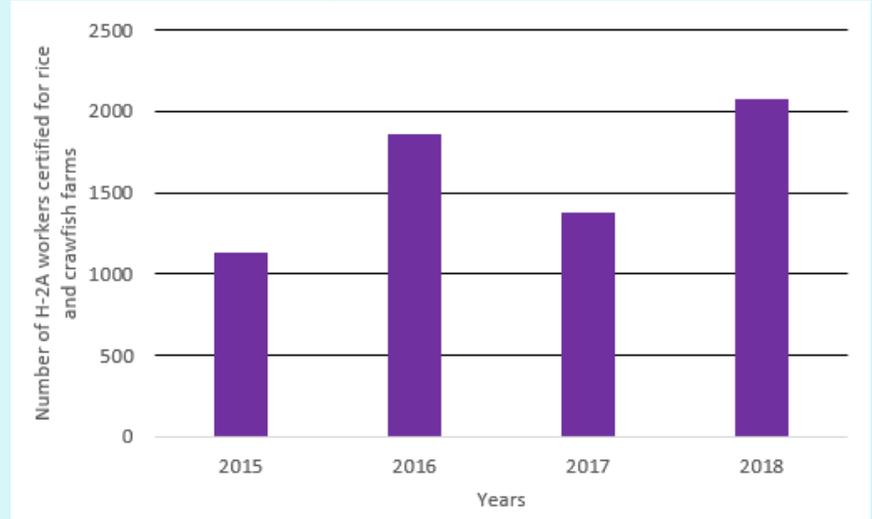
Labor Flexibility and Production Efficiency: Considerations for Guest-Worker Programs

Efficiency in labor-intensive multi-cropping and intercropping production systems depends on non-labor variable inputs, fixed-cost machinery, and labor costs and how these costs can be shared or distributed within a growing season. With labor shortages becoming a more prevalent concern, effective and efficient use of labor is crucial to these production systems.

Guest worker programs that are flexible in terms of allocating employed workers and the period of their employment could generate gains from multi-cropping and intercropping systems. That potential flexibility especially impacts multi-cropping systems that are spread over multiple years or multiple seasons within a year, which run up against the 10-month limit of current H-2A program rules.

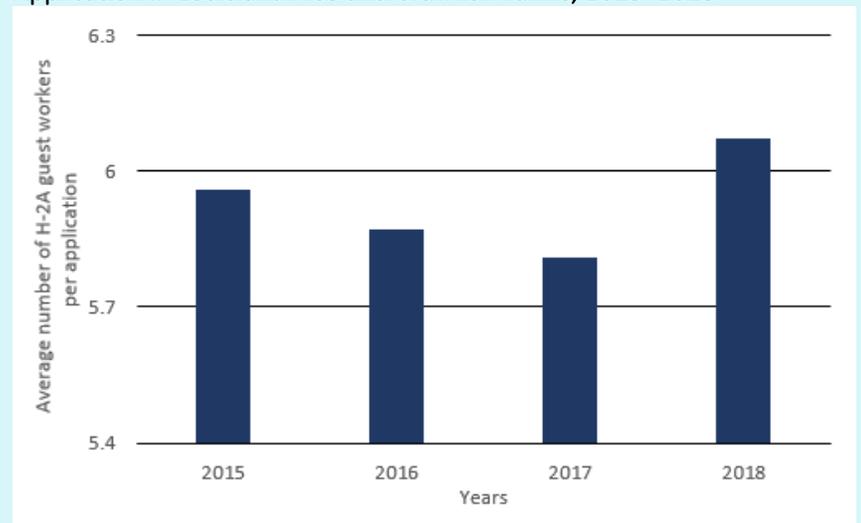
The use of readily available labor not reserved for a single crop and for a longer period may be linked to whole-farm allocative efficiency, as workers can be reallocated to more labor-intensive tasks that have a relatively more expensive capital substitute option. As the marginal return from labor fluctuates throughout production, the opportunity to move employees to critical labor-intensive tasks results in fewer periods of underutilized time. This means that producers can avoid intervals where they have excess labor capacity for the jobs that need to be completed. Further, this makes it easier for the producers to meet the minimum 75% threshold of certified time required under current H-2A employment rules. Also, a more extended employment period allows for potentially fewer breaks in productivity caused by reapplying to the program and not being able to secure the guest workers needed on time for the new production cycle.

Figure 4. Number of H-2A Workers Certified for Working on Rice and Crawfish Farms in Louisiana, 2015–2018



Source: Data from the U.S. Office of Foreign Labor Certification (2018).

Figure 5. Average Number of H-2A Guest Workers Requested per Application in Louisiana Rice and Crawfish Farms, 2015–2018



Source: Data from the U.S. Office of Foreign Labor Certification (2018).

Further, extending the time guest workers can be employed could generate productivity gains from past working experience with the same employer. Workers can be more productive since the types of tasks are most likely the same and they are more familiar with the specific farm operation (accumulation of specific farm human capital). Additionally, employing the same people for a longer period can help mitigate labor management risks since trust relations and communication channels take time to establish.

Moreover, allowing H-2A employees to stay for longer periods and being able to move to other crops can reduce labor costs. There is a combination of variable transaction costs of acquiring each H-2A guest worker and a set of fixed transaction costs affiliated with each application of these same guest workers. These costs can be transaction costs related to the application process—such as application fees, hiring a lawyer to assist with the process—or expenses related to housing, transportation, and overall accommodation of the H-2A workers. For farmers in highly labor-intensive multi-cropping and intercropping systems that demand large numbers of H-2A guest workers, the average fixed transaction costs per guest worker (for example, asparagus/strawberries) are lower as compared to those producers for whom hired guest worker labor complements large capital investments in fixed machinery (rice/crawfish). In these cropping systems, increased flexibility with H-2A labor could create additional efficiency and lower transaction costs.

Discussion

As domestic labor supply for hired farmworker jobs continues to erode in many regions of the country, a greater number of guest workers through programs such as H-2A are being demanded. While used by farmers in some regions to manage labor-intensive planting/harvesting activities in fruits and vegetables, many of these same regions have a historical supply of labor contractors that provide a market alternative that coordinates the supply of labor (domestic or immigrant) and reduces the overhead for an individual farmer in having to search and coordinate processing of H-2A paperwork. Unfortunately, for regions that are now substituting smaller numbers of H-2A labor on historically capital-intensive systems, the total labor costs are higher because of higher average fixed transaction costs per worker.

Proposed policies such as the H-2C legislation have attributes that may be needed to maintain longer-term efficiency and productivity for farmers. Allowing guest workers to stay employed over longer periods with individual farm operations has the potential to reduce transaction costs and increase whole-farm efficiency by leveraging guest workers' specific farm experiences over multiple production seasons. Such attributes of farm labor policy reform may serve as important elements for maintaining both farm profitability and ample availability of certain food commodities that are becoming more guest-worker dependent in regions that have historically provided an ample supply of domestic seasonal farmworkers.

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Acknowledgments: We would like to thank two referees for providing constructive feedback on this article.

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