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The Farm Labor Crisis (Overview & Deal Review)

Industry Deep Dive: Wednesday, December 5th, 2018

David Yocom | Venture Associate
dyocom@iselectfund.com

iSelect Fund, LLC, 4240 Duncan Ave., Suite 200, Saint Louis, MO 63110

Topics Covered

- Current problems with farm labor in the US
- Why farm labor is declining so rapidly in the US
- Potential consequences of farm labor decline in the US
- Potential technology solutions to the labor crisis
- Deal sourcing review: who we've talked to and where should we look next
- Questions to be answered

The Farm Labor Crisis

“We can import labor, or we can import our fruits and vegetables.” – John Oxford, PMA

Breakdown:

A Declining Migrant Workforce, and Jobs Americans Just Don't Want

- Agricultural wages are higher than ever, but growers are struggling to find workers
- Other manual labor jobs tend to take precedence over agricultural field jobs
- Labor shortages are causing food waste and increased food prices
- Extremely high turnover rates for agricultural workers (>50%)

Driving Forces of the Labor Shortage

- US immigration and work visa policies
- Improved economic conditions in Mexico
- Undesirable work & fewer new workers
- High churn rate of agricultural workers

Technology that Could Help

- Automation & robotics
- Workforce management

Market Opportunity

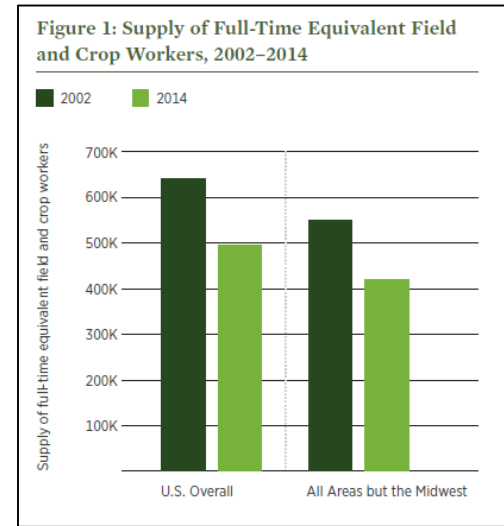
- Specialty crop harvesting
- Row crop harvesting
- Meat processing & production
- Dairy processing



Current Problems with Farm Labor in US

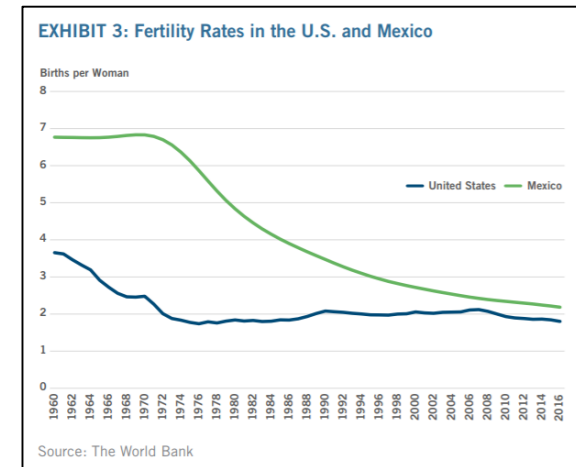
A Major Drop in Labor Availability

- Between 2002 and 2012, the number of new field and crop workers immigrating to the United States fell by roughly 75 percent.
- Between 2002 and 2014, the number of full-time equivalent field and crop workers dropped by approximately 150,000 people, more than 20%.



Attributable to What?

- Fertility rates in Mexico dropping
- Improved economic conditions in Mexico
- US workers unwilling to take farm Labor jobs regardless of pay
- H2A Visa Program challenges



Charts: (1) Partnership for a New American Economy (2) CoBank Knowledge Exchange

Links: http://research.newamericaneconomy.org/wp-content/uploads/2015/08/PNAE_FarmLabor_August-3-3.pdf

<https://www.cobank.com/-/media/files/ked/general/help-wanted-aug-2018.pdf>

Validation of the Problem

Wages for food/crop workers are higher than ever, but declining faster than any other skilled to semi-skilled category:

Figure 2: Hourly Wages of Field and Crop Workers Have Risen Faster than Wages for Other Less-Skilled Positions

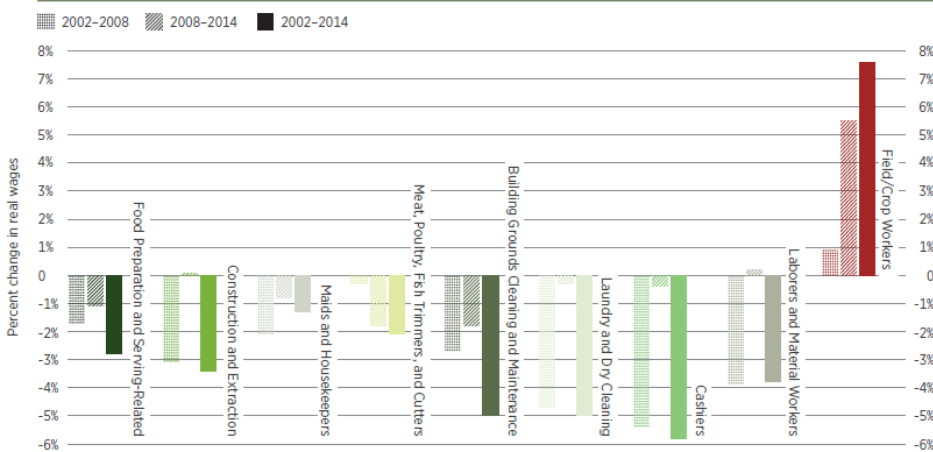
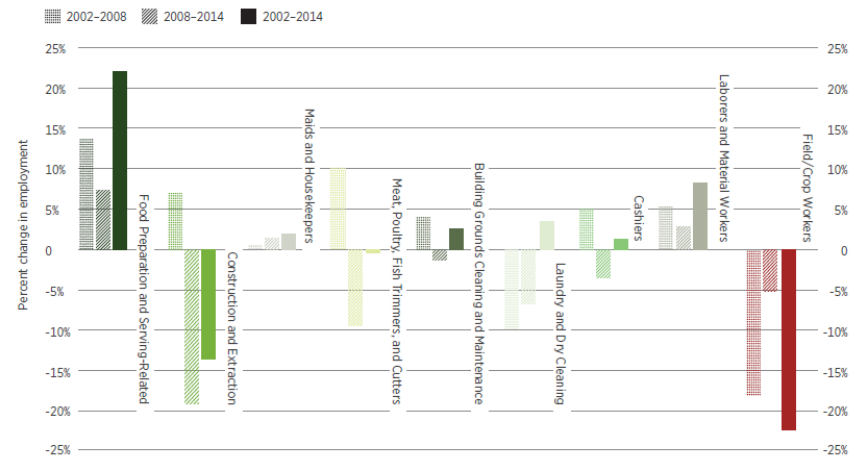


Figure 3: Employment of Field and Crop Workers Has Declined More than Other Less-Skilled Positions



Source: U.S. Farm Labor Survey and Bureau of Labor Statistics, Occupational Employment Statistics

Charts: Partnership for a New American Economy

Link: http://research.newamericaneconomy.org/wp-content/uploads/2015/08/PNAE_FarmLabor_August-3-3.pdf

Size of the Problem, Where, and What's Next

Sizing the Problem:

- Addressable Problem: With no labor shortage, production of labor affected crops could have been higher by \$3.1B annually (New American Economy)
- Addressable Market: Any and all labor in specialty crop harvesting, meat processing, livestock management, i.e. multi-billion-dollar opportunities

Where is the Problem Most Prevalent?

- States: California (Specialty), Florida (Specialty), Georgia (Specialty), Washington (Specialty), North Carolina (Meat Handling/Processing)
- Crops: Berries, Lettuce, Nuts, Tree Fruits, Cherries, Specialty Vegetables

Potential Consequences:

- Food Waste: Crops that can't be picked will rot in the field
- Rising Prices: Lower yields increase scarcity, and therefore cost
- Lower Food Security: Demand won't go anywhere; if we can't find a way to produce fresh food efficiently, others will



Startups, Technology & Skepticism

“Labor is always going to be an issue...It may get worse. It might get slightly better, but it’s not going to go away.” – Lancaster Farming

How startups are targeting the agricultural labor crisis:

- Automate, Automate, Automate: the majority of startups in the field today are focused primarily on the use of robotics paired with computer vision and machine learning engines to complete complex human tasks in variable agricultural environments
- Farm Labor Management: a handful of startups are focused on finding ways to manage and organize the existing farm labor work force, which is challenging

Healthy Skepticism for:

- Hardware: CAPEX is always an issue in high tech solutions, and trust in very new and complex technology is hard to accelerate
- Software: Can and will communication platforms be able to operate with a complex group of users (migrant farm workers)

However...

- At iSelect we have observed an unusual amount of industry buy-in for solutions to the farm labor crisis Ex.) Harvest CROO & Ganaz



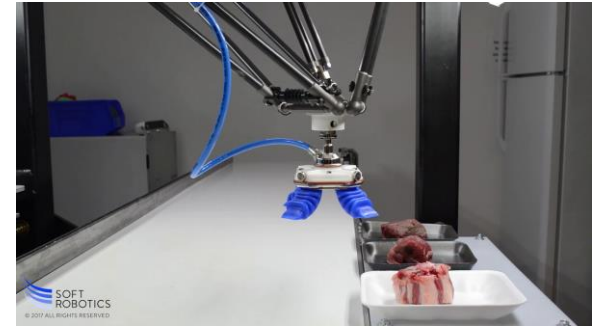
Where can technology help the labor crisis?



Harvesting Automation



Seeding & Weeding



Food Processing & Packaging



Controlled Environment Agriculture



Human Labor Management



Animal & Animal Product Production

Deal Sourcing Review

Who We've Talked To



Modular Science



Groups We Could/Should Talk To



Later Stage Players to Watch



Discussion: Key Questions to Answer/Address

- How should we differentiate between labor automation plays and what makes each of these plays more acquirable?
- Are robotics and automation the only solution? In what areas will they or have they come on first?
- Are there other economic forces at play that will enable cheap labor to prevail longer than previously anticipated?
- If the H2A Visa Program were to improve, would workers outside of Mexico fill labor needs in the US? How long would that last?
- Is there anything that would trigger the development of specialty robotics to be easier or less expensive?
- Who is going to own the equipment and who is in charge of scheduling this piece of equipment?
- Where are there new influxes of migrant farmworkers coming from?
- Who are the early adopter markets?
- When the automation create value vs. just replacing labor?



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