

## Automatic Milkers and Calf Feeders Effecting Labor Issues

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### Introduction

The technology in the dairy industry is advancing while labor issues increase. Immigration reforms, high labor expenses, and maximized effort from the producer toward his or her labor force continue to grow on dairy farms, leaving a farmer no choice but to search for other options to run the farm successfully and efficiently. Producers across the entire globe are adapting technological advances to decrease these issues.

### Labor issues overview

Labor is one of the largest issues in the dairy industry. Main issues of labor include: labor expense, extra time and effort needed to find an adequate labor team, and majority of the labor on dairy farms consists of immigrants causing disputes with the United States' economy. On average, 15 to 20% of a farm's expenses is solely spent on labor. Another issue is the amount of time and effort it takes to hire laborers. In the hiring process, the farmer is advised to advertise openings in agricultural magazines, which may be costly. Then the dairy farmer goes through an interview process with the future employee and contacts the individual's references. To finish off, the employer may put the laborer through a closely watched trial period. After the hiring is complete, the farmer still has to train the individual, provide protocols and operating procedures, find a managing system or area of work the employee will be successful in, continue educating laborers on a regular basis, and hold weekly meetings to facilitate communication between employer, management, and employees. On top of that, in order to hire an immigrant, extra paperwork exists that the employer must complete. The final major labor issue is the tension between agriculture and the United States' economy about immigration. An average of 40% of laborers in agriculture are foreign, non-citizen individuals. Agriculture in the U.S would lose an annual profit of \$1.5 to 5 billion dollars without immigrant laborers. Although tensions are rising regarding laws on immigrant workers, farmers are having more difficulties finding people who are willing to perform labor intensive tasks.

### Automation overview

Though labor issues continue to increase, technology continues to advance. The global dairy industry is consistently increasing in technological improvements to create dairy farms that reach maximum production and profit. Examples of these technologies include the robotic milking system, the automated calf feeder, milk yield recording, activity monitors, and tablet apps for a simplified data collection. The automated milking system (AMS) has and continues to have a large impact on employment. The AMS increases production on a dairy farm without increasing

labor. During the robotic milking, a cow will simply enter the robotic box on her own will. The milking system will identify the cow, and the milking process will begin. A sensor will find the teats, disinfect the teats before and after the milking process, milk the cow out completely, detect any disease or infections, and record the duration of milking and the milk yield. The cows can enter the milking robot at their own pace and do not leave until they are completely done. The other advanced technology booming in the dairy industry is the automatic calf feeder (ACF). Calf care is a precise and difficult aspect of dairy farming that takes careful observations at all times. Because the ACF is programmable, calves receive the exact amount of nutrition needed depending on body weight. Instead of the conventional twice a day feeding, calves are able to drink smaller amounts of milk numerous times throughout the day. The ACF is known to provide calves with more nutrition and decrease the amount of ill calves. How the feeder works: The calf feeder programs calves by weight allowing the farmer to keep accurate records of calf growth and nutrition consumption. This information can be easily accessed by the farmer through a programmable app. The calf enters the feeding stall when it becomes hungry. It can consume the desired amount and return later for the remainder of the required nutrition for that calf. The feeder records the consumption at the exact time and amount consumed making it easier for the farmer to notice issues of malnutrition or possible illness. The ACF requires a different type of employee. Instead of multiple laborers that spend the day feeding, a calf manager is needed to recognize any signs of illness and overlook the programmable app to make sure that calves are eating the required amount of nutrition. Automation is continuing to increase in agriculture changing the face of the dairy industry and altering the need for labor on dairy farms.

### **Automation replacing manual labor**

Not only is technology changing the need for labor in the dairy industry, but it has an effect on the entire agricultural industry. Agriculture is the fastest technology advancing industry with a vast decrease in employment. The labor force has continuously declined since the 1900s. In the year 1900, agriculture produced 40% of the jobs in America; however, in 2010 only 2% of the jobs are in agriculture. Why? Advancing technology is replacing the difficult manual labor with tractors, robots, and computer devices. Agriculture is the third largest area of occupation that replaces manual labor with technology, behind manufacturing and food services. This means that overtime as the immigration reform intensifies, agriculturalists will look for technology advancements to replace the labor issues they are having. For example, tractors now have a GPS and can operate without an individual, cows will potentially no longer need to be milked by people with continued adaption of the AMS, and human labor will not be needed in processing factories. This is due to the increase in labor productivity brought by the advanced technology. In the future, 200,000 jobs may be lost solely due to technological advances in the agricultural industry.

### **How advancing automation will positively help farmers with labor issues**

Keeping all these different aspects in mind, technology is changing the entire agriculture industry. In order to benefit from the advancements in technology on a dairy farm, farmers must also be aware of the tasks and challenges. For instance, with new technology, new skills need to be learned, instruction and communication between vendors and farmers needs to exist, and other expenses may accrue such as maintenance expenses. Although automation is expensive, the replacement of labor can make up for this loss in income. In 2014, labor wages increased by 3%, and then one year later increased to 4%. This continued increase in wages causes a potential portion of 29% of expenses that can be saved due to automation. In the Upper Midwest, farms with robotic milkers averaged 2.2 million pounds of milk production for every full-time

employee; whereas, farms with parlors averaged 1.5 million pounds per employee. Many arguments are against automation due to the fact that these employees are losing their jobs. Automation however, leaves open opportunities for farmers to keep the employees who are more skilled and trustworthy while increasing efficiency and productivity on their farm. Instead of having three individuals on a milking shift, the farmer can use one skilled employee, or on smaller farms, have one general employee who occasionally checks on the milking robots. Same goes for automatic calf feeders. Calves require a lot of care and observation. Feeding them is an extra task that takes time away from other, potentially more important tasks. The time saved from the technological advancements that replace labor intensive jobs leave open opportunities for farmers to focus on other aspects of the farm. And finally, with the new automation and decreased need for labor, dairy farmers will no longer have to battle with the government on immigration laws. As AMS and ACF replace the labor-intensive jobs, less pressure from the public occurs regarding immigrants taking jobs and allow farmers to focus more on producing food. Additionally, with continued increase in automation and decrease in the need for labor, dairy farmers can focus on producing the highest quality product at the most efficient way possible benefitting both the consumer and the producer.

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