

# Nonfatal Agricultural Injuries in Florida: Crop Production<sup>1</sup>

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## Introduction

The crop production industry subsector consists of establishments such as farms, groves, and nurseries that are engaged in growing crops, trees, and seeds for food and fibers (US Census 2021). Various activities and tasks create numerous safety hazards and risks for crop production workers. According to the US Bureau of Labor Statistics' (BLS) Census of Fatal Occupational Injuries (CFOI), 221 crop production workers were killed in the nation in 2019 (BLS 2021a). The BLS investigates annual totals for injuries and fatalities, but does not provide details on these events that could be helpful to prevention efforts. Additionally, nonfatal occupational injury data from the BLS are not available for the state of Florida. The purpose of this publication is to examine nonfatal injuries and illnesses among crop production workers in Florida and to share findings with stakeholders, workers, and Extension educators/faculty in the industry.

## Crop Production Subsector

The crop production subsector grows crops for food and fiber and is divided into five industry groups (BLS 2021a):

- Oilseed and grain farming
- Vegetable and melon farming
- Fruit and tree nut farming

- Greenhouse, nursery, and floriculture production
- Other crop farming

National data show steady growth in the crop production industry subsector (USDA 2021). The number of private crop production establishments increased from 43,323 in 2011 to 49,615 in 2021 (BLS 2021a).

According to data from BLS's Survey of Occupational Injuries and Illnesses (SOII), the nationwide crop production subsector had an injury and illness rate of 141.5 per 10,000 workers for nonfatal cases involving days away from work in 2019 (BLS 2021b). Table 1 breaks down the nonfatal injury rates for specific groups within the crop production industry subsector during that year, with fruit and tree nut farming reporting the highest rates of injury and illness.

Gathering data about on-the-job injuries and illnesses is important because the data can be used by farm owners, managers, and employees to identify, mitigate, or eliminate hazards. Although national data for nonfatal injuries and illnesses are available, BLS has no data for the state of Florida. This report describes the incidences of injury and illness claims for the crop production subsector in Florida and takes a much-needed initial step towards safety interventions to prevent injuries in these sectors in the future.

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## Methods

Examining Workers' Compensation claims data is an effective way of evaluating the risks posed to employees in agricultural industries and identifying methods to reduce the risk of injury. This report is based on the Workers' Compensation data provided by the Florida Department of Financial Services' Division of Workers' Compensation. Data included claims reported under the North American Industry Classification System (NAICS) related to crop production (code 111) from 2010 to 2019.

Data from Workers' Compensation claims in Florida included variables for the date of the incident, injuries resulting in death, injury location (city, county, state, zip code), nature of the injury, injured body part, and cause of injuries. The 6-digit NAICS codes were also included. Agricultural industries in Florida are required to have workers' compensation for six or more regular employees and/or 12 seasonal employees who work more than 30 days (FDFS 2022).

A total of 8,383 injury or illness claims related to crop production were reported. Overall, 32 injuries resulted in fatalities, and 100 injury claims from other states were removed from the final data set. Data analyses were conducted using Microsoft Excel, and maps were developed using Tableau Desktop.

## Results

From 2010 to 2019, a total of 8,351 claims were reported among workers in crop production (NAICS 111) in Florida, and approximately 835 claims were filed per year (Table 2). Since 2010, the injury rate per 10,000 workers averaged 174 injuries or illnesses per year. Over the ten-year period, the data revealed that most of the reported claims related to crop production in Florida occurred during the winter and spring seasons. Over the course of the study period, the total number of claims per month ranged from 433 in July to 914 in May.

Table 3 and Figure 1 show the distribution of the claims by crop production industry groups. Most injuries occurred in the greenhouse, nursery, and floriculture industry group. Within this group, claims were mostly from floriculture (n=1,112) and nursery and tree production (n=1,056). The vegetable and melon farming industry group had the second-highest number of injury/illness claims. Fruit and tree nut farming-related injuries were mostly related to the orange (n=791) and other citrus (n=354) industries. Sugarcane farming workers accounted for almost half (n=465) of the other crop farming injuries. Workers in the

oilseed and grain farming group had the fewest injury/illness claims.

When considering the trends over the study period for each industry group, we observed an increased number of claims in vegetable and melon farming, while the number of claims decreased by more than half in fruit and tree nut farming (Figure 1). Greenhouse, nursery, and floriculture production was consistently the industry group with the highest number of claims.

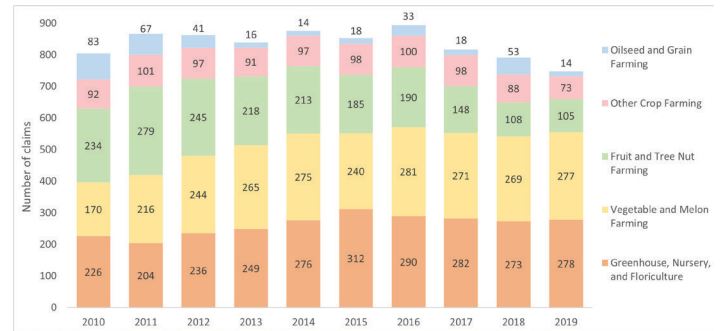


Figure 1. Number of claims per crop production industry group in Florida.

Credits: Joelle Francois, UF

## Claims by County

The three maps below illustrate the distribution of claims by crop production industry groups among counties in Florida. Overall, instances of illness and injury captured by Workers' Compensation data were distributed most heavily in central and south Florida. In Miami-Dade and Orange Counties, greenhouse, nursery, and floriculture workers experienced the highest number of occupational injuries/illnesses (Figure 2b). Claims made by vegetable and melon farmworkers were mostly reported in Collier, Palm Beach, and Manatee counties. Polk, Hillsborough, and Hendry Counties accounted for the most fruit and tree nut farming-related injuries/illnesses.

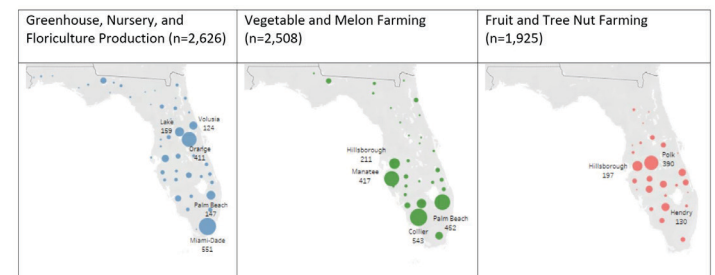


Figure 2. Distribution of claims by counties in Florida for crop production industry groups.

Credits: Serap Gorucu, UF/IFAS

## Body Part Harmed

Table 4 shows the injured body part categories for each industry group. The most common area injured was the

upper extremities (27%), which included mostly shoulders, fingers, and hands. Lower extremities (mostly knees, ankles, and feet) were the second most common, comprising 24% of injuries. Trunk injuries (20%) involved mostly lower back, abdomen, and chest injuries. Head injuries mostly involved eyes (44% of head injuries).

## Major Cause of Injuries/Illnesses

Two causal subcategories combined accounted for half of all Workers' Compensation claims in Florida (Table 5). "Fall, slip, or trip" was the most frequent cause of injury, making up 26% of cases; it was the most common among both fruit/tree nut farming workers and vegetable/melon farming workers. Strains resulting from lifting, pushing, pulling, twisting, and holding or carrying heavy objects were the second most common injury cause (24%).

## Summary

This study provided an opportunity to investigate nonfatal injury and illness claims for crop production subsector workers in Florida between 2010 and 2019. The data provided a total of 8,351 individual claims. The three industry groups with the highest number of injuries and illnesses claimed through Workers' Compensation during the study period were: greenhouse, nursery, and floriculture; vegetable and melon farming; and fruit and tree nut farming. Over the 10 years, the nonfatal injury claim rate in crop production remained relatively constant, with the highest rate in 2016. The lowest claim rates were observed in 2010 and 2019.

Injuries occurred mostly in the winter and spring months, when vegetable and citrus harvesting demands are higher. The most common causes were falls, slips, trips, or strains from various work-related tasks. Farmworkers mostly injured their upper and lower extremities. Thus, occupational safety programs should focus on fall prevention measures and proper workplace ergonomics. Geographically, injury and illness claims were mainly made in central and southern Florida.

Although Workers' Compensation data can clarify the specifics of injuries and illnesses, the demographics and the narrative description of cases were not provided in the data sets, making it harder to build specific intervention programs. Understanding the occurrence of these injuries among crop production workers is critical for implementing effective prevention programs. Extension agents can use these results to choose priority topics and timing for farm safety education.

Findings from this study revealed that most reported claims in Florida occurred during winter and spring months. Thus, conducting safety education/training in the fall and early winter months prior to busier harvesting seasons may be the most beneficial to the greatest number of workers. However, we recommend conducting these safety trainings whenever they are necessary.

## Acknowledgments

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Table 1. Nonfatal injuries among crop production workers in the United States, 2019.

Industry	Injury per 10,000 Full-Time Workers
Overall crop production	141.5
Oilseed and grain farming	121.1
Vegetable and melon farming	126.7
Fruit and tree nut farming	174.8
Greenhouse, nursery, and floriculture production	116.2
Other crop farming	147.1

Table 2. Trends in employment and Workers' Compensation claims in Florida.

Year	Claims	Employment*	Claims/10,000 Workers
2010	805	48,356	166
2011	867	49,565	175
2012	863	50,112	172
2013	839	49,736	169
2014	875	49,325	177
2015	853	48,775	175
2016	894	47,921	187
2017	817	46,288	177
2018	791	44,521	178
2019	747	44,571	168

\*Employment data were obtained from the BLS Quarterly Census of Employment and Wages (BLS 2021c).

Table 3. Distribution of injury claims per crop production industry in Florida, 2010–2019.

Crop Production Industry Group	NAICS Code	Claims (n=8,351)	Percentage
Greenhouse, nursery, and floriculture	1114	2,626	31.4%
Vegetable and melon farming	1112	2,508	30.0%
Fruit and tree nut farming	1113	1,925	23.1%
Other crop farming	1119	935	11.2%
Oilseed and grain farming	1111	357	4.3%

Table 4. Bodily injuries among crop production workers by industry in Florida, 2010–2019.

Body Parts	Greenhouse, Nursery, and Floriculture	Vegetable and Melon Farming	Fruit and Tree Nut Farming	Other Crop Farming	Oilseed and Grain Farming	Total (n)
Upper extremities	781	672	458	282	91	2,281 (27%)
Lower extremities	628	618	448	228	95	2,017 (24%)
Trunk	515	527	398	201	64	1,705 (20%)
Multiple body parts	507	442	414	124	82	1,569 (19%)
Head	168	216	177	82	22	665 (8%)
Neck	27	33	30	18	3	111 (1%)

Table 5. Causes of worker injury or illness per industry group in Florida.

<b>Cause of Injury/Illness</b>	<b>Greenhouse, Nursery, and Floriculture</b>	<b>Vegetable and Melon Farming</b>	<b>Fruit and Tree Nut Farming</b>	<b>Other Crop Farming</b>	<b>Oilseed and Grain Farming</b>	<b>Total</b>
Fall, slip, or trip injury (falls from ladders, fall into openings, falls on same level, etc.)	675	626	590	214	61	2,166 (26%)
Strain or injury by (lifting, pushing, pulling, twisting, repetitive motion, etc.)	718	544	433	214	101	2,010 (24%)
Miscellaneous causes (absorption, ingestion, or inhalation of harmful substances, stress, shock, trauma, etc.)	352	401	242	113	33	1,141 (14%)
Struck or injured by (falling or lifted or handled object, animals, machine, motor vehicle, etc.)	347	333	216	141	35	1,072 (13%)
Caught in, under, or between (object handles, machine or machinery, collapsing materials, etc.)	127	207	79	64	21	498 (6%)
Cut, puncture, scrape injured by (objects, powered and non-powered hand tools, etc.)	154	145	118	58	17	492 (6%)
Motor vehicle (collisions, overturns, etc.)	103	77	131	56	62	429 (5%)
Striking against or stepping on (stationary, sharp object, moving part of a machine, etc.)	89	102	77	40	14	322 (4%)
Burn or scald—heat or cold exposures (chemicals, temperature extremes, dust, fumes, gases, electrocutions, etc.)	40	68	29	29	12	178 (2%)
Rubbed or abraded by (repetitive motion)	21	5	10	6	1	43 (1%)