Agriculture Fatalities in Washington State 1998 to 2008 Report: 47-18-2009

Washington State Fatality Assessment and Control Evaluation (FACE).

Date: June 29, 2009.

Washington State Department of Labor & Industries

SHARP Safety & Health Assessment & Research for Prevention

Agriculture Fatalities in Washington State, 1998-2008

Summary of Key Facts

Industry sector fatalities:

- Crop production, 55 (70%).
    - Fruit and tree nut farming sub-sector, 25 (32%).
- Animal production, 14 (18%).
- Support activities for agriculture, 9 (12%).

Machinery-related fatalities:

- Ranked highest annually.
- Accounted for 30 (38%) of total fatalities.

Tractor-related fatalities:

- Accounted for 24 (31%) total fatalities.
    - 9 were rollovers.
    - 6 had no Roll-Over Protection Systems (ROPS).

Motor vehicle-related fatalities:

- Accounted for 15 (20%) of total fatalities.
- Were 10% among Hispanics and 25% among Non-Hispanics.

Agriculture Fatalities in Washington State, 1998-2008

In Washington State, there were 78 total fatalities in the agriculture sector from 1998 to 2008. Of these, 70% were related to crop production, 18% were related to animal production, and 12% were related to support activities for agriculture.

According to the National Institute for Occupational Safety and Health (NIOSH), agriculture ranks among the most hazardous industries. Farming is one of the few industries in which the families (who often share the work and live on the premises) are also at risk for injuries, illness, and death.

The agriculture sector as defined in this report comprises establishments primarily engaged in growing crops and raising animals on a farm or ranch. All of the fatalities presented in this report were classified according to their specific NAICS codes as crop production, animal production, or support activities for agriculture.

Data for this report was compiled by the Washington State Fatality Assessment and Control Evaluation (FACE) program. The data presented in this report was collected according to the North American Industrial Classification System (NAICS). NAICS six digit codes beginning with 111XXX, 112XXX, and 115XXX were used for this report. These represent the crop production, animal production, and support activities for agriculture industries. This report includes Washington State fatalities as classified by the WA State FACE program and may vary from data generated by other sources due to counting criteria.

This report does not contain data on 20 fatalities in the “Lawn and Garden Services”, SIC code 0782, and “Ornamental Shrub and Tree Services” SIC code 0783. These were previously classified in the Agriculture, Forestry, and Fishing sector but are now under the NAICS code for “Administrative and Support Services”.

How does Washington compare to nationwide statistics?

Statistics for U.S. farm workers, 2007 (NIOSH)[1]

- Agriculture workers fatality rate was 23.5 deaths per 100,000 workers.
- 113 youth less than 20 years of age die annually from agriculture-related injuries.
- Leading sources of fatal injuries to youth on U.S. farms:
    - 23% percent involved machinery (includes tractors).
    - 19% involved motor vehicles (includes ATVs).
    - 16% were due to drowning.

According to the census of agriculture conducted by The National Agricultural Statistics Service, there were 39,284 farms in Washington State in 2007.

Statistics for Washington agriculture workers, 1998-2008 (WA FACE):

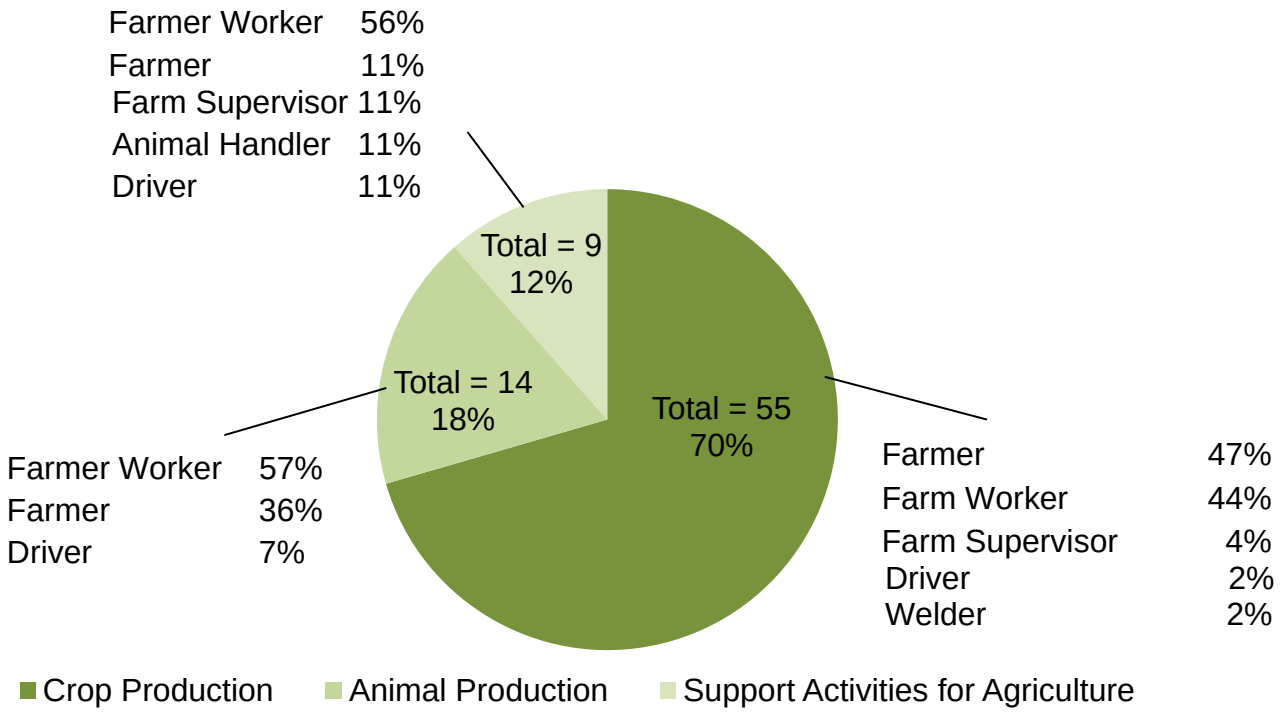
- Five youth less than 20 years of age died in Washington from 1998-2008.
- Leading sources of fatal injuries on WA farms:
    - 38% percent involved machinery (includes tractors).
    - 20% involved motor vehicles (includes ATVs).
    - Drowning, falls, and homicides each accounted for 8%.

The average number of fatalities from 1998-2008 was seven per year. The range was between 4 and 14 per year for this period and 2008 had half the fatalities of 1998. The number of fatalities attributed to machinery incidents was consistently higher than those due to motor vehicle incidents with the exception of 1998. For most years, the variation in total fatalities is related to both machinery and motor vehicle incidents. This pattern is clear from 1999-2005. 1998 was a high year for total fatalities and different from subsequent years due to two related drowning, two related homicides, and higher than average motor vehicle incidents.

1. NIOSH Safety and Health Topic: Agricultural Safety http://www.cdc.gov/niosh/topics/aginjury/.

What agriculture sectors were affected?

Fatalities by Agriculture Sector in Washington State, 1998-2008



How were workers in different sectors of agriculture affected?

Fatalities by Agriculture Sector and Incident Type in Washington State, 1998-2008

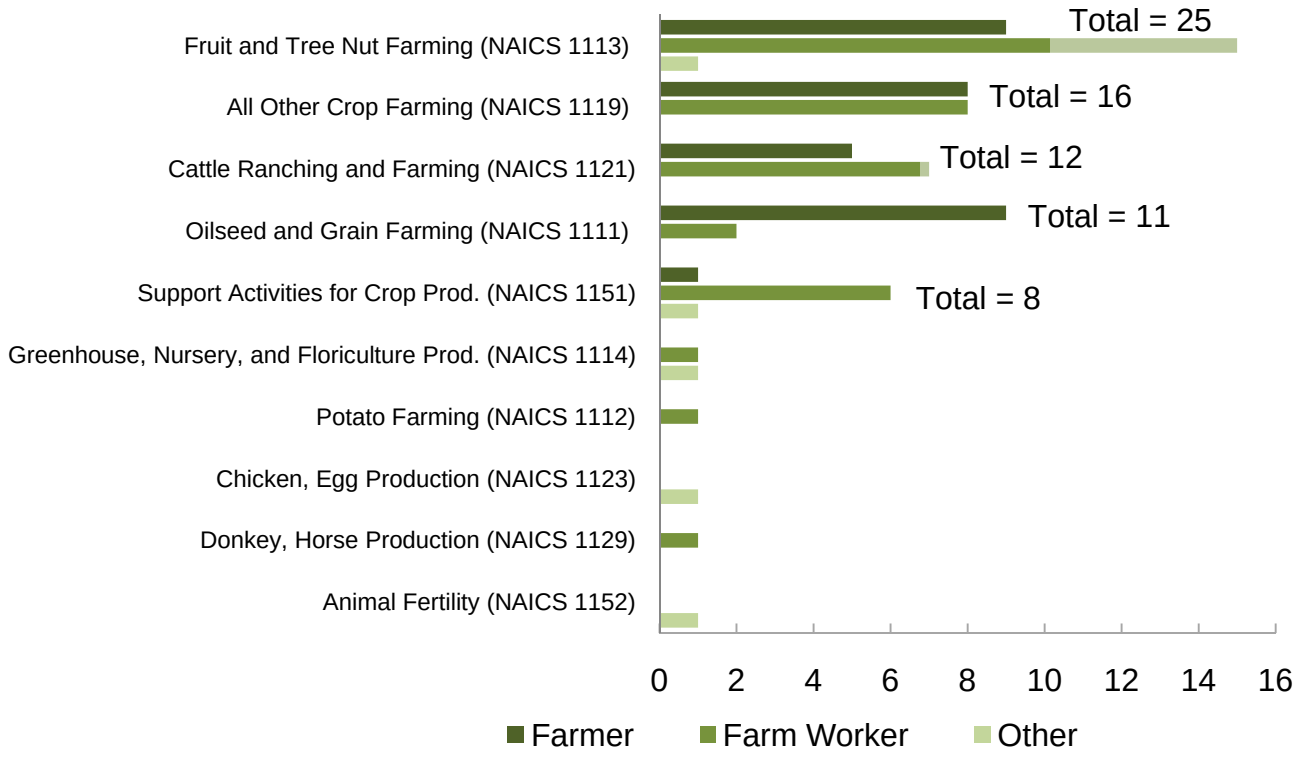
Crop Production	Machinery	Motor Vehicle	Fall	Other	Total
Farmer	16	4	2	3	25
Farm Worker	9	4	3	10	26
Farm Supervisor		1		1	2
Driver		1			1
Welder	1				1
Total	26	10	5	14	55
Animal Production					
Farmer		2		3	5
Farm Worker	1	2	1	4	8
Driver		1			1
Total	1	5	1	7	14
Support Activities for Agriculture					
Farmer				1	1
Farm Worker	2			3	5
Farm Supervisor	1				1
Animal Handler				1	1
Driver				1	1
Total	3			6	9

Farm workers accounted for more fatalities than farmers in all three agriculture sectors. In the crop production sector, machinery was involved in 33% of fatalities. Of these machinery fatalities, farmers were involved in 61% and farm workers in 35%.

How were workers in different types of agriculture affected?

The chart presents fatalities by type of agriculture as defined by the NACIS four digit codes.

Fatalities by Agriculture Type in Washington State, 1998-2008

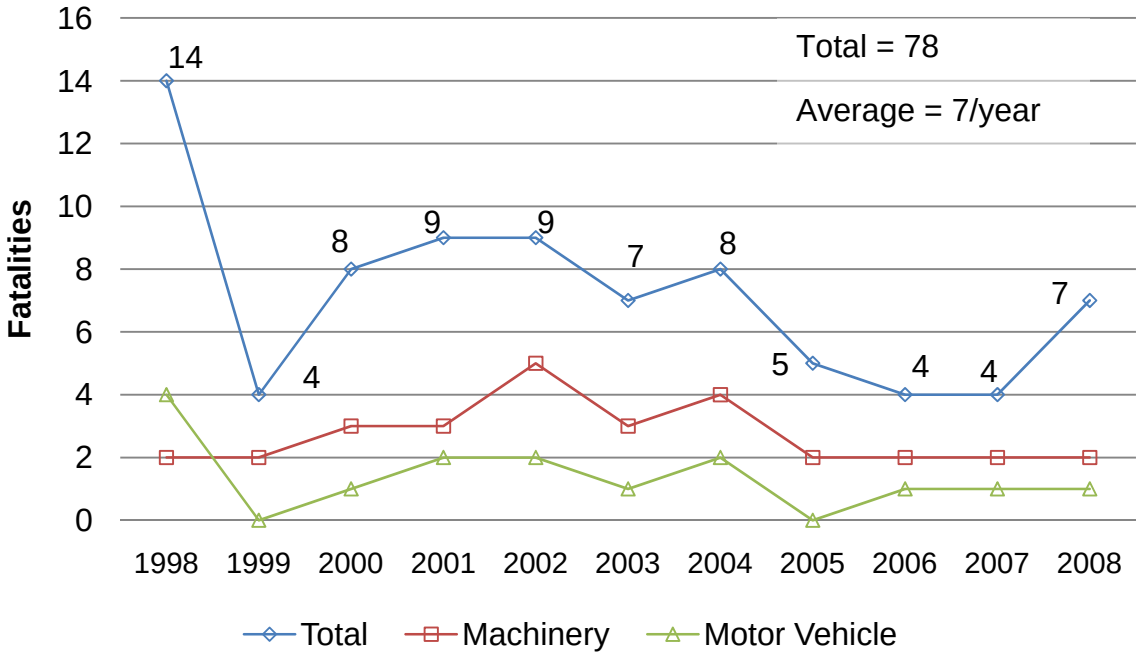


Within each type of agriculture, fatalities are categorized by farmer, farm worker, or other job title. Fruit and tree nut farming had more fatalities than other types of agriculture. Within fruit and tree nut farming, there were 67% more fatalities among farm workers than farmers or other workers. There were more farmer than farm worker fatalities in oilseed and grain farming while more farm workers than farmers or other workers were killed in support activities for crop production.

What was the trend over time and what were the major contributors?

The chart shows the trend in total agriculture fatalities and those attributed to machinery and motor vehicle incidents.

Agriculture Fatalities by Machinery and Motor Vehicle in Washington State, 1998-2008



The majority of fatalities in agriculture were due to machinery incidents followed by motor vehicle incidents. For most years 1998-2008, machinery and motor vehicle incidents comprised approximately 60-70% of the total fatalities each year. The increase from 4 fatalities in 2007 to 7 in 2008 is not accounted for by machinery or motor vehicle incidents but by more struck by object incidents and an animal related fatality.

What types of machine and vehicle incidents were involved?

The table shows agriculture fatalities by the type of machine or vehicle and the incident involved.

Agriculture Fatalities by Incident Type in Washington State, 1998-2008

Machine/Vehicle Type	Incident	Number
Tractor	Run over/struck by	10
	Roll-over off road	6
	Roll-over on road	3
	Struck by motor vehicle	2
	Caught in auger pto	1
Grain Auger	Caught in	1
Bailer	Caught in	1
Chopper	Caught in	1
Forklift	Rollover	1
Harvester	Caught in	1
Loader	Run over/struck by	1
Mower	Run over/struck by	1
Swather	Run over/struck by	1
Total		30

Tractor and machinery incidents accounted for 30 fatalities. Tractor fatalities were the most frequent type with several other machines accounting for a single fatality each. The most frequent machine-incident fatalities were being run over or struck by a tractor. Tractor roll-overs were almost as frequent. Being caught in machinery accounted for 17% of fatalities.

Were Roll-Over Protective Structures (ROPS) involved?

Agriculture Tractor Fatalities and ROPS usage in Washington State, 1998-2008

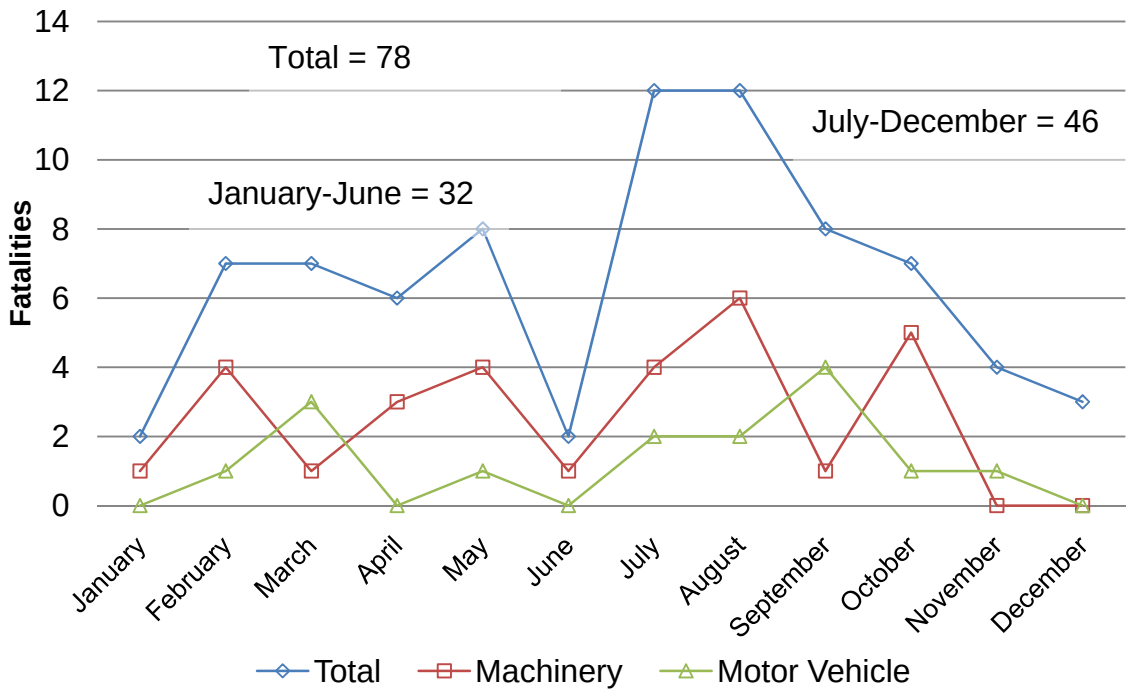
Tractor Roll-overs		
Apple farming		4
No ROPS	3	
ROPS unknown	1	
Rice, wheat, barley farming		2
ROPS unknown	2	
Fruit farming		1
No ROPS	1	
Agriculture processing		2
No ROPS	2	
Total		9

There were nine total tractor roll-over fatalities. Of the nine rollover fatalities in this report, six did not have Roll-Over Protective Structures (ROPS) or restraint systems. ROPS have been developed to be used on tractors to reduce roll-over injuries and fatalities. Four of these fatalities involved tractors used for apple farming. Three of the four tractor roll-over fatalities used in apple farming did not have ROPS. Two tractor roll-over fatalities in agriculture processing were also documented as not having ROPS. Operators of tractors in low profile areas like orchards, vineyards, and hop yards are especially at risk as some of these tractors are not required by WA State law to have ROPS deployed during certain activities. ROPS used with seatbelts are the most effective way to prevent tractor overturn deaths. Many older tractors have not been retrofitted yet with ROPS. The State of Washington requires all tractors manufactured after October 25th, 1976 to be retrofitted with ROPS. Tractors built or sold before 1976 must be retrofitted with ROPS as an optional accessory if manufacturer designed retro-fit kits are available.

How did fatalities in agriculture vary throughout the calendar year?

The average number of fatalities for any month of the year was six while the number ranged from two to twelve. It appeared that fatalities went through two phases each year. They increased in the first half of the calendar year, decreased in June, then increased and decreased again in the second half of the year. In the first half of the year (January –June) there were 32 total fatalities. There were 46, nearly 50% more, in the second half (July-December). Machinery related fatalities peaked in August and were higher than motor vehicle fatalities for most months. The pattern where machinery fatalities peak first and motor vehicle fatalities follow likely represents the harvest and transport cycle.

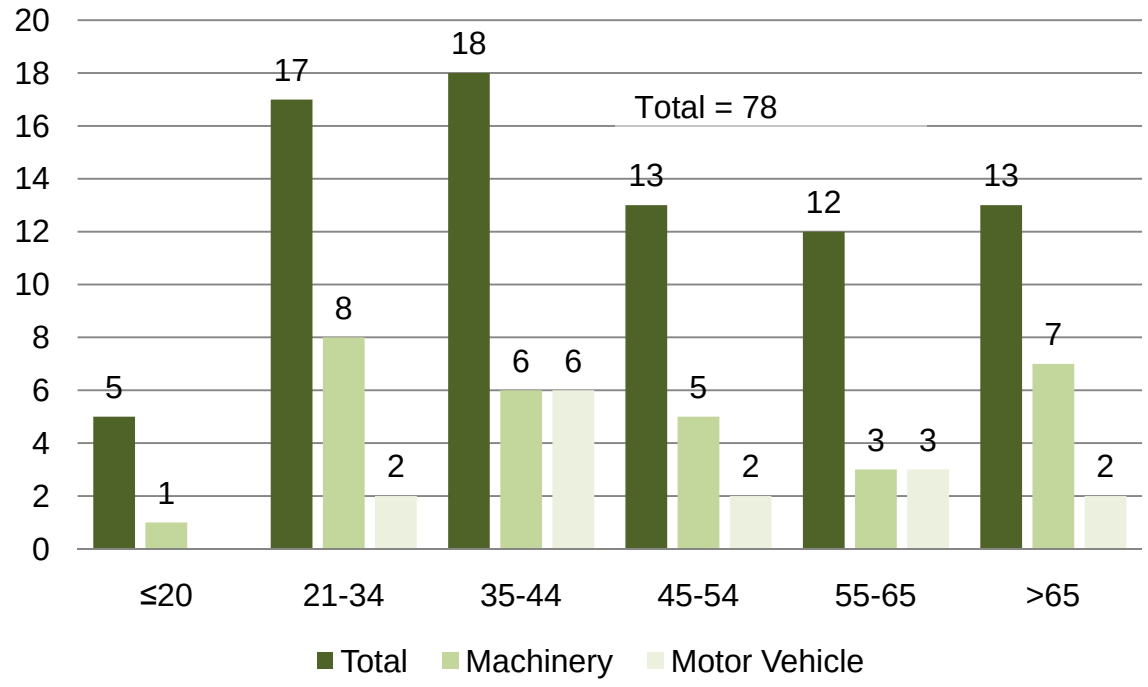
Agriculture Fatalities by Machinery and Motor Vehicle per Month in Washington State, 1998-2008



How were different age groups affected?

The highest number of fatalities occurred among those 35-44 years old. In this age group, machinery and motor vehicle incidents each accounted for six fatalities Workers between ages 21 and 34 were next highest in terms of fatalities. This age group had more machinery than motor vehicle fatalities. Age groups above 45 years old were similar in number of fatalities. Those over 65 years old had more machinery related fatalities, over half the total, than other groups over 45. Workers less than 20 years old had the lowest number of total and machinery related fatalities.

Agriculture Fatalities by Machinery and Motor Vehicle per Age Group in Washington State, 1998-2008



There were two female fatalities of the 78 total. One female was killed in an on road vehicle to vehicle incident and the other was the victim of a homicide. Neither female was a child.

Which Washington State counties were affected?

The Washington counties of Yakima and Grant had the highest number of fatalities between 1998 and 2008 with 16 and 12 respectively. The next closest was Franklin County with seven. The overall average age of fatality victims was 47 years old.

Agriculture Fatalities by County in Washington State, 1998-2008

County	Number
Adams	3
Benton	6
Chelan	4
Cowlitz	1
Douglas	2
Franklin	7
Grant	12
Grays Harbor	3
Klickitat	3
Lewis	2
Lincoln	1
Okanogan	4
Pierce	1
Skagit	1
Spokane	4
Stevens	3
Walla Walla	2
Whatcom	1
Whitman	2
Yakima	16
Total	78

Which ethnic groups were involved in agriculture fatalities?

Agriculture Fatalities by Ethnicity, Industry and Incident in Washington State, 1998-2008

Non-Hispanic, Total = 48, 67% Farmers		Total	Percent
Industry	Crop Production	33	69%
	Animal Production	11	23%
	Support Activities for Agriculture	4	8%
Incident	Machinery	17	35%
	Motor Vehicle	12	25%
	Drowning	4	8%
	Electrocution	3	6%
	Fall	3	6%
	Animal Injury	2	4%
	Fire	2	4%
	Inhalation Poisoning	2	4%
	Aircraft	1	2%
	Struck by Object	1	2%
	Suicide	1	2%
Hispanic, Total = 30, 87% Farm Workers		**Total**	**Percent**
Industry	Crop Production	22	73%
	Animal Production	3	10%
	Support Activities for Agriculture	5	17%
Incident	Machinery	13	43%
	Homicide	6	20%
	Motor Vehicle	3	10%
	Fall	3	10%
	Drowning	2	7%
	Struck by Object	2	7%
	Animal Injury	1	3%

The majority of non-Hispanic fatalities were classified as farmers while the majority of Hispanic fatalities were classified as farm workers. A higher percentage of non-Hispanic workers were involved with animal production whereas a higher percentage of Hispanic workers were in support occupations. Both Hispanic and non-Hispanic workers were involved most frequently in machinery incidents. Following machinery-related fatalities, Hispanic workers were victims of homicide most frequently while non-Hispanic workers were involved in motor vehicle incidents.

Agriculture Fatalities-three cases

HAZARD: Tractors

On February, 27, 2005, an orchardist died when the tractor he was driving up a steep hill lost traction and slid down the hill and rolled over onto him.

RECOMMENDATIONS:

- Install a rollover protective structure (ROPS) whenever feasible, or when there are no overhead clearance issues.
- Wear a seatbelt.
- Do not operate tractors on slopes that are too steep or slippery.
- Tractor operators should be made aware of overturn hazard and methods to reduce this hazard, including safe driving on sloping grounds, keeping the bucket low while driving, and using counterweights on the tractor.
- Back up steeper slopes, if they cannot be avoided.

HAZARD: All Terrain Vehicles (ATVs)

On July 21, 2008, a farm worker was killed while operating an ATV four wheeler on a public roadway. The victim was moving water wheel lines in a hay field and was using the ATV to travel between the two lines. He lost control of the ATV on the road and it overturned, landing on him.

RECOMMENDATIONS:

- ATV operators should participate in a hands-on ATV safety training course.
- All operators should wear proper protective equipment, including a helmet.

HAZARD: Electrocution

On August 16, 2008, a farmer and a helper were moving a grain auger by hand when it contacted an overhead power line and the farmer was electrocuted.

RECOMMENDATIONS:

- Survey the work site to identify hazards, especially those posed by the locations of overhead electrical lines. All employees should then be informed of the possible hazards and encouraged to report any unsafe work conditions.
- Keep vehicles, equipment, tools, and people at *least* 10 feet from overhead power lines.
- Lower the grain auger to a horizontal position prior to movement.

Want more information?

Produced by the **Washington State Fatality Assessment & Control Evaluation (FACE) Program**, which is managed by the Safety and Health Assessment and Research for Prevention (SHARP) Program.

SHARP Program
Washington Department of Labor & Industries
PO Box 44330
Olympia, WA 98504-4330
360-902-5669 or 1-888-667-4277 (toll-free).
http://www.Lni.wa.gov/Main/ContactInfo/Safety/Sharp.asp.

NIOSH Safety and Health Topic: Agricultural Safety
(http://www.cdc.gov/niosh/topics/aginjury/).

Preventing Death and Injury in Tractor Overturns with Roll-Over Protective Structures
(http://www.cdc.gov/niosh/blog/nsb010509_rops.html).

The 2007 Census of Agriculture
http://www.agcensus.usda.gov/Publications/2007/Full_Report/Volume_1,_Chapter_1_State_Level/Washington/index.asp

National Ag Safety Database
http://www.cdc.gov/nasd/

Want more information?

DOSH Consultation Program

Washington State Department of Labor and Industries
(http://www.Lni.wa.gov/Safety/KeepSafe/Assistance/Consultation).

Everett (Region 1, Northwest Washington): 425-290-1300.

Seattle (Region 2, King County): 206-515-2800.

Tacoma (Region 3, Pierce, Kitsap, Clallam, and Jefferson Counties): 253-596-3800.

Olympia (Region 4, Southwest Washington): 360-902-5799.

East Wenatchee (Region 5, Central and Southeastern Washington): 509-886-6500.

Spokane (Region 6, Eastern Washington): 509-324-2600.

DOSH Technical Services

Tumwater Central Office – Safety: 360-902-5460.

Washington State Department of Labor & Industries

SHARP Safety & Health Assessment & Research for Prevention

The Safety and Health Assessment and Research for Prevention (SHARP) Program at the Washington State Department of Labor and Industries is funded in part by the National Institute for Occupational Safety and Health (NIOSH) to run the Fatality Assessment and Control Evaluation (FACE) Program in Washington State (Cooperative Agreement No.: 3 U60 OH008487-02S1). The FACE Program collects information on all work-related fatalities in Washington State, investigates select incidents using a safety systems/root-cause approach, and develops reports and other outreach activities. The FACE Program is not compliance-oriented. Its goal is to reduce the number of work-related acute trauma injuries and deaths.