

Tractor Driver Knocked Off Tractor By Tree Branch¹

California NURSE Project²

SUMMARY: CASE 192-548-01

A tractor driver was pulling a discer through an apricot orchard. A discer is made of two rows of round metal blades that the tractor drags through the soil. The driver looked over his shoulder to check the discer. As he turned to face forward again, a low tree branch hit him on the head and knocked him off the tractor.

The driver fell between the back of the tractor and the discer. The tractor was still pulling the discer forward. The driver rolled as far out of the way as he could. A blade of the discer caught his forearm and cut it to the bone. Luckily, the tractor ran into a tree and stalled, so the blade was not pulled all the way across the driver's arm.

He did not have a phone or radio to call for help. Also, he was working alone. The driver walked to a house about a quarter mile away, where he called for an ambulance.

How could this injury have been prevented?

- Trim branches along orchard rows before driving a tractor down the rows.
- Tractors should have a rollover protective structure (ROPS) and seat belts.
- Tractors should have a cage to protect the driver from branches.
- Workers should have a telephone or radio to call for help.

BACKGROUND

On November 18, 1992, the NURSE staff received a telephone call from a rural ambulance service. That morning they had responded to a agricultural injury in an apricot orchard. A tractor driver was knocked off his tractor by a branch, then run over by the farm implement (discer) his tractor was pulling. The driver sustained a laceration to his forehead, and his right forearm was almost severed.

A nurse from the NURSE Project interviewed the worker in his home on November 23, 1992. On December 4, 1992, the nurse discussed the incident, by telephone, with one of the orchard's owners. On December 17, 1992, the nurse conducted an on-site investigation. NURSE staff also reviewed the Emergency Medical Services (EMS) ambulance record and the hospital medical records.

The California Occupational Safety and Health Administration (Cal/OSHA) was not notified and did not investigate the incident.

During the telephone interview, the farm owner stated that he had a written safety program. However, this program was not available for review at the time of the site visit. During this visit, the nurse outlined the seven point injury prevention program required by Title 8 California Code of Regulations 3203 -- Injury and Illness Prevention Program. The farmer said that his written plan covered five of the seven points, but lacked the written hazard communication and hazard evaluation components. (As of July 1, 1991 the State of California requires all employers to have a written seven point injury prevention program: 1. designated safety person responsible for implementing the program; 2. mode for

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ensuring employee compliance; 3. hazard communication; 4. hazard evaluation through periodic inspections; 5. injury investigation procedures; 6. intervention process for correcting hazards; and 7. provide safety training and instruction.)

The incident took place in an apricot orchard owned and operated by a father and son. The farm includes grape vineyards and apricot, plum, and nectarine orchards that cover approximately 1,000 acres. The farm employs 4 full-time workers, 20 casual workers (working 1-12 weeks per year), 50 seasonal workers (working 13-37 weeks per year), and 2 family members.

The injured tractor driver had worked for the farm owners for nine years and had eight years of experience in discing. He stated that he had received safety training in discing. He told the nurse that two years ago he had experienced a similar incident where a branch hit him and cut his head, but had not knocked him off his tractor.

INCIDENT

On November 18, 1992, at approximately 8:30 a.m., a 42 year-old male Hispanic tractor driver was working alone, discing the ground between rows of fruit trees. A discer has two rows of round metal blades. The blades are dragged through the ground by a tractor, which breaks up and cultivates the soil. The tractor used was a low profile tractor, that is, a tractor with a low center of gravity and a wide wheelbase.

The tractor driver entered an apricot orchard after discing the rows between plum trees. The tractor was about 60 feet into the new row, traveling at an estimated speed of 4-5 miles per hour. The driver turned around to check that his discer was properly aligned in the row. The moving tractor passed under a low branch. As he turned to face forward, this branch struck him on the forehead and knocked him off the tractor. He fell off the back of the tractor, into the space between the tractor and the discer he was pulling.

There was a distance of about ten feet between the back of the tractor and the front of the discer. The driver rolled as far out of the path of the moving discer as he could. The tractor continued moving, but veered to the right, in the direction of the tractor driver. One of the discer blades ran over his right forearm, lacerating it almost to the bone. Before completely severing the arm, the tractor and discer hit a tree and stopped.

The injured tractor driver received a deep, four inch laceration to his forearm, and a minor laceration to his forehead from the branch. He got up and walked about one-quarter mile to the nearest house to seek help. The homeowner called 911. Emergency Medical Services (EMS) received the call at 8:49 a.m., and arrived on the scene at 8:55 a.m. They immobilized him, applied dressings to his forehead to stop the bleeding, and applied a splint to his right arm. An IV was started and oxygen administered. The injured tractor driver was taken to the nearest hospital, arriving at 9:19 a.m. His forehead was stitched in the emergency department. He was given pain medication, admitted to the hospital, and taken to the surgery unit to repair his right arm laceration. He also suffered multiple abrasions and experienced back pain.

The injured tractor driver was discharged from the hospital the next day with appointments for follow-up visits to have his stitches removed. At the time of the interview, five days after the incident, he told the nurse from the NURSE Project that he was experiencing severe back pain and dizziness.

PREVENTION STRATEGIES

1. The employer should have a comprehensive written injury prevention program (Title 8 California Code of Regulations 3203. See Background). In this incident, the employer's safety program should have included components on hazard evaluation and hazard communication. Hazard evaluation of the work environment should include evaluating the orchard before it is discing. Routine orchard maintenance should include cutting low branches that overhang the rows. If a complete injury prevention program had been written and implemented, this injury might not have occurred.
2. Tractors should be equipped with seat belts. The use of a seat belt would have prevented the tractor driver from falling off the tractor when he was struck by the branch. Tractors with seat belts must also be equipped with rollover protective structures (ROPS). Although the California Code of Regulations has a special section that exempts low profile tractors used in orchards and vineyards from the ROPS requirement, the safest alternative is to equip all tractors with seat belts and ROPS. (A low profile tractor is 18 inches or less from ground to chassis, with the front wheel spacing equal to the rear wheel spacing.) If the tractor involved in this incident had a seat belt and ROPS, the driver would not have fallen off the tractor when he was struck by the branch (Title 8 California Code of Regulations

3651: Agricultural and Industrial Tractors, and Title 8 California Code of Regulations 3653: Seat Belts. "Seat belt assemblies... shall be provided on all equipment where rollover protection is installed and employees shall be instructed in their use").

3. Equipment should be designed with safety engineering in mind. The NURSE Project investigated a similar incident (NURSE Report #3) in which a tractor driver was knocked off his tractor by a branch. After the incident, the farm designed and built a driver's cage with a steel mesh screen to protect the tractor driver from low-lying branches. Being struck by branches is a common occurrence. In this incident, the injured worker reported that he had been struck by a branch and injured his head in a previous incident. If the tractor had been equipped with a protective cage for the driver, this injury would not have occurred. (Fiberglass shields are available commercially and may be installed on tractors to prevent drivers from being hit by branches. However, these are not popular with farm owners because they do not last more than one season.)
4. Employers and manufacturers of agricultural equipment should consider safety engineering when using or designing equipment. In this incident, the most severe injury occurred when the tractor pulled the discer forward over the driver's forearm. If the tractor had a mechanism that would stop it when the driver was not in the seat, the driver might not have been run over by the discer. Some tractor manufacturers have already incorporated this safety feature.
5. Employers and manufacturers of agricultural equipment should consider safety accessories when using or designing equipment. The discing of orchards is usually done alone and requires the driver to continually turn around and check if the discer is aligned in the row. If the tractor had a wide-angle rear view mirror which the driver could use to check the discer without turning his head, he might have seen the low branch and avoided it in time. The tractor could also be equipped with an alignment beam so that the driver could keep the tractor aligned without looking over his shoulder. Tractors that push instead of pull implements are also now available. If any of these safety features had been in use, this injury might not have occurred.
6. Workers should be issued portable communication devices to call for help in emergencies. Also,

employers who have workers working alone should have a routine method of monitoring their employees. In this incident, the worker had to walk approximately one-quarter of a mile to request help. If the injured worker had a portable communication device to call the co-owner for help, emergency medical treatment would not have been delayed while he walked to the nearest telephone (Title 8 California Code of Regulations 3400(f): "At isolated locations, provisions must be made in advance for prompt medical attention in case of serious injuries. This may be accomplished by... a telephone communication system for contacting a doctor). If the injured worker had been unable to walk, he may not have been found for several hours and may have bled to death. Employers should establish contact with workers on a periodic basis throughout the day.

FURTHER INFORMATION

For further information concerning this incident or other agriculture-related injuries, please contact:

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The NURSE (Nurses Using Rural Sentinel Events) project is conducted by the California Occupational Health Program of the California Department of Health Services, in conjunction with the National Institute for Occupational Safety and Health. The program's goal is to prevent occupational injuries associated with agriculture. Injuries are reported by hospitals, emergency medical services, clinics, medical examiners, and coroners. Selected cases are followed up by conducting interviews of injured workers, co-workers, employers, and others involved in the incident. An on-site safety investigation is also conducted. These investigations provide detailed information on the worker, the work environment, and the potential risk factors resulting in the injury. Each investigation concludes with specific recommendations designed to prevent injuries, for the use of employers, workers, and others concerned about health and safety in agriculture.