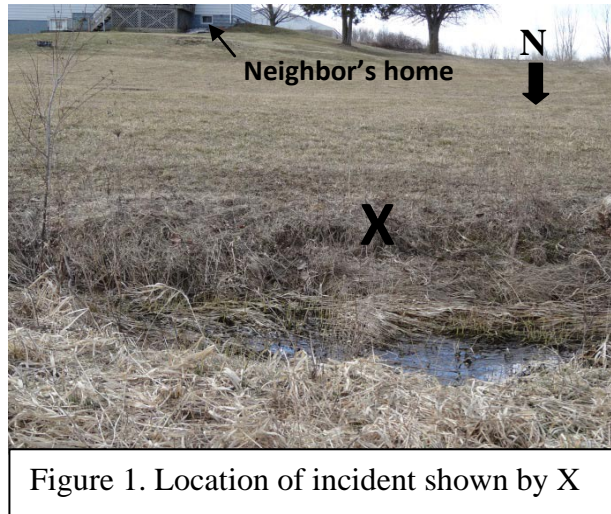


MIFACE Investigation Report: 12MI059

SUBJECT: Land Owner Pinned by Tractor Bucket When Working in Ditch

Summary

In summer 2012, a male land owner in his 70s died when his Massey Ferguson Model 65 tractor equipped with a front end loader bucket slid down a drainage ditch bank, pinning him between the bucket and the opposite ditch bank. He was clearing the ditch of weeds and small trees, for both drainage purposes and in preparation of repair to the culvert providing access to a field adjacent to his home that he rented to a farmer. The decedent placed the tractor on the south side of the ditch, near the ditch edge, with the bucket located over the ditch (See Figure 1 and Drawing 1). He



dismounted from the tractor, leaving the tractor idling in neutral. He did not apply the parking brake. The decedent entered the ditch to tie a chain around a small tree and tall weeds so he could pull them out using the bucket. He had placed the chain around the tree and attached the chain to the bucket when the tractor slid down the ditch bank. The bucket struck his head and then pinned him across his back against the north wall of the ditch. His spouse saw the tractor position and ran to investigate. She began to call for help as she drew near the incident scene. Neighbors responded, and one of them mounted the tractor and applied the parking brake while another neighbor called for emergency response. Emergency response arrived, lifted the bucket from the decedent, and declared him dead at the scene.

Factors Involved:

- Improper tractor operation –tractor left running, no brake application, bucket raised on sloped area near ditch when he dismounted
- Misuse of the tractor's loader bucket
- Working on the ground in the travel path of the tractor

RECOMMENDATIONS

- Tractor operators should read and understand the manufacturer's operator's manual(s) to ensure safe work practices, such as safe tractor shutdown, using wheel chocks to prevent tractor movement, and not working under an unsupported raised hydraulic bucket, are followed when using the tractor and attachments.

- Before initiating a task, conduct a site assessment to determine hazards and appropriate work practices to minimize identified hazards, including topography challenges, equipment location and working on the ground in the travel path of equipment.

BACKGROUND

In summer 2012, a male land owner in his 70s died when his tractor equipped with a front end loader bucket that he was using to pull weeds from a ditch slid down the ditch bank, pinning him between the bucket and the opposite ditch bank. MIFACE learned of this incident from a newspaper clipping. MIFACE contacted the decedent's spouse, who agreed to speak with the MIFACE investigator about the incident as well as accompany the investigator to the incident site. MIFACE took incident scene pictures with the approval of his spouse. During the writing of this report, the death certificate, police, and medical examiner reports were reviewed.

The decedent was a land owner who rented 10-15 acres of land to a local farmer to plant and harvest corn. Abutting the farm land he rented was a drainage ditch. The culvert to access the farm land crossed the ditch and was accessed via a two-track path from the main road. The drainage ditch separated two properties – the decedent's front yard to the north and a neighbor's back yard to the south (Drawing 1).

The decedent was very familiar with the Massey Ferguson Model 65 tractor operation when it was equipped with the front end loader bucket. He had used it while building a rock wall for the home, mowing the property, and clearing additional land for future agricultural rental opportunity. It is unknown if there were counterweights on the rear of the tractor or if the tractor had ballasted tires.

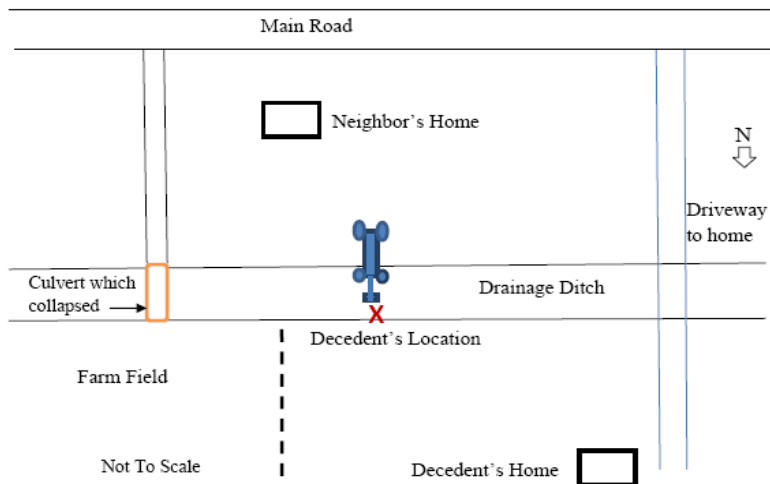
His spouse thought that the tractor was manufactured sometime in late 1950-early 1960s. The tractor's front tires were set at a wide setting. According to the decedent's spouse, the decedent took good care of the tractor and knew of no problems with the tractor brakes. The tractor was not equipped with a roll over protection structure and seat belt.

INVESTIGATION

The decedent was clearing the ditch of weeds and small trees to facilitate field drainage as well as in preparation of fixing the culvert which had collapsed. He had started clearing the ditch from the driveway leading to his home, working east towards the culvert. The ditch had a vertical drop of approximately three feet.

A week prior to the incident, the decedent's wife was helping him clear the ditch of small poplar trees and tall weeds. The decedent's wife described his work practice the previous week when she worked with him: He drove the Massey Ferguson tractor with the attached loader bucket to the north side of the ditch. He placed the tractor near the ditch edge with the tractor bucket over the ditch. He lowered the tractor bucket so he could reach it while standing at the base of the

ditch. With the tractor in neutral, he dismounted the tractor. He did not set the parking brake. He entered the ditch, and tied a chain around the poplar trees/tall weeds and then attached the chain to the bucket. The condition and rating of the chain was unknown. He climbed out of the ditch, mounted the tractor and then raised the bucket to pull the trees/weeds from the ditch. While he was working in the ditch, his wife was standing near the tractor. The tractor began to move forward. The decedent's wife quickly turned the tractor off to stop it from rolling into the ditch. At this time, the decedent's wife informed him of what happened and that he should use wheel chocks or "something to keep the tractor from moving".



Drawing 1. Drawing of incident scene. Not to Scale.

At this time, the decedent's wife informed him of what happened and that he should use wheel chocks or "something to keep the tractor from moving".

On the day of the incident, his wife was working at the front of their home while the decedent continued to clear the ditch. He drove the tractor down the driveway and to the south side of the ditch, placing the tractor near the edge. The distance of the front wheels of the tractor to the edge of the ditch was unknown. Although fairly flat at the location of his work, the back yard had slight downward slope to the ditch. It is postulated that he used the same work practice as he did the previous week when working with his wife: dismounted, left the tractor in neutral, did not set the parking brake, did not block the tractor wheels, attached the chain to a poplar tree and the other end of the chain to the metal V-shaped piece on the bucket.

The actual sequence of events leading to his death was not witnessed and is unknown. It is postulated that the tractor vibrated causing movement toward the ditch due to the slope or when attaching the chain from the tree to the bucket, he pulled down on the bucket, facilitating tractor movement toward the ditch. The decedent's wife happened to look back toward the ditch. She saw the front of the tractor leaning into the ditch. She ran toward the ditch, yelling for help. A neighbor, who was inside the home with her boyfriend, heard the decedent's wife yelling and crying for help. When she looked out the window, she saw the decedent's wife by the tractor in the ditch. She yelled for her boyfriend to help assist the decedent's wife and she called 911.

The boyfriend ran out of the house and found the decedent's wife by the tractor with her husband face down in the ditch with the front end bucket of the tractor pinning him against the north wall of the ditch. He noted the tractor was idling and the tractor wheels were not spinning. The boyfriend stated to the responding police agency that he did not know how to control the tractor or how to raise/lower the bucket, so he mounted the tractor and applied the brake to keep the

tractor in position until emergency responders arrived. Emergency responders lifted the tractor bucket from the decedent's back. No resuscitation attempts were made. The decedent was declared dead at the scene.

CAUSE OF DEATH:

The cause of death listed on the death certificate was multiple blunt force trauma of the head or torso. Toxicology results were negative for alcohol, illegal drugs and prescription or over the counter medications.

RECOMMENDATION/DISCUSSION

- Tractor operators should read and understand the manufacturer's operator's manual(s) to ensure safe work practices, such as safe tractor shutdown, using wheel chocks to prevent tractor movement, and not working under an unsupported raised hydraulic bucket are followed when using the tractor and attachments.

Tractors are meant to be implement carriers, transport units and remote power sources. The use of the tractor equipped with a loader bucket was not designed nor intended for use as an assist for pulling trees and thus was a misapplication of tractor use.

The operator's manual should be consulted to determine the safe operating practices and procedures for the tractor and any attached implements. Generally, when dismounting a tractor, the safe work practice is to always disengage the power take off, lower all attachments and implements to the ground, lock the brakes together and set the brake lock or, if equipped the park lock, and turn the engine off. If the equipment must be left running, then the park brake should be set with the transmission in neutral. The decedent left the tractor in neutral, but did not engage the parking brake and did not shut off the engine.

The tractor was being operated in a stationary position and did not have chocks/blocks for the wheels. Wheel chocks capable of holding the tractor in position should be utilized to prevent tractor movement.

Working under a non-supported hydraulically raised bucket is dangerous and could cause a severe injury if the hydraulics fail.

- Before initiating a task, conduct a site assessment to determine hazards and appropriate work practices to minimize identified hazards, including topography challenges, equipment location and working on the ground in the travel path of equipment.

There were several site topography issues for this work operation: the slope of the land leading to the edge of the ditch, the location of the tree at the bottom of the ditch and the soft ditch shoulder. All of these issues would need to be taken into account in developing a strategy to remove the trees/weeds from the base of the ditch. The decedent knew of these hazards prior to the incident,

and despite averting an injury the previous week when performing the same activity because another person, his wife, was present, he apparently underestimated the risks of following his previous work practices.

The decedent was downhill from and working in the travel path of the tractor and under the raised bucket. Working with his back to the tractor did not give him sufficient warning that the tractor was moving downhill and to retreat from the tractor's travel path in time.

Key Words: Tractor, Front end loader, Crushed by loader bucket, Drainage ditch, Agriculture

MIFACE (Michigan Fatality Assessment and Control Evaluation), Michigan State University (MSU) Occupational & Environmental Medicine, 909 Fee Road, 117 West Fee Hall, East Lansing, Michigan 48824-1315; <http://www.oem.msu.edu>. This information is for educational purposes only. This MIFACE report becomes public property upon publication and may be printed verbatim with credit to MSU. Reprinting cannot be used to endorse or advertise a commercial product or company. All rights reserved. MSU is an affirmative-action, equal opportunity employer.

February 11, 2014