

REPORT#: 22MI131 REPORT DATE: 03/03/2026

DATE:

Fall 2022

TIME:

Unknown

VICTIM:

34-Year-Old Farmer

INDUSTRY/NAICS CODE:

Corn Farming/111150

EMPLOYER:

Owner/operator

SAFETY & TRAINING:

Informal/Hands on

SCENE:

Open Field

LOCATION:

Michigan

EMPLOYER SIZE:

Small

EVENT TYPE:

Combine Auger Entanglement



Farm Worker Entangled in Combine Auger During Harvesting

SUMMARY

A 34-year-old male farmer began harvesting corn at around 8:00 pm. At approximately 8:30 am the next morning, the farmer's wife noticed the combine was in the field and not moving. She called the farmer's cell phone and there was no answer. The farmer's wife drove to the combine, where she discovered he was wrapped tightly in the corn head harvesting attachment's auger blades. She called 911. The fire department and state police were dispatched, and the Medical Examiner Investigator also responded. The farmer was pronounced deceased on site at 9:09 am. [Read Full Report>](#)

CONTRIBUTING FACTORS

Key contributing factors identified in this investigation include:

- Not disengaging the auger or shutting off the combine before inspecting, servicing, or unplugging.
- Alcohol impairment while operating farm machinery.
- Written safe work procedures were not developed or implemented.
- Lack of documented hazard recognition and control training.
- Warning labels were not in place at the machine danger zones.

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RECOMMENDATIONS

MIFACE investigators concluded that, to help prevent similar occurrences, employers and combine owners and operators should:

- Disengage the auger and shut off the combine before inspecting, servicing, or unplugging.
- Prohibit operation of farm machinery under the influence of alcohol or other substances that may impair judgement or affect reaction time.
- Develop and put in place written procedures for safe operation and maintenance of equipment.
- Ensure equipment operators have the training and information needed for safe operation and servicing of equipment.

Maintain warning labels for danger areas on equipment [Learn More>](#)

INTRODUCTION

A 34-year-old farmer was killed when he became entangled in the auger of a JI Case-Tenneco Model 1640-243 axial flow combine corn head harvesting attachment's auger sometime during the overnight period in Fall 2022 between 8:00 pm on day 1, and 8:30 am on day 2. The Michigan Fatality Assessment and Control Evaluation Program (MIFACE) learned of this incident upon receiving notification from the Michigan Occupational Safety and Health Administration (MIOSHA) fatality reporting system. The MIFACE investigation was performed using available records obtained from the police, medical examiner, and MIOSHA. MIFACE obtained the combine and corn head operation manuals and conducted phone interviews with the volunteer firemen who assisted in extracting the victim from the equipment. The Case-New Holland Corporation and a Case-New Holland equipment dealership provided information to assess and understand the equipment age and functionality. Pictures used in the report were taken by the responding Michigan State Police officers.

Timeline

The deceased's wife told State Police the farmer headed to the field at about 8:00 pm on day 1, to run (harvest) some corn. She stated the farmer consumed roughly four beers prior to leaving the house, and that she went to bed between 9:00 pm and 10:00 pm. Upon waking at 6:00 am on day 2, she noticed he was not there. She was not immediately concerned because he had told her he might go hunting early in the morning. Later, at about 8:30 am, she realized his hunting gear was still in the house and became concerned. She looked toward the field and observed the combine directly behind the house approximately 1/3 mile away and not moving. Her calls to his cell phone went unanswered. She drove in their farm truck to the combine with her young daughter. Observing a hand coming from the auger area, she told her daughter to get back in the truck and she called 911. The time of the entanglement is unknown. County 911 was called at 8:44 am on day 2. The victim was determined to be beyond medical help by the State Trooper, who requested the Medical Examiner and a victim's advocate be dispatched. Per the Medical Examiner Investigator's report, death was pronounced at 9:09 am in coordination with a non-attending hospital physician. MIFACE could not determine the length of operation between 8:00 pm and the incident. One of the volunteer firemen interviewed noted a truck and trailer was parked in the field for receiving the grain and estimated it might take five to six times emptying the combine to fill it. The semi-trailer level was not checked or noted in reports. The 145-bushel bin on the combine was not very full, suggesting the accident may have occurred in the first few hours of harvesting. Police photos verify the volume of harvested corn in the combine's bin.

EMPLOYER

The farmer was a sole proprietor with no other employees.

WRITTEN SAFETY PROGRAMS and TRAINING

Experience in this case is one of multi-generational family farming. Per his obituary, the deceased was a seventh-generation farmer. The existence of any written safe work practices or training was not able to be assessed.

EQUIPMENT

Michigan State Police took photos of the equipment and data plates allowing for identification of the machinery. The photos captured the model and Part Identification Number of the combine, but the serial number was not captured. The Case-New Holland Corporation (CNH) provided equipment age estimates based on available data plate information in photos from the scene. There was no direct evidence of breakdown or mechanical failure noted in the documentation or statements. However, there was evidence of a plugged (clogged) condition in the corn head attachment auger, described in more detail in the Evidence of a Plugged (clogged) Condition section below.

Combine Terminology and Function: Combines achieve functionality in harvesting different types of crops with great efficiency. The combines have multiple systems built in to do that. The primary components involved in this incident are those near the front where there was an apparent clog, and the farmer was pulled

in. The main components referenced in this report are defined below and shown in the following diagram [reference for terminology: Combine Concaves 2025]:

- **Header** – a removable attachment designed for harvesting particular crops. These attachments allow the combine to be more versatile and be used for harvesting different types of crops.
 - *Corn Header* – an attachment specifically for harvesting corn that has points between each row that guide the corn stalks in, snap rolls to strip stalks and leaves from the corn ears and an auger that guides the corn ears toward the center (through spinning or rotation) and into the thresher where grain is separated from the cobs.
- **Feeder Conveyor** – the conveyor that transports the harvested corn cobs or grain from the corn head auger up and into the thresher.
- **Thresher/Separator** – the threshing drum is a cylinder type mechanism that rotates to separate grain from the plant. Rasp bars and drum bars create a rubbing effect that removes kernels from corn cobs, beans from pods, and seeds from seed heads. The clearance must be set for each type of crop. The rotation is typically hundreds of revolutions per minute and separation occurs very fast.

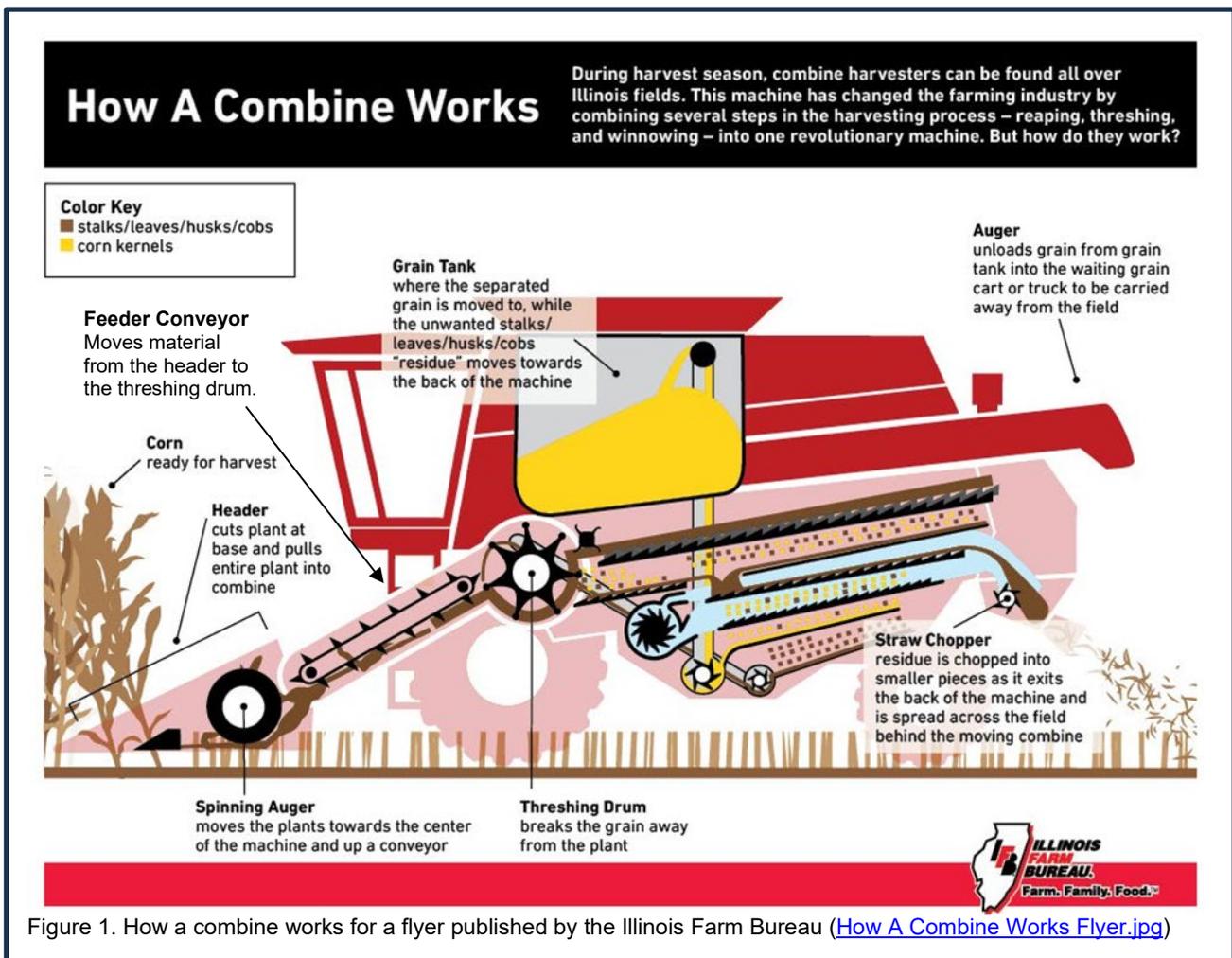


Figure 1. How a combine works for a flyer published by the Illinois Farm Bureau ([How A Combine Works Flyer.jpg](#))

Combine. The equipment being used was a Model #1640-243 Axial Flow combine, manufactured by JI Case, a Tenneco Company located in Racine WI, and was manufactured in 1986, making it 36 years old at the time of the accident.

Corn head attachment. The harvesting attachment to the combine was an International Harvester Company Model 863 corn head attachment manufactured between 1964 and 1968, making it between 54 and 58 years old at the time of the accident. This YouTube video shows an example of a Model 863 corn head in operation, including the rotation of the auger and in-running gathering chains:

https://youtu.be/4awtTF4jftE?si=9Qg1bBkc8sfel_LD

INCIDENT SCENE



Figure 2. Photos of the Case Model 1640 Axial Flow Combine and International Harvester Model 863 Corn Head (left) as found in the field. Enlarged view (right) shows there are no warning labels evident at the corn head auger where the entanglement occurred during an apparent attempt to clear a blockage. The black oval represents the location of the farmer in the auger. Source: Michigan State Police.

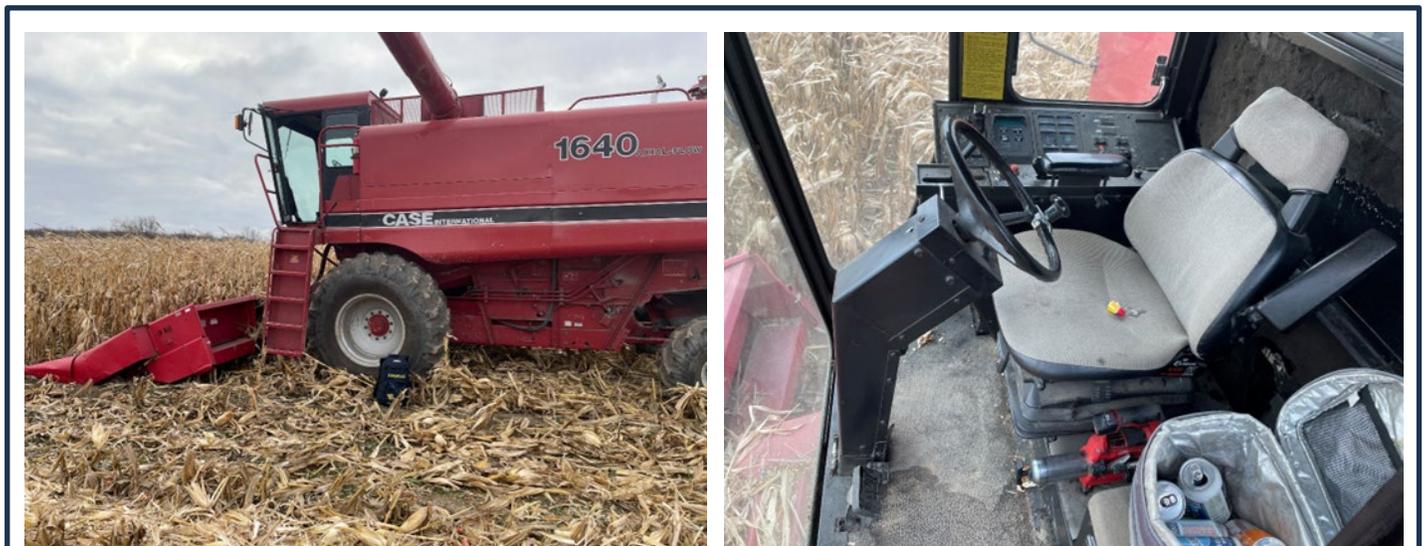
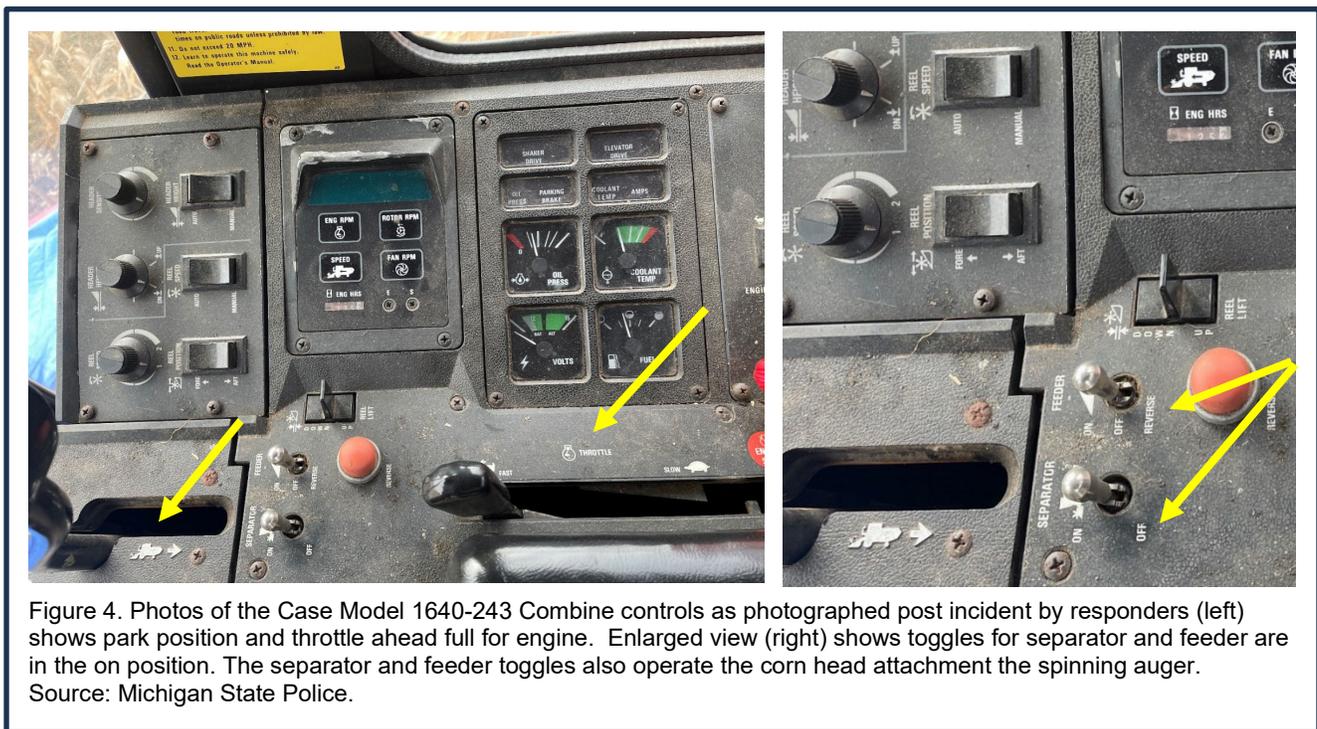


Figure 3. A side view of the Case Model 1640 Axial Flow Combine as found in the field (left), and view of inside the combine cab. (right). Source: Michigan State Police.

Equipment Controls

The combine ignition was found in the on position with engine speed/throttle adjustment pushed all the way toward the rabbit or fastest possible engine speed. The combine was in park, so the combine wheels should have been stationary despite the engine speed running on high. The separator/thresher and feeder conveyor toggle switches were in the on position versus off (middle) or reverse (pulled back). It was confirmed that for this model combine, the corn head attachment auger is directly driven by the feeder control via gearing (sprocket). Therefore, using the feeder reverse toggle and depressing the red reverse button (seen in Figure 4) would have reversed the corn head auger and would have potentially helped to clear a clog condition from the combine operator position. As the feeder toggle was found in the on (forward) position, it is not known if the farmer attempted to use the reverse feeder function to clear the clog before exiting the running combine. See Figure 4 below.



Evidence of a Plugged (Clogged) Condition

The deceased farmer appeared to have been attempting to dislodge blockage from the head of the combine. Two of the responding volunteer firemen, who were also farmers with combine experience, helped disassemble one end of the corn header auger drive mechanism to be able to lift the auger and remove the deceased. In interviews with MIFACE the two volunteer firemen reported a high likelihood the deceased was attempting to unplug a blockage at the auger. They described visible evidence in support of a clogged condition including divots in the ground behind the combine caused by uneven ground. The uneven ground would have affected the height of the corn head and possibly caused it to dig into the lower part of the corn stalks and soil. Additionally, they noted one whole row of corn stalks were being bent over with some root balls pulled out of the ground, and cobs not being removed or shelled. The plugging would have required the operator to reverse the feeder and connected corn header auger by using the reversing toggle and button controls, and possibly also leave the combine to manually remove the blockage or debris.

The volunteer firemen told MIFACE that combines often have a reverse setting on the feeder control that is used to discharge a plug back out the front of the head by reversing the feeder conveyor which also reverses the corn header auger rotation. (Note: the combine involved did have that feature – shown in above Figure 4).

Both volunteer firemen agreed based on their experience operating combines that even after reversing the material out, sometimes it is necessary to get out of the combine to manually remove all the debris before continuing to harvest. Also, if the reversing did not completely unplug the auger, it may be necessary to reach in the auger danger zone to cut free a clog. **To do so safely would necessitate shutting the header (feeder switch) and combine off.** In this incident, the feeder control toggle switch (shown in Figure 4 above) had positions of on, off or reverse, but was left in the on position. While in the on position, once a clog was dislodged, the feeder and corn header auger would immediately start running. A shoe and pieces of clothing from the deceased were taken through the separator and out the discharge at the rear of the combine. From that, it appears likely that once the clog was dislodged and the corn header auger freed, the clog material discharged rapidly, exposing the deceased to the entanglement hazard posed by the immediate startup of the in-running gathering chains and 14-inch auger.



Figure 5. Photo of the Case Model 1640-243 Combine as found in the field with ruts or divots noted (left arrow), and closer view of the divots from the Combine (right arrow). The divots were pointed to by volunteer fire department responders (who were also farmers and combine operators) as evidence of likely blockage that would require unplugging by reversing the feeder and header and possibly shutting down of the combine and manually unclogging. Source: Michigan State Police.

WEATHER

- The work was initiated in cold (37- to 32-degree Fahrenheit) and darkness (sunset at 5:19 pm and sunrise at 7:28 am), with cloudy conditions, and no precipitation for the five days prior to and including the incident overnight period.
- It does not appear any wet conditions were present that may have contributed to the clogging of the equipment.
- Dew points were in the upper twenties Fahrenheit, below the air temperature, also indicating a heavy dew was not likely present. [Source: Weatherunderground.com]

CAUSE OF DEATH

The cause of death was reported as blunt force trauma due to entanglement in a combine auger, with mechanical asphyxia not ruled out. Manner of death was reported as accident. Extensive blunt force injuries included severe lacerations and critical injury to vital organs, head and skeletal system.

Toxicology Findings: The postmortem toxicology screening findings were positive for ethanol, 0.23 percent femoral blood alcohol content (BAC) 0.23. Police photos from the incident show open and unopened beer cans in and around a cooler inside the operator cab. The farmer's wife also told State Police he had consumed around four beers on day 1, before beginning to operate the combine.

CONTRIBUTING FACTORS

Occupational injuries and fatalities are often the result of one or more contributing factors or key events in a larger sequence of events that ultimately result in the injury or fatality. The following hazards were identified as contributing factors in this incident:

- Not disengaging the auger or shutting off the combine before inspecting, servicing, or unplugging.
- Alcohol impairment while operating farm machinery.
- Written safe work procedures were not developed or implemented.
- Lack of hazard recognition and control training.
- Warning labels were not in place at the machine danger zones.

MIOSHA ACTIONS

MIOSHA determined the case was not covered under the MIOSH Act as the farmer was a sole proprietor with no other employees. A no-citation letter was issued by MIOSHA. Note: Unlike Federal OSHA, MIOSHA may conduct inspections of small farms with 10 or fewer employees using state funds. See MIOSHA instruction [MIOSHA-ADM-06-7](#) for details.

RECOMMENDATIONS / DISCUSSION

Recommendation #1: Combine owners and operators should disengage the auger and shut off the combine before inspecting, servicing, or unplugging.

By design, the corn head attachment auger does not have a physical guard. It is normally guarded by location when the operator is in the seat of the tractor. **MIFACE recommends ALWAYS disengaging the auger by placing the feeder control to off and shutting down the combine before leaving the cab when unclogging, maintenance, or adjustment is needed.** The combine key should be removed and maintained in the control of the person doing the unclogging.

MIOSHA Part 53, Section 408.45301 adopts federal OSHA agricultural regulations 29 CFR 1928.57(a)(6). This standard requires operators to stop the engine, disconnect the power source, and wait for all machine movement to stop before servicing, adjusting, cleaning, or unclogging the equipment.

The International 800 Series Corn Head Operator's Manual (November 1979) section titled "Work Safely - Follow These Rules", page 4 contains graphics with safety warnings including warnings (Figure 6 below) requiring disengaging power and shutting off the combine engine before attempting unclogging or dislodging material. The Case International Harvester 1640 combine operator manual (1995) safety instructions (Figure 7 below) also direct shutting off power, lowering units, shutting off the engine and removing the key before dismounting and doing servicing. The combine operator manual feeder operating instructions describe how to use the reverse clutch switch toggle and reversing button to reverse the feeder and the header to help unclog. It then states to stop the combine, set the parking brake and lower the header to the ground before removing obstructions from the feeder or header.

Shutting down the combine is the only safe method for manually unclogging at the header. The 800 Series Corn Head Operator's Manual specifications indicate the 14-inch diameter auger speed of rotation is 155 to 178 rotations per minute (RPM). This auger rotation speed equates to 568 to 652 feet per minute or 9.5 to 10.9 linear feet per second. The in-running gatherer chains operate at a speed of 270 to 360 feet per minute, or 4.5 to 6 linear feet per second.

After-market Operator Sensing Safety Devices (OSSDs) are recommended to be installed in the seat of older equipment to either shut down power to selected equipment or produce an audible alarm or visual signal if the operator is absent from the control position. However, an equipment dealer recommended by Case-New Holland consulted by MIFACE verified that an after-market OSSD was not available to be installed in the 36-year-old combine involved in this incident

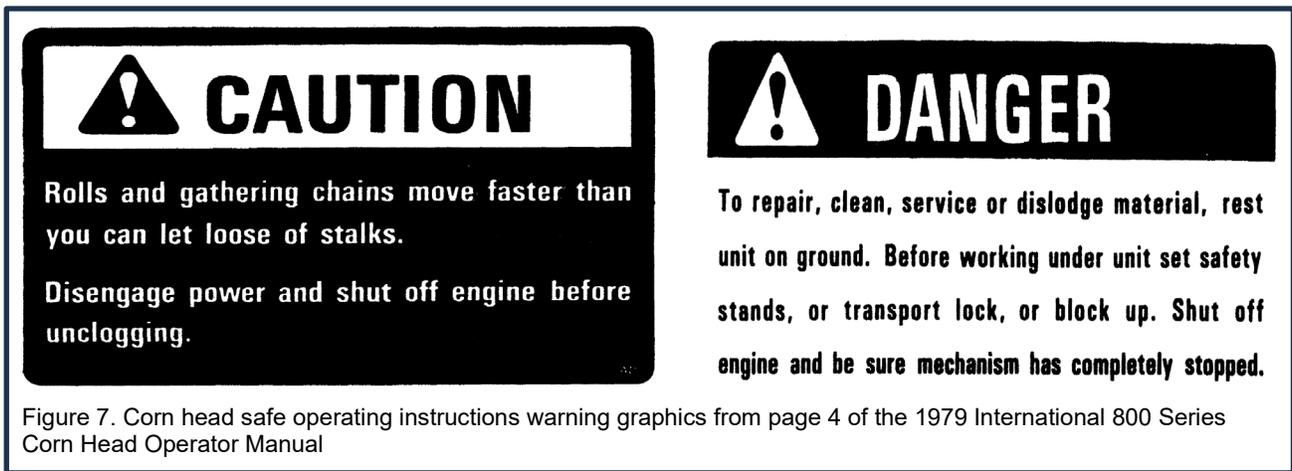


Figure 7. Corn head safe operating instructions warning graphics from page 4 of the 1979 International 800 Series Corn Head Operator Manual

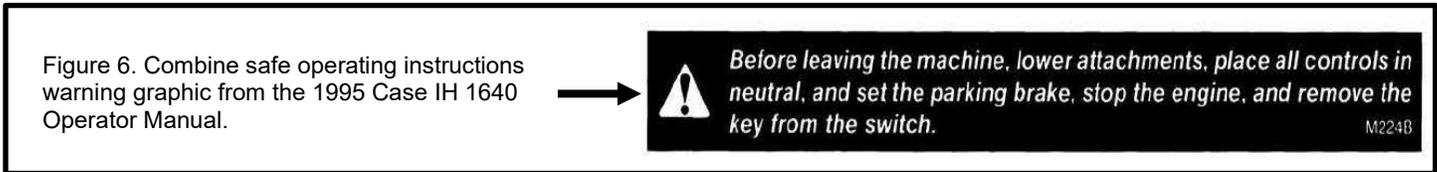


Figure 6. Combine safe operating instructions warning graphic from the 1995 Case IH 1640 Operator Manual.

Recommendation #2: Employers and combine owners and operators should ensure farm machinery is not operated under the influence of alcohol or other substances that may impair judgement or affect reaction time.

MIFACE strongly advises against operating machinery, such as combines, while impaired. Impairment can result from a variety of factors, including fatigue, alcohol use, or the use of other substances (e.g. prescription medications including opioids, cannabis/THC, other non-prescription medications or recreational drugs). Impairment may affect coordination, reaction time, judgment, information processing abilities, and perception, increasing the risk of injury (Source: [CDC Impaired Driving](#); [NHTSA Drunk Driving](#)).

Alcohol Use: Farmers who consume alcohol should take precautions to ensure safety. This includes waiting until any effects have fully worn off before operating machinery. Michigan’s laws regarding blood alcohol concentration (BAC) apply primarily to public roadways, (Michigan Statutes, Section 257.625). The legal BAC limit for drivers on Michigan roadways is 0.08 grams per 100 milliliters of blood, or 210 liters of breath, or per 67 milliliters of urine. The U.S. Department of Transportation (DOT) has published guidance detailing BAC limits for DOT employees working in safety sensitive positions (e.g. operations and maintenance in transportation including air, pipeline, maritime, rail, and commercial motor vehicles). These standards recognize that impairment can occur at BAC levels between 0.02 and 0.08 grams per 100 milliliters and provide for a recommended period of abstinence before operating. DOT References: 49 Code of Federal Regulations part 40 and publication [What Employees Need to Know About DOT Drug & Alcohol Testing Handbook](#).

MIFACE recommends machine operators:

- Do not consume or minimize alcohol intake for a minimum of four (and up to eight, if need) hours before operating or maintaining farm equipment.
- Do not operate farm equipment with a blood alcohol concentration above 0.02 grams per 100 milliliters.
- Do not operate farm equipment if under the influence of or impaired by alcohol or a combination of alcohol and drugs.

Practical tools, such as online calculators and smartphone applications, can help estimate BAC, in combination with meeting minimum abstinence of four to eight hours as needed. See [Blood Alcohol Content \(BAC\)](#)

[Calculator \(Beer, Wine & Liquor\)](#) from www.alcohol.org, and BAC Tracker and Alcohol BAC Calculator applications in the smart phone app store. Bluetooth connected BAC home test breath devices that provide results on your smart phone are also available, such as the [BACtrack® Mobile Breathalyzer for iPhone & Android Devices](#).

Cannabis/THC Use: In Michigan, cannabis (marijuana) use is legal, but operating, navigating, or being in physical control of any motor vehicle, aircraft, snowmobile, off-road recreational vehicle, or motorboat while consuming or being under the influence of cannabis is prohibited [reference: MRTMA 2018, [4200 Marihuana and Driving brochure](#)]. Drivers may not consume cannabis products, and neither drivers nor their passengers may smoke cannabis within the passenger area of a vehicle on a public roadway. Impairment from cannabis varies with THC concentration or dose, route of administration, and individual metabolic factors. Thus, **MIFACE recommends abstaining from cannabis use for 24 hours before and while operating farm equipment to reduce the risk of injuries.**

Prescription and Over the Counter (OTC) Drugs: MIFACE recommends the following practices in accordance with DOT guidelines for operators in safety sensitive positions:

- Do not operate or maintain farm machinery when using any controlled substance unless used pursuant to the instructions of an authorized medical professional.
- Do not operate or maintain farm machinery when taking prescription medicine unless it is prescribed to you by a licensed medical professional, such as your personal doctor, and the treating/prescribing medical professional has made a good faith judgment that the use of the substance at the prescribed or authorized dosage level is consistent with the safe operation of farm machinery.
- If you are being treated by more than one medical professional, you should ensure at least one of the treating medical professionals has been informed of all prescribed and authorized medications and has determined that the use of the medications taken together is consistent with the safe operation of farm machinery.
- Use of over-the-counter medications should similarly be evaluated by a medical professional and/or pharmacist to prevent any negative interaction when used with other medications operating farm machinery.
- Illegal drugs should not be used by operators.

Substance Use Harm Reduction: For individuals who use alcohol or other substances, harm reduction strategies can minimize risks. Examples for alcohol harm reduction strategies include avoiding use before or while operating machinery or vehicles, spacing out consumption, staying hydrated, measuring and tracking amounts consumed, and avoiding mixing substances (e.g., alcohol and medications). Additional harm reduction resources are available online, including guides for safer alcohol and substance use; [Harm Reduction Strategies for Alcohol](#) website and the [Safer-use Strategies-Alcohol](#) factsheet. Harm reduction strategies are also available for [other substances](#). Employers can also establish recovery-ready workplaces to prevent drug-related injuries and deaths and help workers access treatment and maintain recovery from substance use disorders ([US Department of Labor Recover-Ready Workplace Resource Hub](#)).

Screening and Intervention: Screening and intervention tools are available to help in cases where ongoing substance use (including alcohol) may present a safety issue. Screening and intervention tools are available from the National Institute on Alcohol Abuse and Alcoholism (NIAAA) [Screen and Assess: Use Quick, Effective Methods](#), and the Substance Abuse and Mental Health Services Administration (SAMHSA) [Screening, Brief Intervention, and Referral to Treatment \(SBIRT\)](#). SAMHSA also has a webinar on Agriculture and Alcohol Use available at [AgriSafe Learning: Agriculture and Alcohol Use](#). Registration is required. Cost is free.

The ongoing opioid crisis has impacted all American communities, with many individuals initially using opioids medications prescribed for pain management. The Michigan Substance Use, Prevention, Education, and

Recovery ([MiSUPER](#)) project provides resources, trainings, and educational materials addressing opioid and stimulant use specifically designed for rural Michigan, including a list of [substance use treatment centers](#) by geographic region. The Great Lakes Addiction Technology Transfer Center ([Great Lakes ATTC](#)), located at the University of Wisconsin–Madison, is also funded by SAMHSA to provide evidence-based technical assistance, training, and resources addressing the needs of individuals in: Illinois, Indiana, Michigan, Minnesota, Ohio, and Wisconsin. For those outside these states, an ATTC is in every region nationwide <https://attcnetwork.org/about/>.

MIOSHA: Although MIOSHA does not have specific regulations on operating machinery while impaired, the General Duty Clause, Section 408.1011(a) of Act 154, Michigan Public Acts of 1974 requires an employer to furnish each employee employment and a place of employment that is free from recognized hazards that are causing, or are likely to cause, death or serious physical harm to the employee.

Recommendation #3: Employers and combine owners and operators should develop and put in place written procedures for safe operation and maintenance of equipment.

MIFACE recommends there be written safe work procedures for equipment inspection, operation and maintenance. The safe work procedures should include guidelines for how to safely inspect, clean, unjam or unclog the equipment, and any operating or settings guidance to prevent clogs from occurring. Operators not trained in or authorized to inspect and remove jams or clogs should shut down the equipment and contact the employer or owner if there is one. Sole proprietors may need to seek assistance from local equipment representatives and the operator manual.

As a safe work procedure, **MIFACE** recommends farmers who work alone or remotely establish a communication schedule with someone who can respond if there is an emergency or lapse in communication. Best practices for safety while working alone include frequent scheduled check-ins and two-way radio communication. There is no regulatory requirement in Michigan for a written safety plan in agriculture. However, written safe work procedures help to identify and control hazards that cause injury, illness, or fatality.

SOP (EXAMPLE) SS-WHS-SAF-000 Authorized By: Rev 1 [Publish Date]		SPIRE SAFETY 	
TASK	EXAMPLE		
HAZARDS	Flying debris	<input checked="" type="checkbox"/> Heat / cold	<input checked="" type="checkbox"/> Electricity
	Cuts / laceration	<input type="checkbox"/> Dust	<input type="checkbox"/> Rollover
	Pinch / crush	<input type="checkbox"/> Noise / vibration	<input checked="" type="checkbox"/> Plant interaction
	High pressure	<input checked="" type="checkbox"/> Other:	<input type="checkbox"/> Other:
PPE REQUIRED			
PRE-START CHECKS			
<ol style="list-style-type: none"> 1. Ensure all personnel are trained and authorized. 2. Inspect the item for any visible damage, leaks, or signs of wear. 3. Check that all hoses, fittings, and connections are properly secured and in good condition. 4. Verify that the item oil level is adequate and that there are no signs of contamination. 5. Confirm that fire extinguishing equipment is readily available in case of emergency. 			
SAFE OPERATING PROCEDURE			
<ol style="list-style-type: none"> 1. Wear appropriate personal protective equipment (PPE) including safety glasses, hearing protection, and gloves. 2. Start up the item according to manufacturer's instructions, ensuring that all safety interlocks are engaged. 3. Monitor the operation closely, checking for any abnormalities. 4. Adjust settings as necessary to maintain proper operating conditions. 5. Be aware of any leaks or spills around the area and take appropriate action to contain and clean them up. 6. If any issues or errors occur during operation, stop operation immediately and troubleshoot the problem before resuming. 			
POST-OPERATION PROCEDURE			
<ol style="list-style-type: none"> 1. Shut down the item as per manufacturer recommendations. 2. Inspect the item and surrounding area for any defects or issues, reporting any problems to the appropriate personnel. 3. Clean up the area, removing any debris. 4. Perform routine maintenance tasks. 5. Store any unused accessories in a designated area, ensuring they are protected from damage and unauthorised use. 			

Key steps to the development of safe work procedures includes conducting a hazard assessment to identify types of hazards involved each work activity and evaluating and assessing feasible measures to control those hazards and protect workers. The below are example resources for farm-based safe operating procedure development.

The article [Safe Combine Operation](#) from the Ohio State University Extension Agricultural Safety and Health Program provides a list of safe work practice recommendations that may be included in building a written safe work practice or procedure. The Australian safety company Spire offers a free downloadable combine safe operating procedure example (shown at left) for use in tailoring to your own equipment at [FREE Combine Harvester SOP \(Safe Operating Procedure\) Template](#). The article [Combine Safety](#) published by Farm Journal provides a detailed list of items to include in safe work practices separated into operations and maintenance actions. [Combine Safety and the Hazards to Avoid](#)

published by Good Day's Work OSHA Training for Ag also provides detailed recommendations for combine safety, including shutting down the equipment before maintenance or unclogging. The North Dakota State Ag Extension YouTube video [Combine Safety](#) includes pre-harvest and operator safety practices.

Recommendation #4: Employers and combine owners and operators should ensure equipment operators have the training and information needed for safe operation and servicing of equipment. MIFACE recognizes the challenges formal training presents for small farm and sole proprietor operations, which can be varied and change daily. As such, it is recommended that practical tools (e.g., manufacturer safety and hazard warning information, and a review of equipment warning labels) be included in written safe work procedures and verbal pre-task safety briefs, sometimes called toolbox talks.

Demonstrated Competence. It is important to verify understanding of the hazards and safe practices before performing the task, including inspecting, adjusting, or unclogging. Sole proprietors should satisfy themselves and review manuals and written safe procedures as frequently as needed. When allowing other operators to harvest or do maintenance, farm owners should verify understanding based on review of the conditions and hazards for the task, including unclogging.

MIFACE recommends all operators be able to demonstrate understanding of when lowering, disengaging or shutdown of equipment is required for inspection, servicing, adjusting, cleaning or unclogging to be done safely.

- Note: This training is required initially and annually thereafter by MIOSHA as described below in training and information sources.

Training and Information Sources

Equipment Operator Manual. Safety warnings are clearly shown in the manufacturer operating and maintenance manuals. This information should be used to train farm equipment operators to ensure understanding of site conditions in relation to the operational limits of the equipment, such as terrain, slope, turn radius, speed, and identification of dangerous components and procedures for servicing and maintenance, including unclogging.

Written Safe Work Procedures. Written safe work procedures should include the manufacturer warnings and safe practices to control the hazards. Safe work practices should be reviewed prior to performing the task, as a refresher when it has been a while. They should be reviewed and revised based on new information or after any near miss or accident.

MIOSHA Regulations: Certain MIOSHA regulations require hazard control training. The Michigan agriculture regulation in Part 53, Section 408.45301 adopted the federal OSHA regulations at 29 CFR 1928.57(a) through (c). The parts of the regulations that directly relate to this incident include:

- A requirement at the time of initial assignment and at least annually, to instruct every employee in the safe operation and servicing of all equipment. *The instruction is to include safe practices such as: stopping the engine, disconnecting the power source, and waiting for all machine movement to stop before servicing, adjusting, cleaning, or unclogging the equipment.*
- The regulations also include an exception for situations when the machine must be running to be properly serviced or maintained. In those cases, the instruction is to include all steps and procedures which are necessary to safely service or maintain the equipment.

Entanglement Information. This [Farm-Related Machine Entanglements](#) Hazard Alert by Michigan State University, Office of Environmental and Occupational Medicine provides information on Michigan specific entanglement cases involving PTOs and other rotating components on a variety of equipment and emphasizes preventive actions.

More training sources are provided in the Resources section and Related State Fatality Assessment and Control Evaluation (FACE) Investigations sub-sections below.

Recommendation #5: Employers and combine owners and operators should maintain warning labels for danger areas on equipment.

As seen in the photos of the combine corn head shown in Figure 2, no warning labels were visible near the exposed auger. Warning labels should be affixed right at or near the hazardous condition interface and are a reminder to prevent a serious or possibly fatal injury exposure. Manufacturer operation manuals often specify upkeep of these warning labels in compliance with the American National Standards Institute/American Society of Agricultural and Biological Engineers Standard ASABE/ISO 11684:2023 September 2024 (see reference section for details). The corn head attachment in this incident was 54 to 58 years old. The operation manual did not have a section specifying warning label placement, but did have pictures of dangerous components with safety warnings that could guide the operator on where to place aftermarket labels. The ASABE/ISO AD11684 standard provides specific examples of recommended danger pictograms pertaining to agricultural equipment. An example from the standard that may apply to the auger area of the corn head involved in the fatality is shown at right.

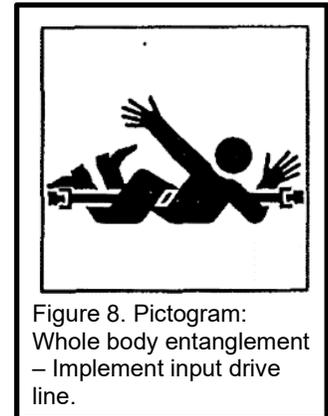


Figure 8. Pictogram:
Whole body entanglement
– Implement input drive
line.

MIFACE recommends highly visible labels be added, if not already present, at danger areas and in visible locations in the cab warning operators to disengage, lower raised equipment, and shut down before exiting the cab or attempting maintenance outside the cab.

Web sites are available that provide replacement hazard label kits for a variety of equipment and directions for placement, such as this [combine safety kit](#) that includes 80 decals on 2 sheets and instructions. General farm safety signs and labels are also available, such as through this [sign company](#).

Case operator manuals and danger decals are available online including through Case at [Farm Equipment Operator Manuals](#), and [Danger Decals through CHN](#). The International Harvester corn head Model 863 Operator's Manual is also available through Case IH at [Product Search Link](#).

RESOURCES

The following article provides a list of safe work practice recommendations that may be included in building a written safe work procedure.

McGuire [2015] Safe Combine Operation. Ohio State University Extension. (<https://agsafety.osu.edu/newsletter/ag-safety-stat/september-2015/injury-prevention/safe-combine-operation>)

The following article provides a detailed list of items to include in safe work procedures separated into operations and maintenance actions.

MyMachinery.com Editors [2022]. National Farm Safety & Health Week: Combine Safety. Farm Journal (<https://www.agweb.com/news/crops/crop-production/national-farm-safety-health-week-combine-safety>)

The following blog article provides detailed recommendations for combine safety, including shutting down the equipment before maintenance or unclogging.

Good Day's Work [2015] Combine safety and the hazards to avoid. Safer Times. (<https://blog.gooddayswork.ag/blog/combine-safety-and-the-hazards-to-avoid>)

The following Youtube video includes pre-harvest and operator safety practices.

NDSUExtension [2014] Combine Safety. The North Dakota State Ag Extension. (<https://www.ndsu.edu/agriculture/ag-hub/ag-topics/farm-safety-health/farm-safety/combine-safety>)

Below is a link to a free downloadable combine safe operating procedure example for use in tailoring to your own equipment.

Tanya [2024] Free Combine Harvester SOP Template. Spire Safety (<https://spiresafety.com.au/resources/combine-harvester-sop/>)

The Michigan State University Division of Occupational and Environmental Medicine provides a document detailing safety practices for Michigan farmers.

MSU OEM [2017] Farm-Related Machine Entanglements in Michigan. Michigan State University.
(<https://oem.msu.edu/images/Alerts/RotatingMachineryHazardAlert.pdf>)

Additional farm safety planning and training programs

Michigan Farm Bureau's Agricultural Labor and Safety Services (ALSS) program
(<https://www.michfb.com/agriculture/farming-resources/labor>)

Farm Safety Planning Templates and Checklists from Iowa's Center for Agricultural Safety and Health.
(<https://icash.public-health.uiowa.edu/programs/seasonal-campaigns/farm-safety-planning/>)

National Safe Tractor and Machinery Operation Program from Penn State Extension
(<https://extension.psu.edu/national-safe-tractor-and-machinery-operation-program#section-4>)

Related Investigations: For more information and possible resources, see the below additional historical FACE reports within the national and state FACE report archive (<https://www.cdc.gov/niosh/face>). These case studies provide further related insight and reinforce similar or identical hazards and previous recommendations made:

Iowa [1995]. Farmer Dies After Getting Caught in Auger of a Combine Header, Iowa Case Report 95IA035
(<https://stacks.cdc.gov/view/cdc/166836>).

Oklahoma [2003]. A Farmer Was Killed When He Was Run Over By A Combine, Oklahoma Case Report 03OK032
(<https://stacks.cdc.gov/view/cdc/167042>).

Minnesota [1996]. Pea Combine Operator/Cleaner Dies After Being Run Over By Pea Combine, Minnesota 96MN055
(<https://stacks.cdc.gov/view/cdc/167139>).

Alcohol as a contributing factor:

Michigan [2002]. Farmer Killed When His Tractor Leaves Public Road Shoulder and Overturns Into a Ditch, Michigan 02MI120 (<https://oem.msu.edu/images/MiFACE/02MI120v1.pdf>)

Michigan [2017]. Farm Owner Drowned in Ditch When Tractor Overturned to Side and Pinned Him, Michigan 17MI098
(https://oem.msu.edu/images/MiFACE/InvestigationReport_RealEstate/17MI098_InvestigationReport.pdf)

REFERENCES

MIOSHA standards may be found at and downloaded from the MIOSHA, Michigan Department of Labor and Economic Opportunity (LEO) website at: www.michigan.gov/mioshastandards Copies of MIOSHA standards are available at no cost by writing to: Michigan Department of Labor and Economic Opportunity, MIOSHA Standards & FOIA Section, P.O. Box 30643, Lansing, Michigan 48909-8143 or calling (517) 284-7740. For details and order form, see [MIOSHA Standards Index-Order Form](#).

MIOSHA [2024]. Administrative Rule Part 11 – [Recording and Reporting of Occupational Injuries and Illnesses](#). Lansing, MI: Michigan Occupational safety and Health Administration.

MIOSHA [1977]. Agricultural Safety Standard Part 51 – [Agricultural Tractors](#), (which adopts OSHA 1928.51 Roll Over Protective Structures (ROPS) for Tractors Used in Agricultural Operations), Lansing, MI: Michigan Occupational safety and Health Administration.

MIOSHA [1977]. Agricultural Safety Standard Part 53 – Farm Equipment (which adopts OSHA 1928.57 Guarding of Farm Field Equipment, Farmstead Equipment, and Cotton Gins), Lansing, MI: Michigan Occupational safety and Health Administration.

ANSI/ASAE [2022]. S318.19 OCT2022 – Safety For Agricultural Field Equipment. American Society of Agricultural and Biological Engineers. (available to be purchased at: <https://webstore.ansi.org/standards/asabe/ansiasaes31819oct2022>)

ASABE/ISO [2024]. 11684:2023 SEP2024 – Tractors, machinery for agriculture and forestry, powered lawn and garden equipment – Safety signs and hazard pictorials – General principles. American Society of Agricultural and Biological

Engineers. (available to be purchased at: <https://webstore.ansi.org/standards/asabe/asabeiso116842023sep2024>)

Combine Concaves [2025] How a Combine Harvester Works: Components and Functions Explained? Blog Post at Estes Performance Combines (<https://www.estesperformanceconcaves.com/combine-harvester-machines/>)

INVESTIGATOR INFORMATION

This investigation was conducted by Ed Parsons

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