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## EC62-2100 Safe Corn Harvesting Operations

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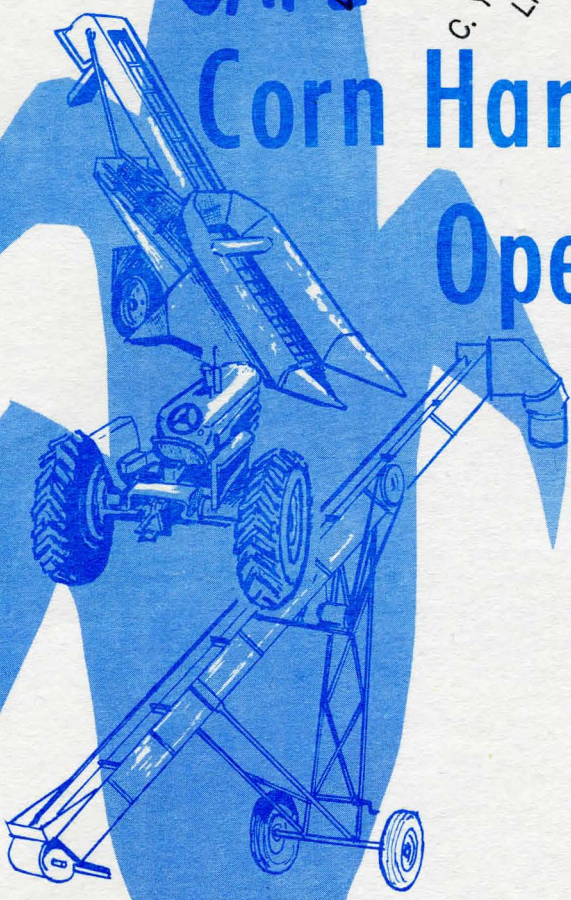
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# Corn Harvesting Operations



EXTENSION SERVICE  
UNIVERSITY OF NEBRASKA COLLEGE OF AGRICULTURE  
AND U. S. DEPARTMENT OF AGRICULTURE  
COOPERATING  
E. F. FROLIK, DEAN    E. W. JANIKE, DIRECTOR

# SAFE CORN HARVESTING OPERATIONS

by  
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## Accidents do not happen - they are caused

Each year manufacturers try to make their corn pickers safer for the operator. But corn picking accidents still happen. Why? In almost every case, operator carelessness is to blame, not the machine.

The 1959 Census of Agriculture showed a total of 58,542 corn pickers in Nebraska. Records show that about 1 out of every 250 corn pickers is involved in some type of accident each year. This means, then, that Nebraska has a possibility of 235 corn picker accidents per year.

## Personal Injuries

Table 1. Number of Injuries Resulting from Corn Harvest Accidents

Type of Injury	1947	1948	1949	1950	1951	1952	1953	1954	1955	1956	Total
Deaths -----	4	3	5	5	3	4	0	3	0	2	29
Amputations -----	32	200	116	128	201	297	124	118	99	76	1391
Broken bones -----	23	75	67	22	35	118	37	21	15	14	427
Bruises and cuts --	51	95	39	50	81	54	37	31	38	30	506
Bruises only -----	74	20	13	0	63	45	13	11	0	7	246
Others -----	0	41	22	28	35	43	18	16	15	15	233
Totals	184	434	262	233	418	561	229	200	167	144	2,832

An Iowa study (1947 to 1956) showed 29 persons killed and 2,803 injured from corn harvest accidents in Iowa. Probably there were many minor accidents not reported since they did not require a doctor's services. Table 1 summarizes yearly accident numbers and type of injury.



Amputations are characteristic of corn picker injuries. More than 49 percent of Iowa corn harvest accidents from 1947 to 1956 resulted in amputations. In 1956, 76 persons lost 129 fingers, 23 hands, and 15 arms. In 1952, the high year for corn harvesting accidents, 297 persons lost 11 arms, 98 hands and 432 fingers. In 10 years, 1,391 persons lost 14 legs, 81 arms, 320 hands and 2,055 fingers in corn harvesting accidents.

## Part of Machine Involved

Table 2. Number of Corn Harvest Accidents in Which Each Machine Part was Involved

Machine Part	1947	1948	1949	1950	1951	1952	1953	1954	1955	1956	Total
Stalk ejectors -					111	148	45	47	25	34	410
Husker rolls ---		162	73	78	101	103	32	26	32	33	640
Snapper rolls --		135	68	61	55	56	25	16	23	14	453
Chains and elevators ----		5	16	11	32	36	12	27	15	13	167
Other picker ---		42	37	0	41	69	19	0	15	15	238
All picker accidents ----	134	344	194	150	340	412	133	116	110	109	2,042
Tractor -----	10	33	26	11	46	35	19	6	9	11	206
Elevator -----	40	29	21	50	32	92	64	37	33	24	422
Wagon -----		9	11	17	0	11	7	11	7	0	73
Silo and silage cutter -		6	10	0	0	0	6	21	2	0	45
Others -----		13	0	5	0	11	0	9	6	0	44
Totals	184	434	462	233	418	561	229	200	167	144	2,832

It is not enough to know that the accident happened during corn harvesting or that a corn picker was involved. To live safely while corn harvesting, knowledge of the specific danger points is necessary. Table 2 lists machine parts responsible for accidents.

Many people believe that most picker accidents happen at the snapper rolls. However, Table 2 shows that since 1951 there were more accidents with the husker rolls and stalk ejector rolls than with the snapper rolls.

This is caused by at least two factors: first, most people think the snappers are the most dangerous and that husker and stalk ejector rolls are relatively safe; and second, the stalk ejector rolls and the husker rolls actually grab objects such as gloves and loose sleeves. This machine is designed to grab and shake, and will do the same to a human hand as it does to an ear or stalk of corn.

The number of accidents with elevators is high. More than half of these happen on the power shaft. It is a general practice not to cover these shafts since they move rather slowly. Each year, until 1955, about one fourth of the elevator accidents injured children under the age of 10 playing near the moving elevator.

There are two major types of tractor accidents during corn harvest. One is getting caught by the uncovered power take-off while operating in the field and the other is falling from the tractor. Accidents during ensiling of corn result from cleaning clogs while the cutter is running.

## Causes of Accidents

Table 3. Number of Corn Harvest Accidents By Cause, By Years

Cause	1948	1949	1950	1951	1952	1953	1954	1955	1956	Total	Percent
Tiredness -----	19	5	17	32	23	8	31	10	4	149	5.3
Hurrying -----	109	78	106	153	225	78	63	50	29	181	31.5
Unsafe method -	243	151	160	283	370	122	138	107	119	1,693	59.8
No safety device -----	43	42	6	28	10	15	19	8	15	186	6.6
Lack of training -----	15	10	0	0	7	15	19	0	0	66	2.3
Other -----	5	16	0	51	71	0	6	20	16	185	6.5

Five basic causes, as shown in Table 3, are involved in corn harvest accidents. Some accidents result from two or more causes.

Two causes, hurrying and using an unsafe method, were involved in 91.3 percent of all accidents. The unsafe method most often the cause of accidents was



manually cleaning out the rolls, ejectors, huskers, or snappers while the machine was running.

## When Accidents Occur

Table 4. Number of Corn Harvest Accidents Each Hour of the Day by Years

Year	6:00	7:00	8:00	9:00	10:00	11:00	12:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00
1948 -	0	26	13	10	94 <sup>a</sup> /	66	0	5	34	71	96 <sup>b</sup> /	14	5	0
1949 -	10	12	45	34	57 <sup>a</sup> /	23	0	0	0	23	34 <sup>b</sup> /	22	0	0
1950 -	5	4	7	12	65 <sup>a</sup> /	6	0	8	0	50	58 <sup>b</sup> /	11	7	0
1951 -	0	15	16	88 <sup>a</sup> /	62	46	10	10	41	42 <sup>b</sup> /	37	36	10	5
1952 -	0	22	55	78	34	79 <sup>a</sup> /	22	22	11	80 <sup>b</sup> /	57	56	45	0
1953 -	0	0	15	23	53 <sup>a</sup> /	31	0	15	22	8	31 <sup>b</sup> /	16	15	0
1954 -	0	4	2	25	38 <sup>a</sup> /	25	0	12	13	14	31 <sup>b</sup> /	24	12	0
1955 -	0	0	0	14	39 <sup>a</sup> /	25	0	0	39 <sup>b</sup> /	12	38	0	0	0
1956 -	5	3	15	25 <sup>a</sup> /	17	7	8	8	16	25 <sup>b</sup> /	23	0	0	0
Totals-	20	86	168	309	459 <sup>a</sup> /	308	40	80	176	325	405 <sup>b</sup> /	179	94	5

<sup>a</sup>/ High hour in the morning

<sup>b</sup>/ High hour in the afternoon.

There are primary fatigue periods during the day that most operators ignore. Industry and farming studies show that fatigue reaches a peak during certain hours of the day. The greatest number of accidents during the 9-year period studied happened from 10:00 to 11:00 a.m., and from 4:00 to 5:00 p.m. (see Table 4).

## Age of Injured

The age distribution of all corn harvest equipment operators is not known. The age group from 26 to 50 probably includes most operators with the 30 to 40 year age group predominating. Table 5 shows a breakdown of age groups with the occurrence of accidents to each group.

The figures show a relatively close distribution from age 16 to 50. Two things may be noted; first, age or experience does not appear to reduce the accidents. Second, there are more accidents in the 15 or under and

the 16 to 20 year age groups than the proportion of workers in those age groups warrant. This suggests a need for training new operators.

Table 5. Number of Persons Injured in Corn Harvest Accidents  
by Year and Age Group

Year	15 or under	16-20	21-25	26-30	31-35	36-40	41-45	46-50	51-55	56-60	Over 60
1948 -	7	41	107 <sup>a/</sup>	86 <sup>b/</sup>	36	20	21	64	28	21	3
1949 -	9	39 <sup>b/</sup>	12	21	36	28	26	44 <sup>a/</sup>	19	9	17
1950 -	18	29	24	12	41 <sup>a/</sup>	24	35 <sup>b/</sup>	24	4	17	5
1951 -	5	53	34	43	73 <sup>a/</sup>	43	68 <sup>b/</sup>	48	34	4	13
1952 -	0	94 <sup>b/</sup>	58	67	79	104 <sup>a/</sup>	44	46	28	22	19
1953 -	7	2	30	17	28	18	8	28	49 <sup>a/</sup>	35 <sup>b/</sup>	7
1954 -	6	12	18	12	35 <sup>a/</sup>	23 <sup>b/</sup>	35 <sup>a/</sup>	22	7	13	17
1955 -	0	10	19	29 <sup>b/</sup>	39 <sup>a/</sup>	21	11	9	19	0	10
1956 -	0	7	23 <sup>b/</sup>	15	9	38 <sup>a/</sup>	16	10	9	15	0
Totals	52	287	335 <sup>b/</sup>	302	376 <sup>a/</sup>	319	264	295	197	136	91

<sup>a/</sup> Age group with most accidents each year.

<sup>b/</sup> Age group with second most accidents each year.

## It Pays to Follow Safety Rules

You are a safe operator if you follow all safety rules regularly, especially the one that says, Stop that picker and tractor engine before getting off the tractor seat. If you can be classed as a safe operator, your chance of getting hurt on a corn picker in the next five years is only one in a million.

If you take occasional chances, such as trying to remove a loose cornstalk from the husking rolls while the picker is running, you are an average operator and stand 1 chance in 25 of getting hurt by a picker during the next five years.

If you are a careless operator who ignores safety rules to the extent of trying to unclog snapping rolls while the picker is running, you have a 50-50 chance of being seriously injured in the next five years.

Obeying the following safety rules will classify you as a safe, careful operator:

1. Train all operators in the efficient, safe operation of corn harvesters, elevators, tractors, and silage cutters.

2. Never oil, adjust, or unclog the machine while it is in motion.

3. Keep your machine in good mechanical condition and proper adjustment.

4. Wear only clothes that fit snugly and that do not have loose pockets or sleeves.

5. Use a metal or Pyrex sediment bulb on your tractor instead of a glass one.

6. Keep all safety shields in place.

7. Keep trash and shucks away from exhaust manifold.

8. Carry a fire extinguisher, a shovel, and a first aid kit on the picker.

9. Be particularly cautious during midmorning and midafternoon. A break at these times is helpful. This may be:

- a. Just stop machine and relax.
- b. A break for light lunch or drink.
- c. A break to adjust machine.
- d. A change-off with another worker who is a trained picker operator.
- e. A break to lubricate the machine.

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This circular is adapted from "A Report of 2,832 Corn Harvest Accidents, 1947 - 1956" Iowa State College, A. E. 694 (Rev.). The study has been continued up to the present time. The new findings show no big difference in the accident records since the 1956 revision.