

THE DEARBORN FORAGE HARVESTER



DEARBORN MOTORS CORPORATION

BIRMINGHAM, MICHIGAN

National Marketing Organization for The Ford Tractor
and Dearborn Farm Equipment

www.ntractorclub.com



DEARBORN MOTORS
PRODUCT AND SALES TRAINING MANUAL

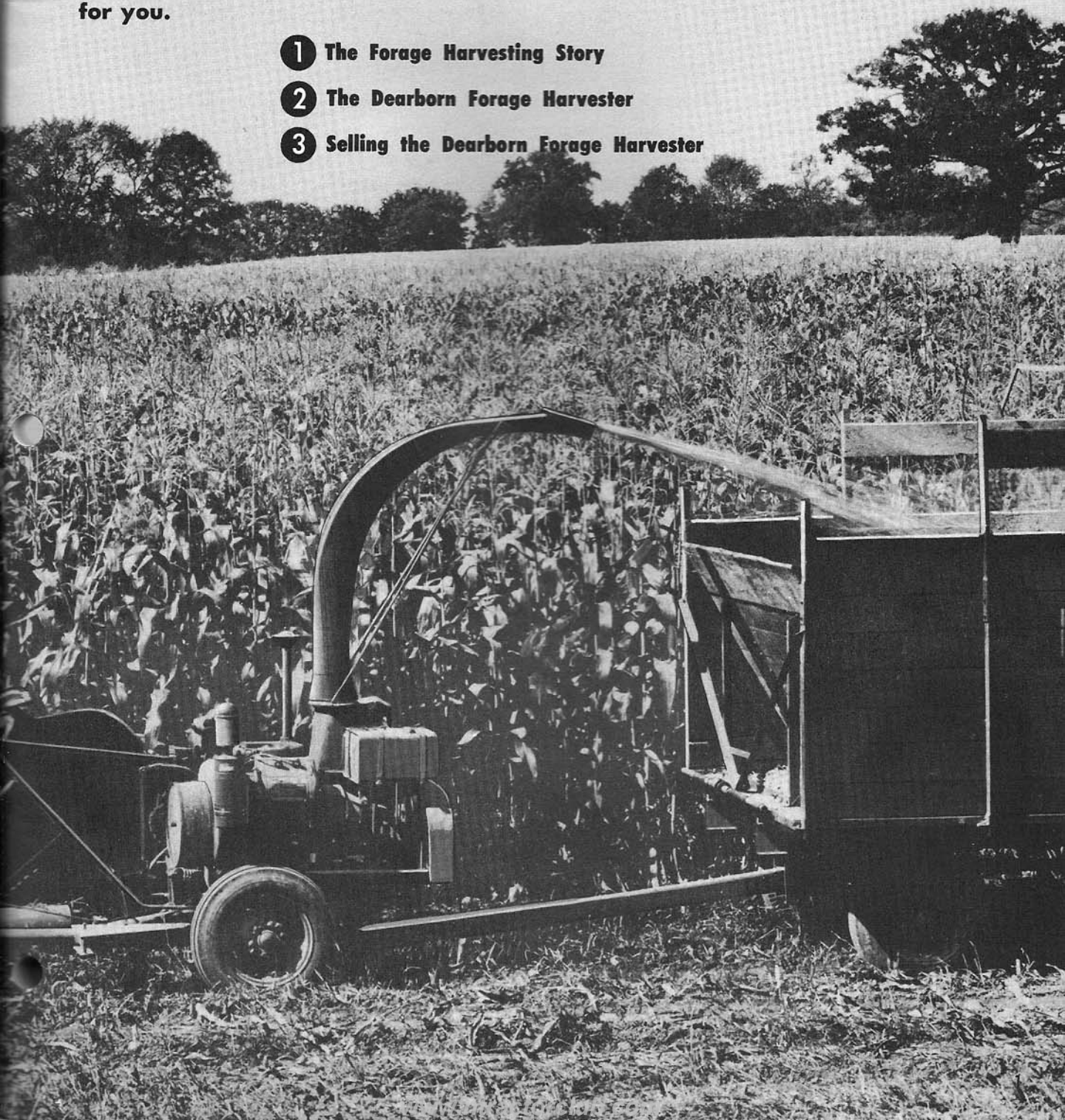
ON THE DEARBORN FORAGE HARVESTER
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This book of information on the Dearborn Forage Harvester is to aid you in your selling job. The first section tells why the Forage Harvester is growing in popularity. The second and third deal with the features of the Dearborn Forage Harvester and the sales advantages of these features.

Become familiar with this book. The time you spend with it will pay off in greater service to your customers, and added sales of Forage Harvesters for you.

- 1 The Forage Harvesting Story**
- 2 The Dearborn Forage Harvester**
- 3 Selling the Dearborn Forage Harvester**

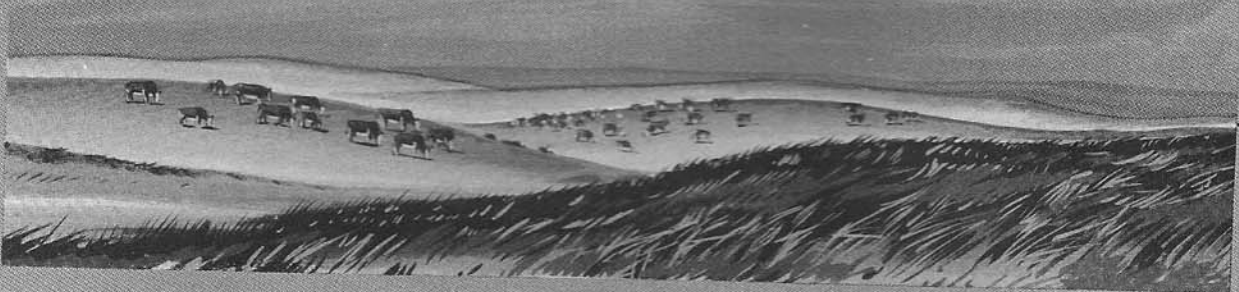


The **FORAGE HARVESTING STORY**

Importance of Forage Crops

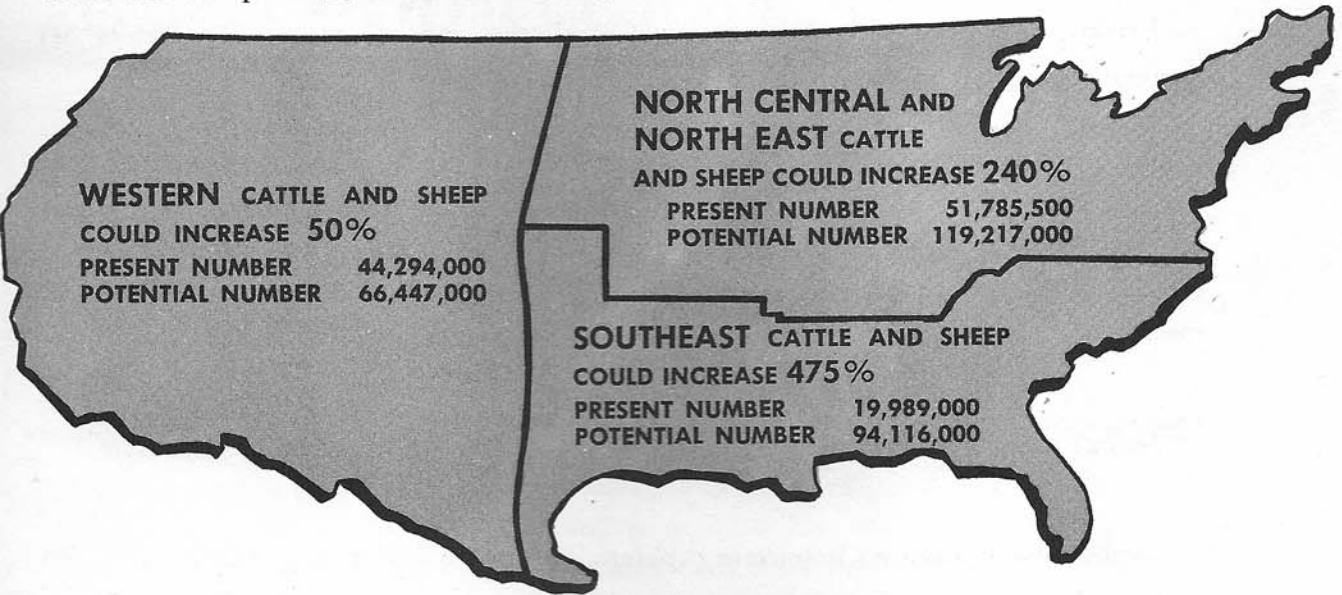
Today more and more American farmers are discovering the benefits of forage crops — conservation of valuable topsoil, greater soil productivity, and more high-quality feed for livestock. In livestock production the emphasis is on high-quality forage — with grains supplementing, rather than dominating feeding practices. With this emphasis on high quality, an increasing percentage of forage crops are being chopped and made into hay or silage. This plan has been found to pay off in increased production. This can only mean one thing: that the potentials for American agriculture are far from being reached. According to National Field Crops Research reports, if we develop our grasslands to their fullest we can expect to:

- 1 Produce far more than we are producing today.
- 2 Produce it with less labor and at more stable profits.
- 3 Build up our topsoil at the same time.



It is estimated by the Bureau of Agricultural Economics, U.S.D.A. that there will be 40 million more people to feed in the United States in 1975 than in 1950. Only on our grasslands, can we bring about the vast increases in meat, milk and other livestock products this increased population will need in the future. If we made full use of the information we now have available, the full potentials that grassland farming offers could bring about vast increases in our livestock production.

As shown by the map below, it is estimated that the West could carry about 50% more cattle and sheep than it does today; the North Central and the Northeast could increase cattle and sheep 240%, and the Southeast, 475%.



Such livestock increases, while seemingly overoptimistic, are indeed possible if American farmers continue to recognize a sound grassland program as their key to an economically stable and highly productive farming operation.

Although there is a definite trend toward grassland farming, corn still ranks a close second to the hay crop in the feeding of livestock. And it is an established fact that chopping corn for silage materially increases its food value. Until recent years, corn silage has filled a high percentage of the silos that are such a common sight on American farms. The production of corn silage has averaged around 35 million tons annually.

The increased importance in the use of forages in the feeding of livestock has brought about many problems. Most important among these problems is the need for improved labor-saving and quality-saving methods.

Helping the American farmer solve these harvesting problems with the new Dearborn Forage Harvester presents you, as a Dearborn dealer, with a fine opportunity to render a real service, and at the same time materially increase your sales.

The **NEED** for Improved Harvesting

Equipment

It is common knowledge that, to date, the forage crops, such as grasses, legumes, corn and straw, have been the least mechanized of all the crops we grow. The farmer has generally been left to sweat over them as best he could.



Labor has always been an important problem, especially during hay making and silo filling. The American farmer is always looking for a way to relieve this ever-present back-breaking problem, by a harvesting method which will add efficiency at every step of the harvesting process. And in the feed lot, too, he is looking for easier labor-saving methods. Today, even if a farmer could pay the wages for this labor, where is he going to find it?

Because unfavorable weather and lack of labor frequently cause a poor hay harvesting schedule, too many vitamins and digestible nutrients are lost out in the field. Far too many farm animals are eating hay which has lost from 75 to 90% of its Vitamin A and from 25 to 35% of its digestible nutrients.

It is well known that cutting and chopping the crop at the right time; dodging the destruction from the weather; and harvesting the crop quickly and easily will increase the quality of feed the farmer brings in from the field. This is especially important in humid regions where the crop must be harvested in spite of wet conditions. Properly equipped, the farmer can organize a flexible plan to get his harvesting done at the best time for the maturity and condition of his crop, regardless of the weather. With the right equipment and planning, a farmer can even get more cuttings off his land each year.

There are two real causes for these unprofitable, laborious conditions. Farmers lack either:

- 1 The latest forage harvesting know-how.
- 2 The mechanized forage harvesting equipment—or both.

The lack of harvesting know-how and equipment has cost the American farmer a tremendous sum each year. The bleaching effect of sun; the fermentation and leaching effect of rain; the shattering of leaves from improper handling, poor timing of the harvest; and waste in the consumption of forage, once it is in the feed lot, all result in the annual national loss of forage feed value, according to animal nutritionists, of \$500,000,000. This figure is approximately equal to the value of all the hay raised in the states of California, Nebraska, Wisconsin and Michigan. This is a greater loss, due to weather and improper handling, than for any other crop we grow in this country.

If an implement could be made to get the greatest quality out of the forage crop, increase the nutrient yield, and reduce farming to a matter of pushing buttons, it must still be a justifiable investment for the American farmer. It must be priced right and be inexpensive to maintain. It must be able to do many jobs and do them well and simply. It should be useful in the handling of many different crops—grasses and legumes for dry hay and silage, row crops such as corn and sorghum for silage, for chopping straw for bedding, and other uses by the farmer or custom operator.

The issue is clear: For farmers to get the most out of their forage crops, they must have mechanization that will:

- 1 Reduce food value losses of the crop in the field.
- 2 Increase total nutrient yield.
- 3 Reduce labor, man-hours and physical exertion.
- 4 Be economically practical and profitable for the farmer.



A NEED CREATES . . .

the Modern Forage Harvester

Necessity being the mother of invention, farmers and industry began working toward an easier, faster, and more economical way to harvest the forage crops that were used as feed for beef and dairy cattle. Many different experiments were conducted with the silo-filler in conjunction with the mower, rake, hay loader, corn binder, and tractor. Years of continued experimenting and developing with these many units resulted in the present type forage harvester that was finally introduced to the American farmer in the early forties.

THE FORAGE HARVESTER MEETS THE NEED

1. *By reducing the food value losses of the crop in the field.*

It is important that every hay producer clearly understands the principles which make possible high efficiency in hay harvesting. Since it is the object of hay making to produce feed that has a high nutritive value, let us consider the characteristics of such feed.

To be of high quality, it must have been made from plants cut at an early stage of maturity. The hay must be handled so that it retains its leaves. It must be free of mustiness and mold. Such hay or silage is very palatable and it also has a much higher feeding value per ton. The losses that occur in the haying operation are:

- Losses of leaves and other finer parts by shattering.
- Losses by fermentation and bleaching.
- Losses of soluble nutrients by leaching, in case of heavy rains.

The difficulty in curing is aggravated by the fact that hay yields are increasing as a result of improved soil fertility and soil management. The following is a charted comparison from the Beltsville, Maryland, Agriculture Experiment Station of three methods of making hay.

PER CENT	CROP AS CUT	CROP PRESERVED FOR FEEDING				
		SILAGE	MOW-DRIED HAY HEAT	MOW-DRIED HAY NO HEAT	FIELD-CURED HAY NO RAIN	FIELD-CURED HAY RAIN
	100%	84%				
100			78%	76%		
75					69%	
50						49%
25						
PROTEIN/ACRE LOSS IN POUNDS		67	91	108	144	223
IN DRY MATTER AS FEED PER CENT		20.72	18.68	18.70	18.19	17.19

From this chart, it is obvious that food value loss can be decreased in two ways. First, by improving the quality of field-cured hay and second, by harvesting more of the crop as silage or mow-cured hay.

The quality of field-cured hay can be improved by reducing the damage done by the sun and the rain to a minimum. This can be accomplished with the Forage Harvester because its large harvesting capacity means that the crop needs to remain in the field only a short time after it is cured.

Harvesting the crop for silage or mow curing with any method except the Forage Harvester creates a real labor problem, for there is much unavoidable hand labor involved and the crop is very heavy and hard to handle. With the Forage Harvester, complete mechanization is possible and manual handling of the crop can be eliminated.

2. By increasing the total nutrient yield.

We know that harvesting grasses and legumes at an early stage of maturity means that the resulting feed will contain a maximum of digestible nutrients. Harvesting the crop at an early stage of maturity also permits earlier subsequent cuttings, and possibly even an extra cutting, producing increased yields.

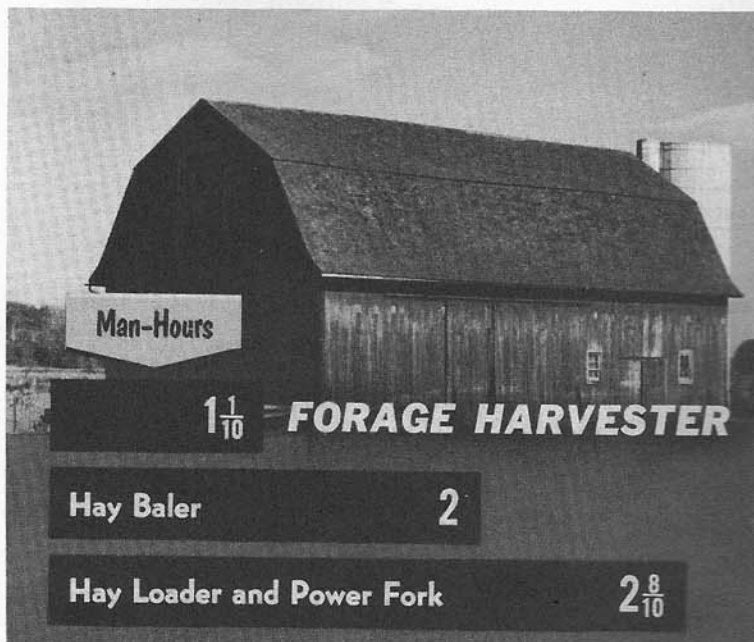
The versatility of the Forage Harvester permits a farmer to organize a harvest plan that will give these results. In the spring when wet weather is a problem, he can harvest his crop as silage or cure it in the mow with forced air drying; later in the year it is possible to harvest high-quality forage by either mow or field curing.



3. By reducing labor — man-hours and physical exertion.

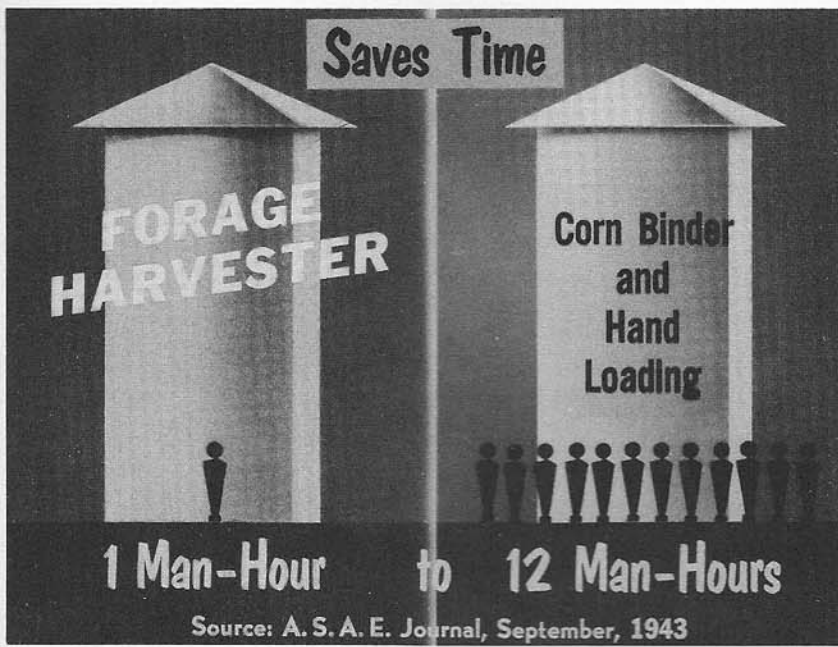
Even with mechanical aids, putting up long hay has always been a laborious, inefficient process. It has meant long hours of pitchfork work, at the hottest time of the year, in field, mow, and at the stack. The long man-hours required have meant a large labor investment, besides making the farmer dependent on outside help to handle one of his most vital operations. And with the cost of farm labor increasing and the supply decreasing, the labor outlook continues to look more dismal.

The Forage Harvester, however, answers the farmer's problem for harvesting quality hay, with minimum labor, and with minimum time spent for harvesting and handling. Of all the commonly used haying and silage-making methods, harvesting with the Forage Harvester requires the least man-hours per ton. But this does not tell the whole story. Machinery now shoulders all the hard work of harvesting which has made haying such a backbreaking job. Pitching loose hay, handling bales of hay, or bundles of corn have become a thing of the past. In fact, harvesting these crops with the Forage Harvester is almost as easy as driving a tractor — a feature which makes forage harvesting a job that practically any member of the family can perform.



The United States Department of Agriculture has found that, by comparing commonly used haying methods, it takes almost three man-hours to move a ton of hay from windrow to mow with a loader and power fork, and two man-hours with a hay baler. But with a Forage Harvester, it takes little more than one man-hour. Think of it! One-third the labor of the loader and fork. One-half the labor of the hay baler.

Source: "Hay Harvesting Methods and Costs," U. S. D. A. Circular 868, June, 1951.

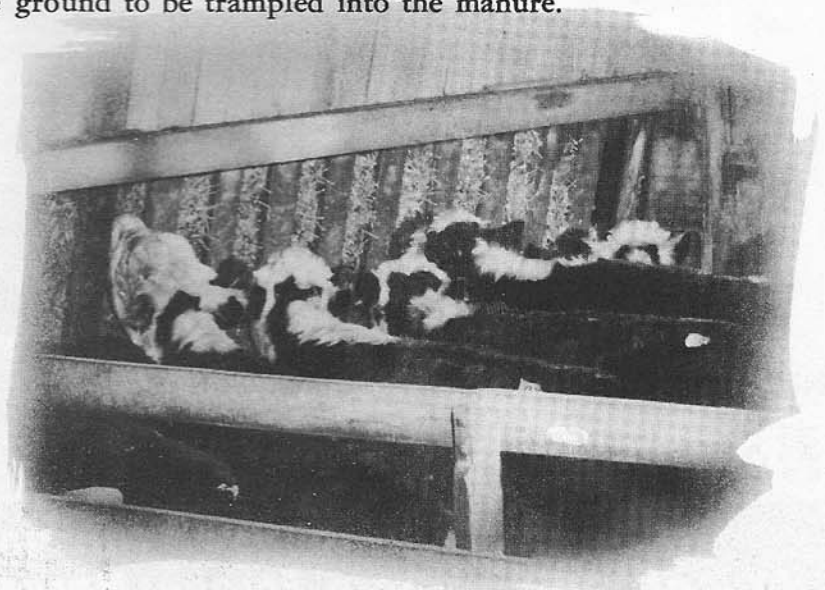


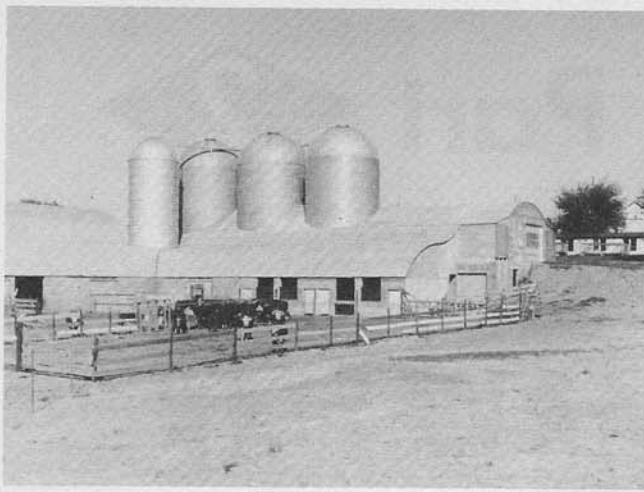
The Forage Harvester also saves labor in making corn silage. With the Forage Harvester method, only one man-hour is required to produce the silage which requires twelve man-hours when the Corn Binder and Hand Loading method are used. In comparing overall time from field to silo, the Corn Binder and Ensilage Cutter method requires 5 times the man-hours needed by the Forage Harvester method.

This type of harvesting operation, with the use of the one-man Forage Harvester, is truly one of the greatest labor-savers in American Agriculture.

Improved feeding techniques save feed and labor. In the field and in the feed lot chopped forage saves both feed and labor. There is less feed waste because the forage is more completely consumed. Chopped hay does not cling together like long or baled hay. Consequently, when cattle pull out chopped hay from the feed bunk they pull out smaller mouthfuls, and very little drops to the ground to be trampled into the manure.

Chopped forage is more adaptable to self-feeding by means of a movable gate in the barn or from a self-feeding type silo in the field or barnyard. This saves valuable feeding time and eliminates extra handling of the forage. It also saves storage space, because chopped hay needs only about half the room of long hay.





Considering these advantages, today's trend in new farm buildings is away from the high, large structure to one that is low and less expensive. They are designed to give more space to productive livestock units and less space to feed, with the emphasis on labor-saving features throughout. Chopped hay fits ideally into this modern design. Great strides have also been made in reducing silo costs by utilizing pit, trench and "snow fence" silos. This means less investment in buildings and labor, thus cutting the cost of production and increasing profits.

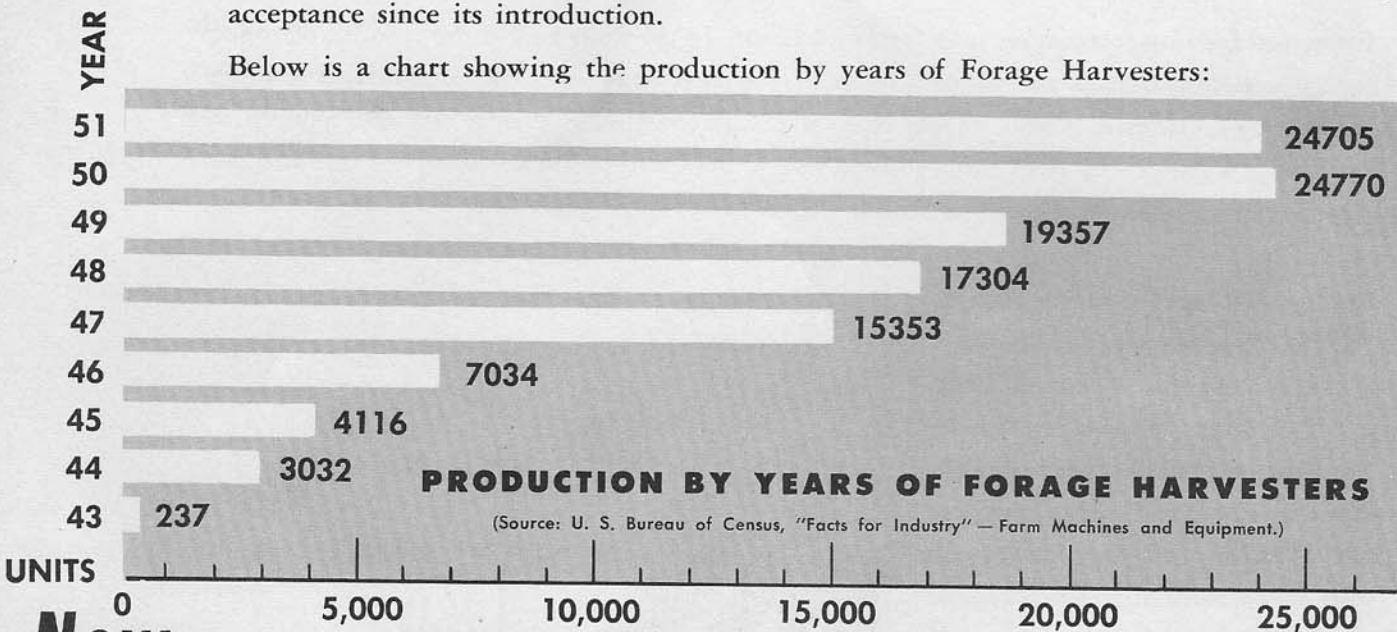
4. By being economically practical — profitable for the farmer.

The Forage Harvester is a sound investment because it can be used all through the growing season. The making of grass silage and corn and sorghum silage, the chopping of straw, the chopping of field-cured hay and mow-dried hay are some of the uses of this versatile machine. The Forage Harvester permits complete mechanization of these crops. It harvests the crops with the least man-hours per ton and practically eliminates the backbreaking hand labor. It provides forage for self-feeding methods, which are easily adapted to existing buildings or to modern labor-saving type buildings. And in addition, the Forage Harvester, because of its large capacity and sturdiness, may be used for custom operation should the owner wish to increase his income by helping his neighbors put up their forage crops.

Yes, the Forage Harvester, with its many outstanding advantages is directly beneficial to the American farmer and indeed a worthy investment.

Thus far we have discussed the need for the Forage Harvester and the many reasons why the Forage Harvester meets the need. Proof that the Forage Harvester is meeting this need is clearly demonstrated by the following figures that show rapidly growing acceptance since its introduction.

Below is a chart showing the production by years of Forage Harvesters:



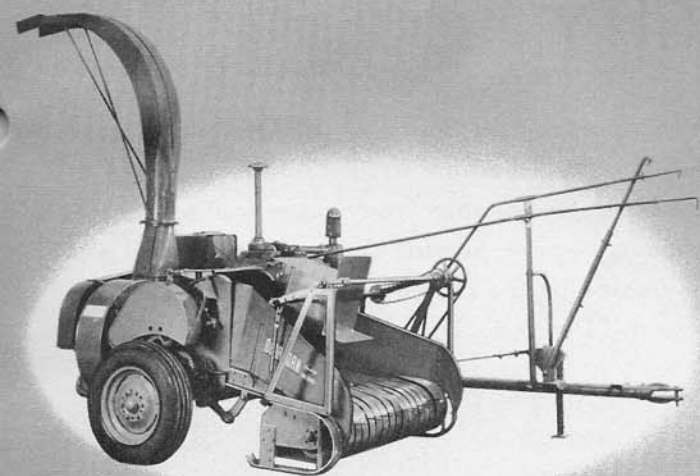
Now...

let's examine the many outstanding sales features of the Dearborn Forage Harvester and see why it is a top value in this harvesting field.

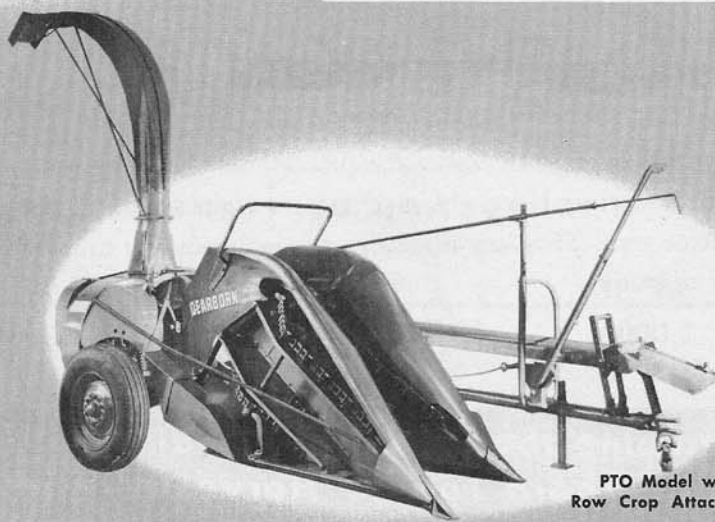
Part 2

The DEARBORN **FORAGE HARVESTER**

In the last section, we saw how the superior qualities of chopped forages are being discovered by farmers in increasing numbers. We saw how the Forage Harvester provides a means for making high-quality feed from both grass and row crops and how it licks problems of manpower, in terms of manual labor and time. We saw how it is efficiently used with modern farm buildings designed for self-feeding methods, and why it answers the need for an economically practical machine. Now in Part Two, we'll cover the operating features of the Dearborn Forage Harvester and see why it is one of the top Forage Harvesters on the market. Learn these features thoroughly and you'll be better prepared to tell a more convincing sales story.



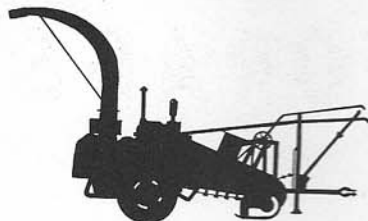
Engine Model with
Windrow Attachment



PTO Model with
Row Crop Attachment

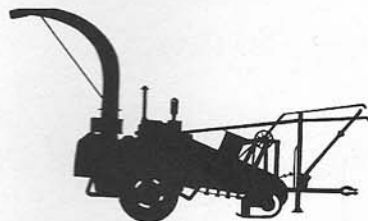
The Dearborn Forage Harvester **FEATURES . . .**

RUGGED DESIGN



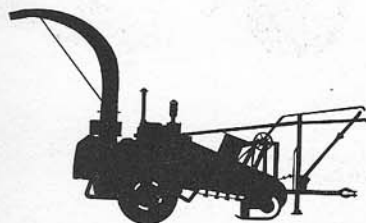
The frame for the Dearborn Forage Harvester is formed of three-inch fully welded, tubular and structural steel. This rigid foundation for the cutting and pickup mechanisms means the machine can continue peak performance under the roughest conditions. This rugged design contributes greatly to longer operating life.

BALANCED CAPACITY



The superior engineering planning which went into the design of the Dearborn Forage Harvester is quickly seen in the capacity of the machine itself. While its design is small and compact, its capacity is equal to or greater than many other leading makes. Hour after hour of continuous operation is possible because the capacity of each section is *balanced* to handle material delivered by the preceding section without choking or faltering. This is possible because the Dearborn Forage Harvester was designed as a *unit*.

CONVENIENT CONTROLS



Controls to raise or lower the pickup; to start, stop, and reverse the feeding assembly; and to start and stop the machine, are right where they can be easily reached from the tractor seat. They are adjustable for use with any tractor, and act as real time-savers for the operator.

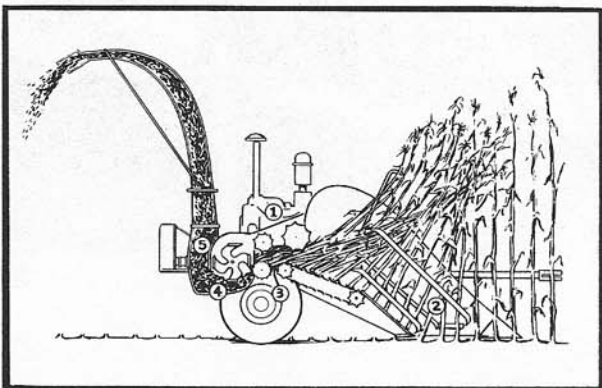
HOW the Dearborn FORAGE HARVESTER WORKS

The principal operations accomplished in the Dearborn Forage Harvester are similar to most other types of forage harvesting equipment. The machine carries its own power or has it supplied from a PTO attachment to the tractor pulling it. The material to be chopped is gathered up, fed to the cutter and then blown into a wagon or truck.

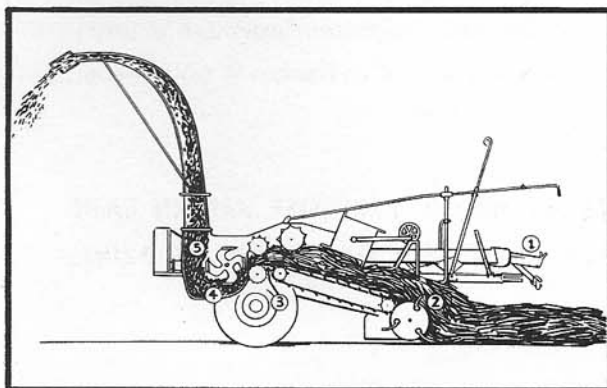
Below are the five sections that make up the Dearborn Forage Harvester.

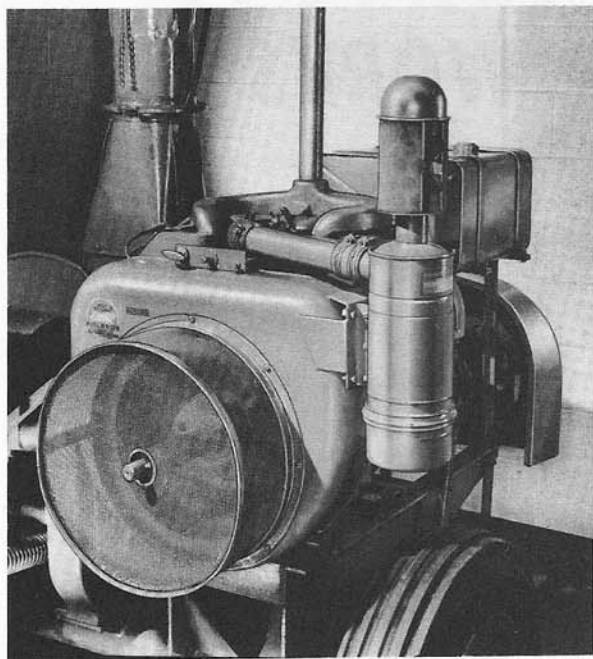
- 1 POWER:** Power is supplied from either an auxiliary engine or from the tractor PTO.
- 2 GATHERING:** The crop to be chopped is gathered and taken into the machine in this section. For corn, cane, or sorghum, a *Row-Crop Attachment* is used; for grasses, legumes and straw, a *Windrow Attachment* is used.
- 3 FEEDING:** In this section, metal rolls receive the crop, compress it and positively thrust it into the cutting chamber.
- 4 CUTTING:** Here the crop is chopped by a cylinder-type cutter. Two simple methods are used to obtain the length of cut desired.
- 5 BLOWING:** A separately operating fan blows the chopped material through a pipe into a truck or wagon.

WITH THE ROW-CROP ATTACHMENT



WITH THE WINDROW ATTACHMENT





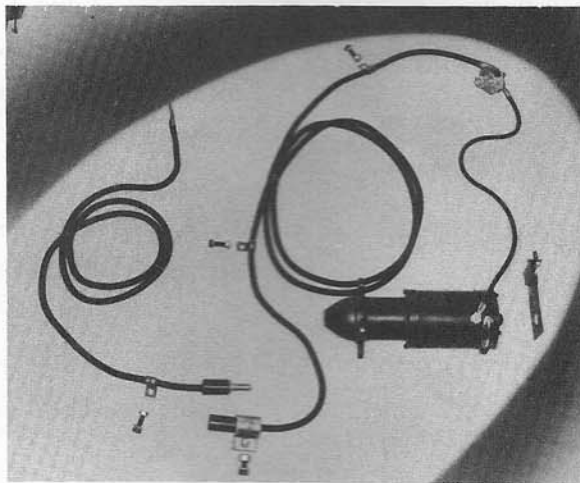
The basic unit of The Dearborn Forage Harvester is available in either an engine powered or a power-take-off model. Except for the power source, both basic units are the same. Both contain the same carefully designed feeding, cutting, and blowing mechanisms . . . all with a host of features, which are ready to go to work producing high-quality feed as soon as the row-crop or windrow attachment is added.

ENGINE POWERED

A powerful, air-cooled, thirty-one horsepower 4-cylinder engine gives dependable service, and a reserve of power for tough going. The engine governor is set to operate at a "no load" engine speed of 2300 r.p.m.

STARTER AVAILABLE

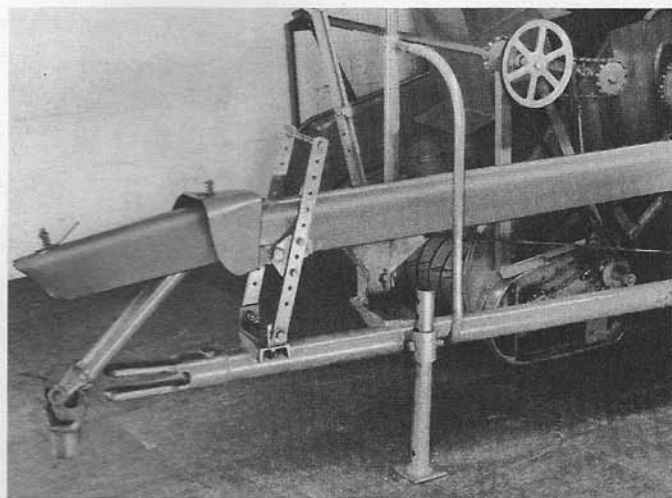
A starter can be installed on the engine of Model 14-43. The starter and wiring to connect to the tractor battery are available as accessories and can be installed with a minimum of effort.



PTO POWERED

The PTO is designed to attach to any tractor of adequate power having standard A.S.A.E. hitching specifications. Many of the principal parts of the PTO assembly are the same dependable units which are used on the Dearborn-Wood Bros. Combine.

THE DEARBORN FORAGE HARVESTER HAS THE SAME OPERATING SPEED WITH EITHER TYPE OF DRIVE.



GATHERING TWO ATTACHMENTS ARE AVAILABLE

The two attachments which may be added to the Dearborn Forage Harvester to handle crops are the Windrow and the Row-crop attachments.

The windrow attachment cleanly gathers up crops which are cut and windrowed—grasses and legumes of all kinds.

Good rules to follow when using this attachment are:

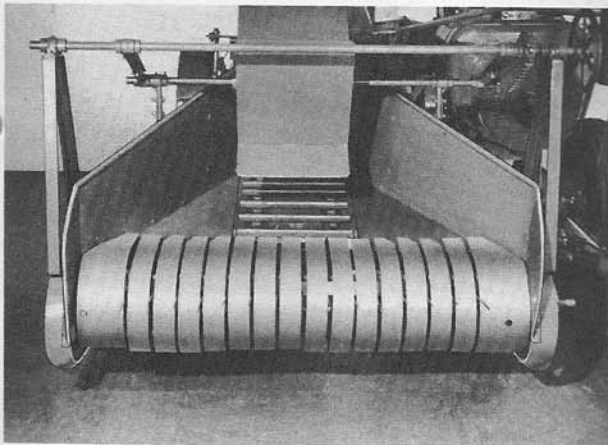
1. Be sure windrow is of uniform size—bunching makes operation difficult.
2. Make corners long and rounded. This helps to eliminate bunches on corners.
3. One to one and a half mower swaths usually makes the most desirable windrow.

This attachment is easily assembled to the basic unit.

The row-crop attachment cleanly and efficiently harvests corn, sorghum, cane and other row crops. It is easy to hook up to the basic unit. This attachment is fully protected to operate efficiently even under weedy conditions.

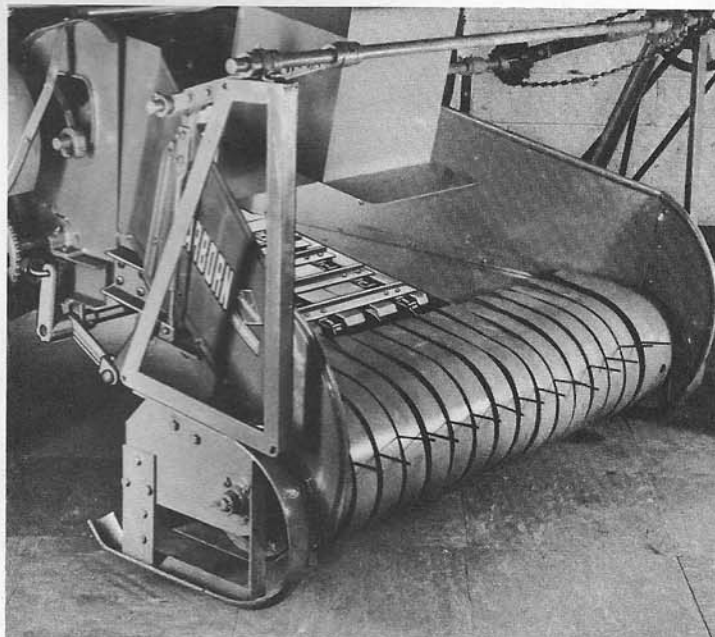
Either attachment may be added to either basic unit. **MANY FARMERS WILL WANT BOTH ATTACHMENTS.**

THE WINDROW ATTACHMENT



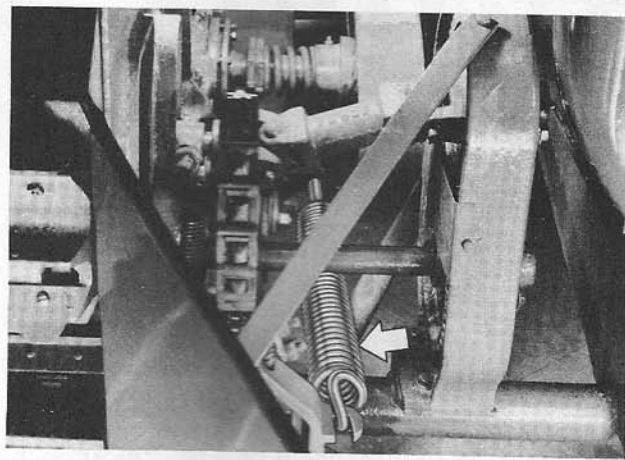
The Dearborn windrow attachment's 54-inch width assures capacity for large and small windrows. Its ten-inch height provides a short lift for the windrow, and minimizes the shaking off of leaves and fine parts. Three rotating bars with steel tines cleanly lift the windrow onto the feed apron. The pickup is protected during transportation, when it can be raised ten inches off the ground for safe clearance.

Attachment and detachment are simple, easy, and quick. Secure eight bolts (four on each side) which hold the unit to the main frame. Add the lift link pins, which secure the lift mechanism. Connect the apron, by attaching the apron chains. Add the pickup reel drive chain, and take up tension on the balance springs, and you are ready for the field.



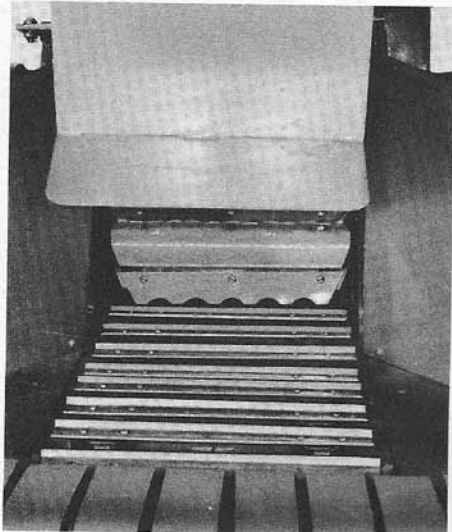
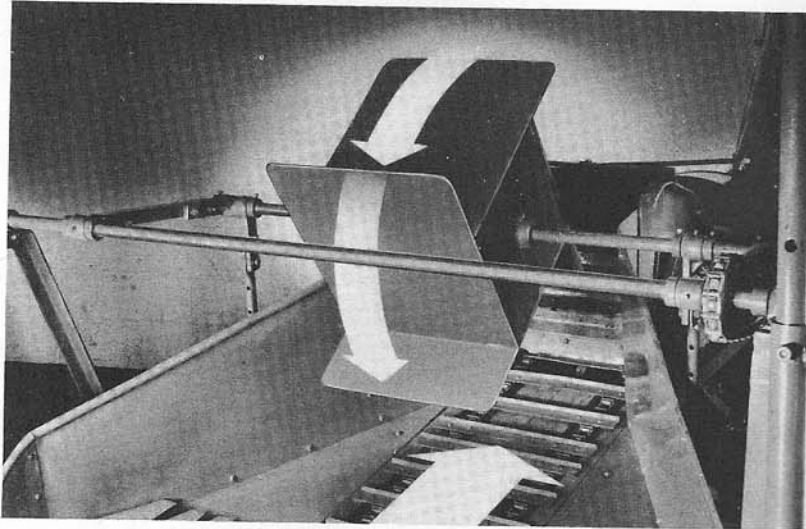
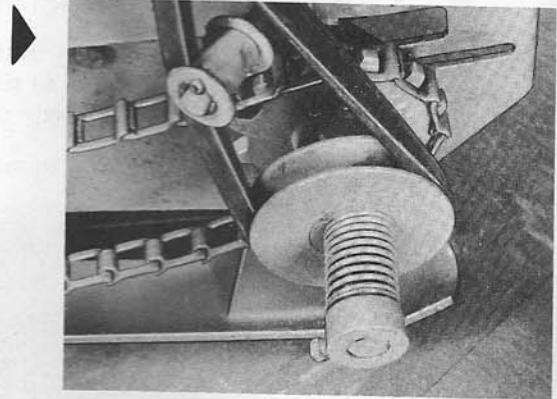
FLOATING ACTION

Two adjustable lift springs, one on each side, provide floating action. This makes it easy to lift the pickup in the field, by providing a "balanced" lift which prevents wrenching and jolting. The pickup gently floats over bumps and uneven ground.



SLIP CLUTCH

A protective feature is the slip clutch, which makes it possible to reverse the feeding mechanism to clear it, without reversing the pickup.



ADJUSTABLE HAY WHEEL

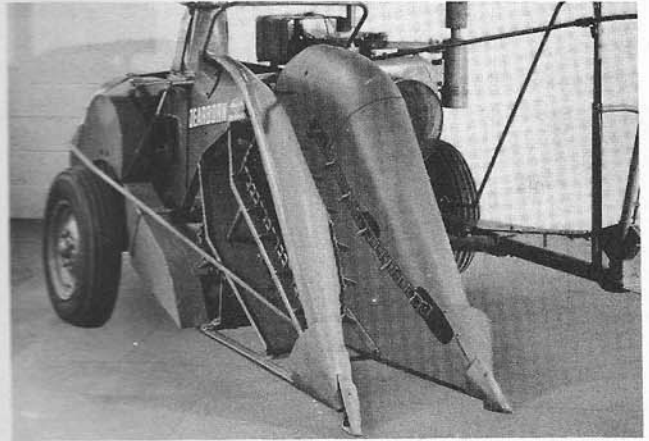
The free-floating, powered hay wheel can be adjusted for distances of from four to ten inches above the apron. At the correct setting for the particular crop conditions, it just brushes the top of the hay, providing a positive, even feed. The floating feature means that no matter how the windrow may vary in size as it passes beneath the hay wheel, the right amount of pressure is applied.

APRON

The apron works with the hay wheel to move the material to the front serrated feed roll, and the gathering operation is complete.

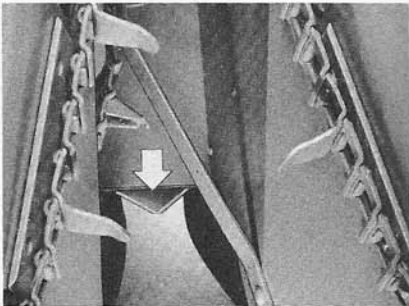
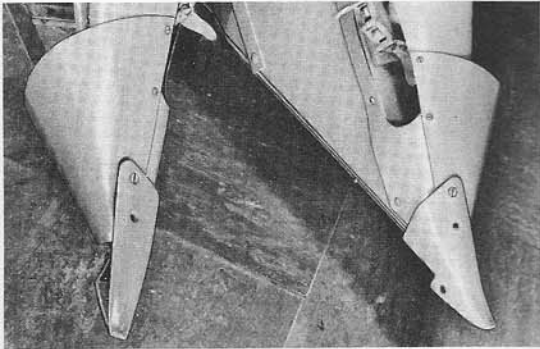
2 THE ROW-CROP ATTACHMENT

In a few simple steps, the row-crop attachment is put on or taken off the basic unit. The assembly is accomplished in the following manner: Secure eight bolts, connect and tighten the apron chain, secure lift links with pins, install main drive chain assembly, and tighten balance springs.



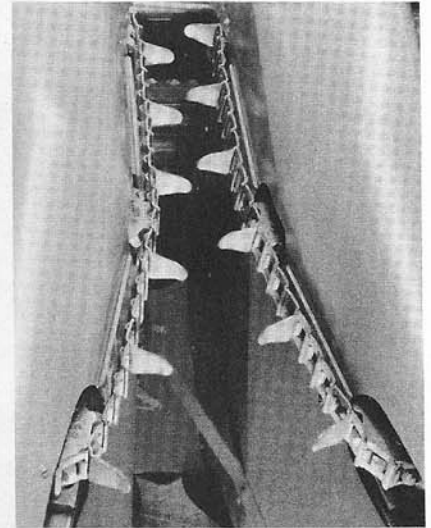
GATHERING POINTS

Stalks which are leaning, or down, are picked up by these two gathering points. Closely following the changing contour of the ground while in the field, the points can still be raised six inches above the ground for safe transport.



KNIFE SECTION

A knife section operating between two side knives cuts off the stalks as the machine moves along.



UPPER GATHERING CHAINS

Two upper gathering chains start the stalks moving back toward the feeding mechanism. With the aid of the gathering points, they also help pick up leaning stalks.

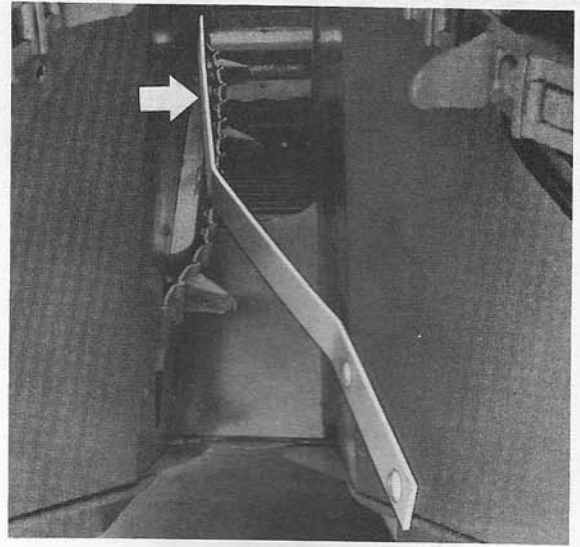


LOWER GATHERING CHAIN

The lower gathering chain on the right side is moving at nearly twice the speed of the upper chains. This action moves the bottom end of the material up the stalk chute, and begins to tilt the top of the stalk forward.

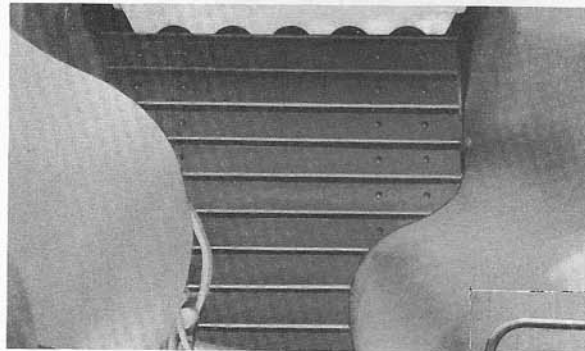
PRESSURE TINE

The pressure tine holds the cutoff stalks against the gathering chains on the right side, and assures a positive, even flow of stalks to the feed apron.



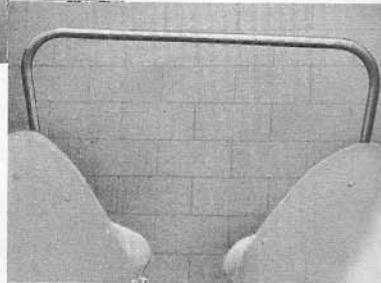
TALL CORN DEFLECTOR

This deflector is especially helpful on windy days and in fields where the corn is extra tall. It aids the feed apron in the operation of laying the stalks down.



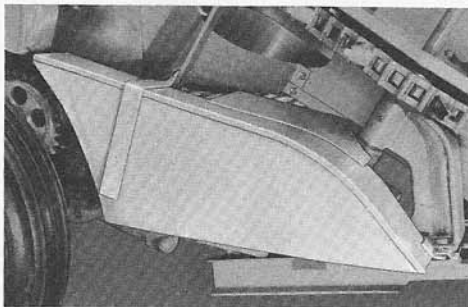
FEED APRON

Continuing the action already set up by the motion of the gathering chain, the feed apron continues to lay the stalks down and moves them to the feed mechanism.



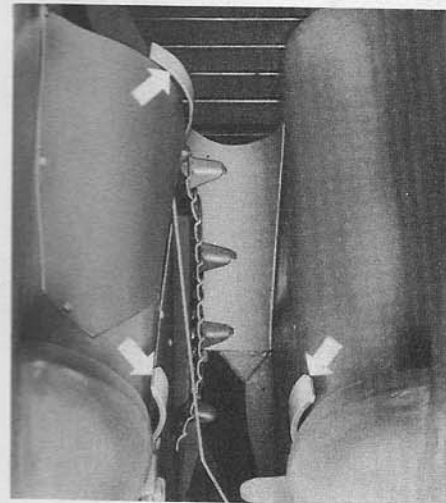
WEED PROTECTION

The Dearborn Forage Harvester features weed guards at all vital points to thoroughly protect it against weed wrapping.

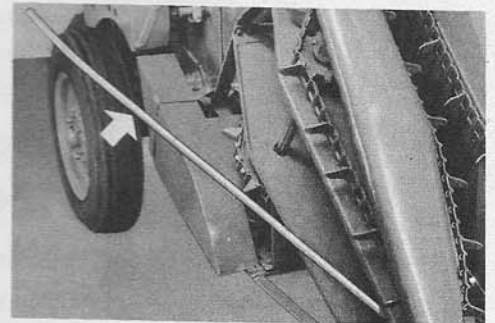


A guard fits over the drive chain and shaft to protect them from weed wrappage.

Three small sprocket guards at the rear of the gathering chains act as strippers and prevent weeds and trash from being pulled through and collecting on the drive chain and gears.



Even in extremely weedy conditions, the Dearborn Row-Crop attachment can work effectively, because a weed deflector bar is added to the right side sheet, which further protects the drive mechanism.

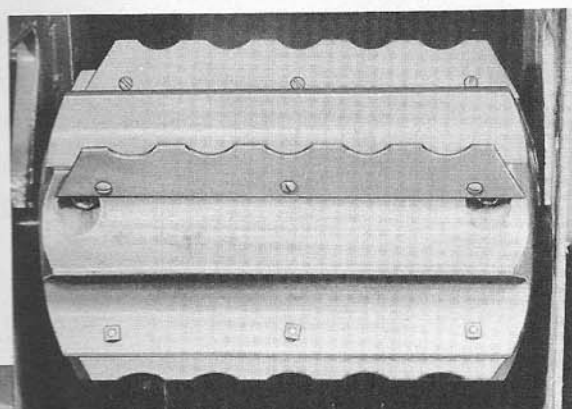


FEEDING

Feeding of the material to be chopped is accomplished on the Dearborn Forage Harvester by means of a set of three feed rolls acting in conjunction with the feed apron. The feed rolls are aggressive. They positively move the material through the feed throat which leads to the cutting cylinder. They also compress the material firmly, so the cutter knives can make a clean, sure cut.

FRONT FEED ROLL

The front serrated feed roll does the job of feeding positively and aggressively. Because it is a cast-iron roll, it is heavy enough to partially compress the crop. Because it floats, it can handle large or small windrows. It moves the material to the rear feed rolls.



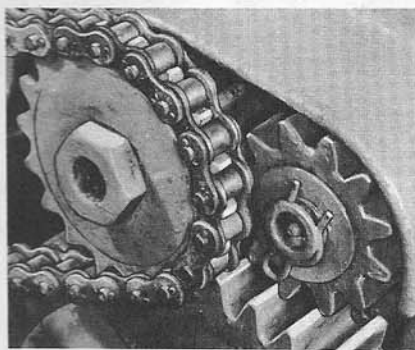
REAR FEED ROLLS

The ribs in the upper roll in this set, and the spikes in the lower roll help provide positive feeding. In addition, the upper roll is spring-loaded, which further assures continuous, positive operation with varying sized windrows. This means, too, that the material is fed to the cutting cylinder at a uniform rate to obtain the proper length of cut.



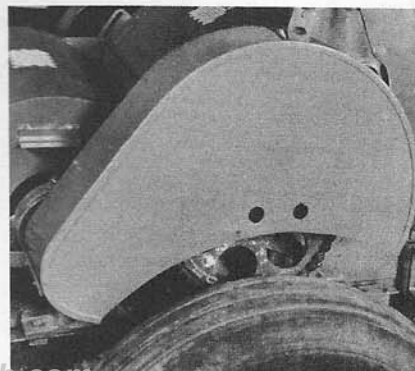
SPUR GEARS

The spur gears which start, stop and reverse the feed mechanism are typical of the high-quality materials used throughout the Dearborn Forage Harvester to assure dependable operation at all times.



FEED MECHANISM SHIELD

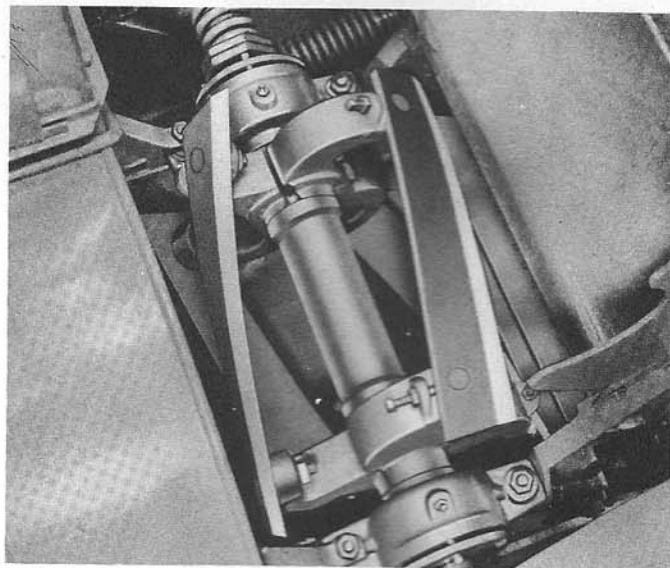
The shield over the drive gears is only one example of the shields provided throughout the machine, to protect the operator from accident. It is important that all shields be in place during operation.



CUTTING

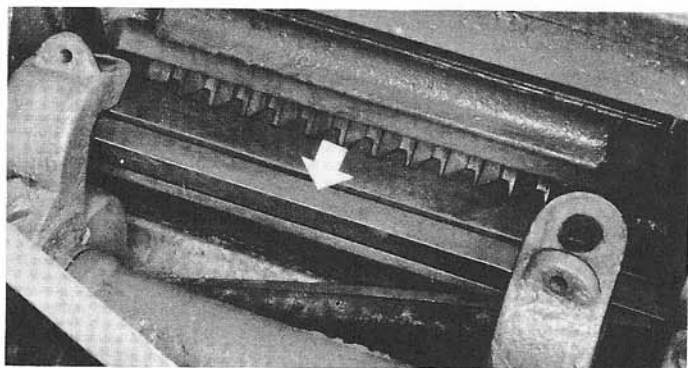
The large capacity cutting mechanism of the Dearborn Forage Harvester handles 88 square inches of material at one time. That's the amount of forage that is chopped every time a single cutting knife passes the shear bar.

This is a cylinder-type cutter, made up of four 17-inch knives, rigidly supported on each end. The rigid mounting of the knives results in more uniform cut.



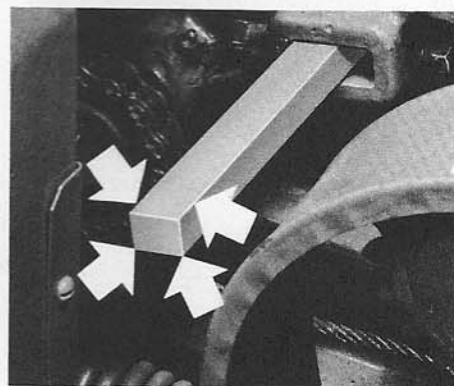
SET SCREWS

The closer the knives come to the shear bar, the sharper and cleaner the cut. Proper cutting clearances are easily maintained by simply adjusting set screws, provided on each end of the cutting knives.



SHEAR BAR

High-carbon steel edges give the shear bar extra wear and long life. Easy adjustment of the shear bar backward or forward is also possible, with set screws provided to give the advantage of the closest possible cut.



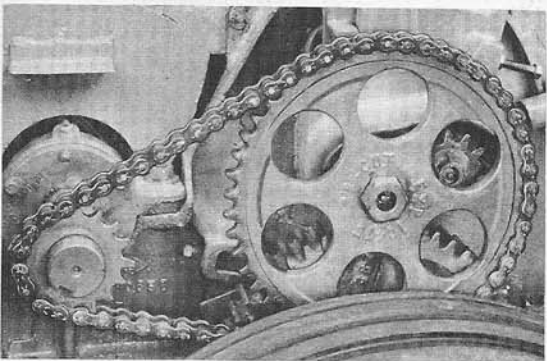
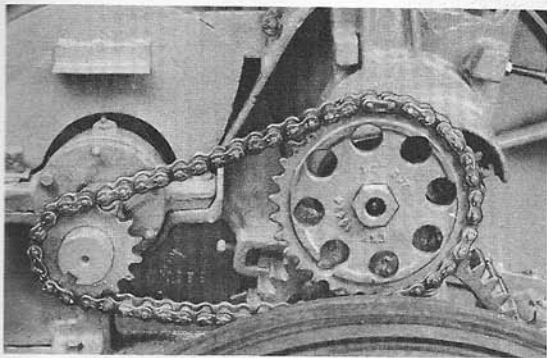
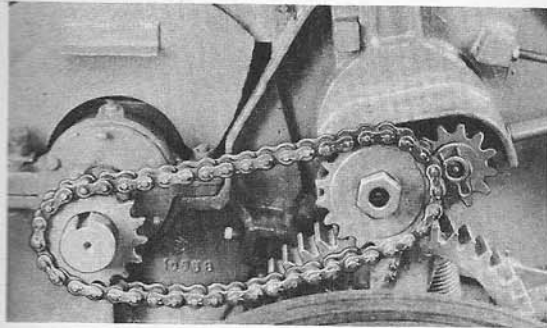
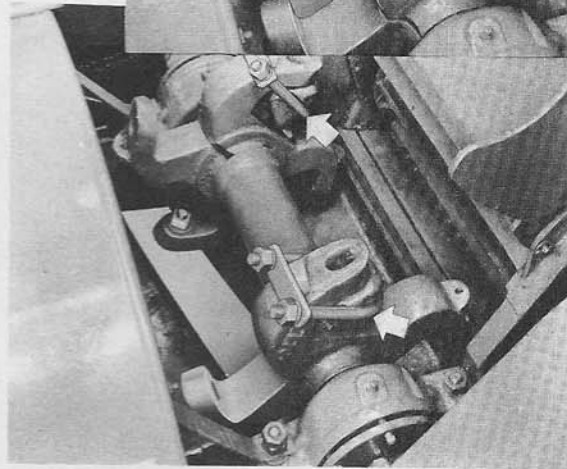
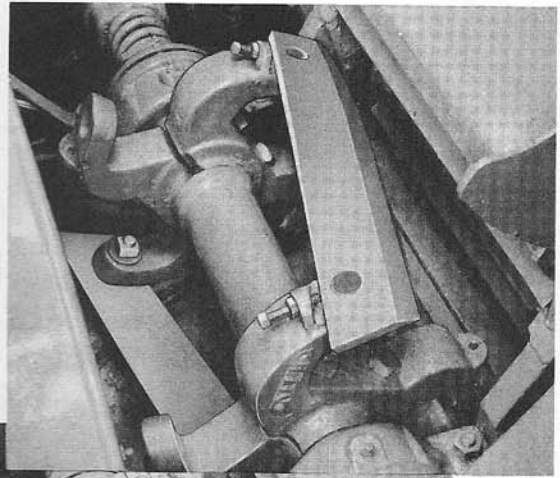
Not one, but four cutting edges! This economy feature means the shear bar can be successively rotated to use all four sides as wear takes place. This is a welcome time-saver in the field—no more running out for a new shear bar if one edge becomes dull.

ADJUSTING LENGTH OF CUT

Remove Two or Three Knives.

Removing two or three knives means that, for each revolution of the cylinder, fewer cuts will be made. Hence, the removal of these knives would produce a longer cut than if all four knives were in operation.

Counterbalance weights are provided for use when one knife alone is used.



Change Feed Sprocket.

By changing the feed sprocket, the speed at which the material is fed into the cutter can be varied. The Dearborn Forage Harvester is supplied with sprockets for a $\frac{3}{8}$ ", $\frac{1}{2}$ " and 1" length of cut. The machine will be delivered from the factory with the $\frac{3}{8}$ " cut sprocket installed. For green silage—either hay or corn—the $\frac{3}{8}$ " or $\frac{1}{2}$ " length is most commonly used. Dry hay for blowing into a mow is usually longer, and will require a sprocket change and/or removal of two or three knives.

By removing knives, and changing sprockets in various combinations, forage lengths of from $\frac{3}{8}$ " to 4" may be obtained.

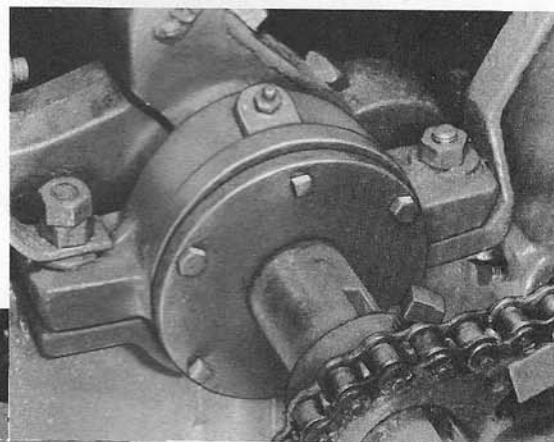
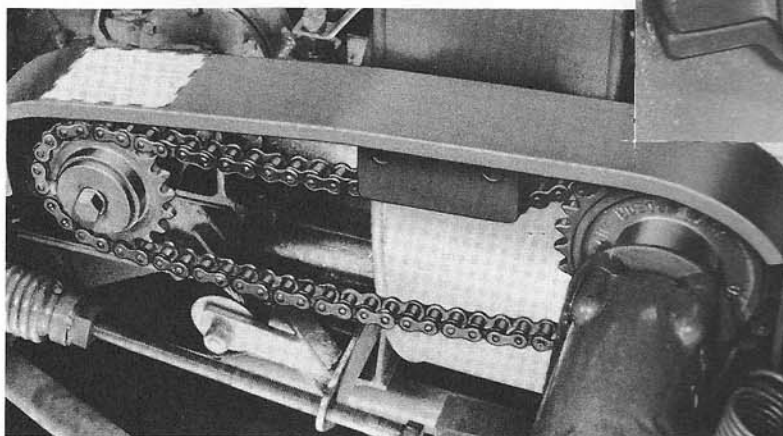
Below is a list of the sprockets showing the combination which should be used to get the specified length of cut:

THEORETICAL LENGTH OF CUT

KIND OF SPROCKET	4 KNIVES	2 KNIVES	1 KNIFE & COUNTERWEIGHTS
3/8" — 48 TOOTH SPROCKET	3/8"	3/4"	1 1/2"
1/2" — 32 TOOTH SPROCKET	1/2"	1"	2"
1" — 18 TOOTH SPROCKET	1"	2"	4"

BEARING ADJUSTMENT PLATE

The cutting cylinder which turns on tapered roller bearings is designed for long, service-free operation. The bearings are easily adjusted by moving the adjusting plate at the cylinder bearing end in or out.

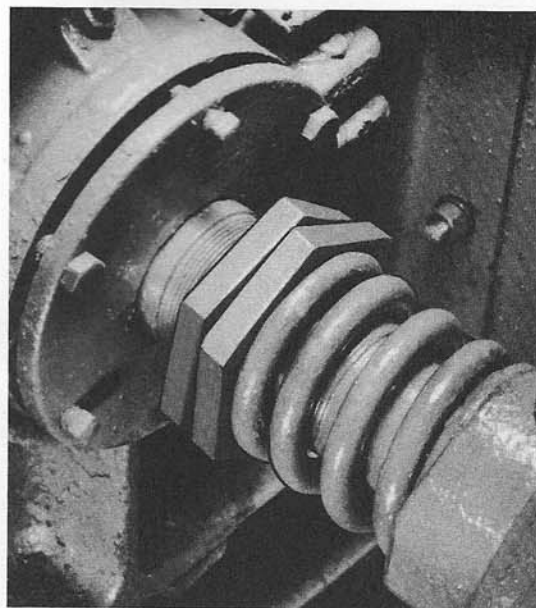


HEAVY DUTY CHAIN

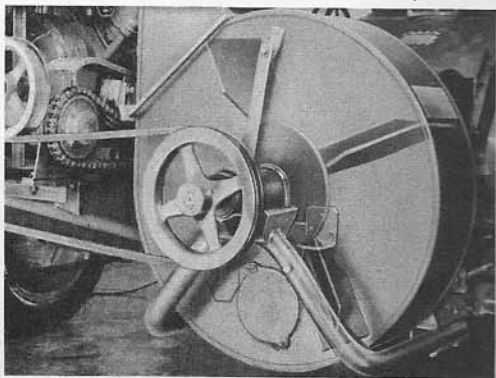
Power is transmitted from the angle drive to the cylinder by a heavy-duty roller chain which contributes to efficient trouble-free operation.

SLIP CLUTCH

A slip clutch on the cylinder shaft is an important safety feature. When properly set it goes into action whenever rake teeth, stones, wood, or other objects enter the cutting chamber. Because the cylinder type cutter has a low momentum, it stops turning before expensive damage is caused.



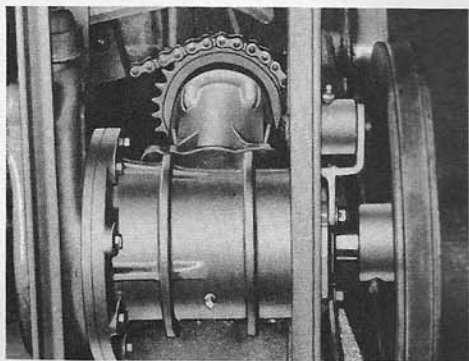
BLOWING



The Dearborn Forage Harvester features a blower which has just one job to do—deliver cut material to the wagon. It does not try to double up as a cutter and blower both. Consequently, it can be made smaller and still handle all the material supplied to it.

FOUR-BLADED BLOWER

The blower is equipped with a 30-inch, four-bladed fan. It turns on ball bearings that are provided with grease fittings for long, trouble-free service. It lifts the cut forage in a powerful stream of air up the pipe and out into a truck or wagon.

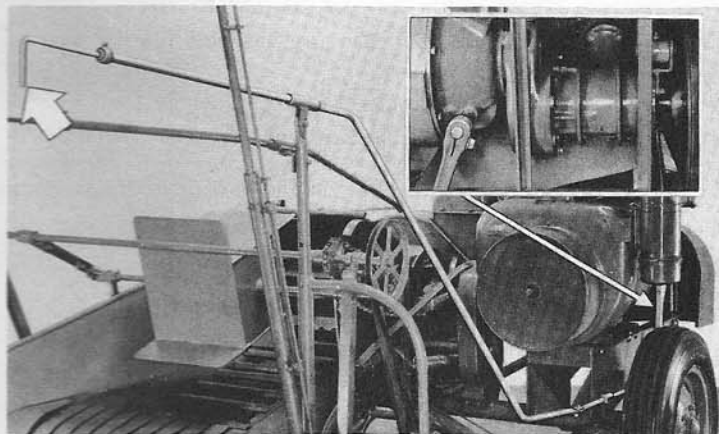


ANGLE DRIVE

An angle drive, with a reinforced gear box, delivers power to the blower. It also delivers power to the cutter chain drive. This type of drive eliminates complicated arrangements of chains and belts.

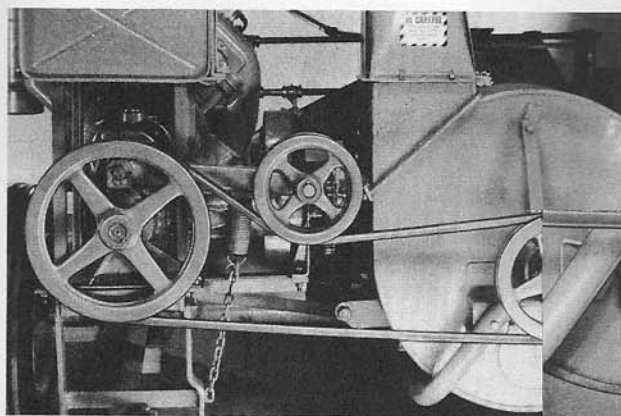
POWER-CONTROL CLUTCH

A clutch is provided on the engine model to disengage the power unit. It is operated from the tractor seat. This is important in case foreign objects are encountered by the cutter.



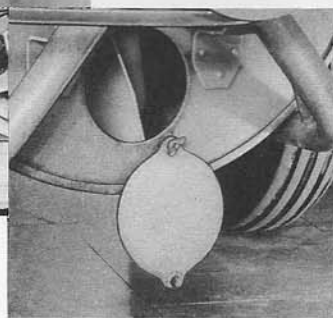
V-BELT AND ADJUSTABLE IDLER

The blower is driven by a V-belt. An adjustable idler assures positive blower operation.



CLEANOUT DOOR

A cleanout door provides easy access for the removal of foreign materials.



THE BLOWER PIPE

Flexibility of position is a feature of the Dearborn Forage Harvester's blower pipe. This means that a farmer is not restricted to one type of conveyance for receiving the cut forage. He may use either a trailing wagon, hitched to the rear of the harvester; or a truck which travels along at the side under its own power.

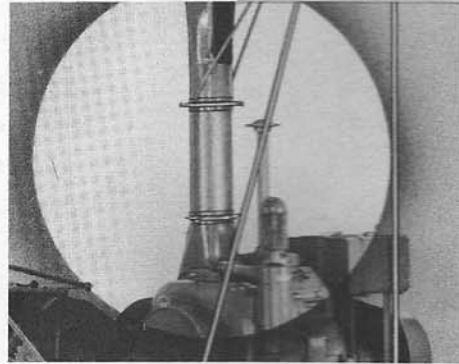
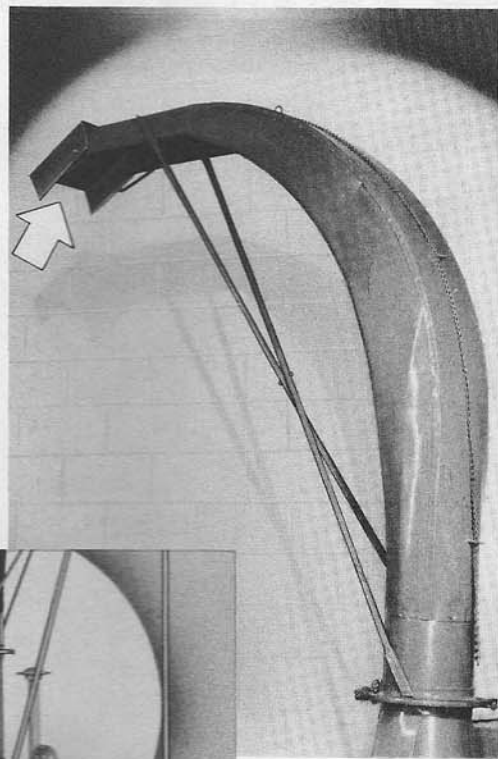
The blower pipe has several adjustments for just the right positioning to the rear, and a single adjustment to the side. Only one position to the side is needed, since the truck can readily keep a certain position in relation to the blower discharge.

BALANCED LOADING

Balanced loading is made possible by a deflector on the end of the blower pipe. This provides for accurate aiming to the front or rear of the wagon which receives the discharge. Cross bracing gives added stability to the end of the blower discharge.

PIPE EXTENSION

For use with high-sided trucks which will hold extra large loads of forage, a pipe extension kit is sold as optional equipment. This kit contains an extension which adds 20" of height to the blower pipe and additional bracing needed for extra height.



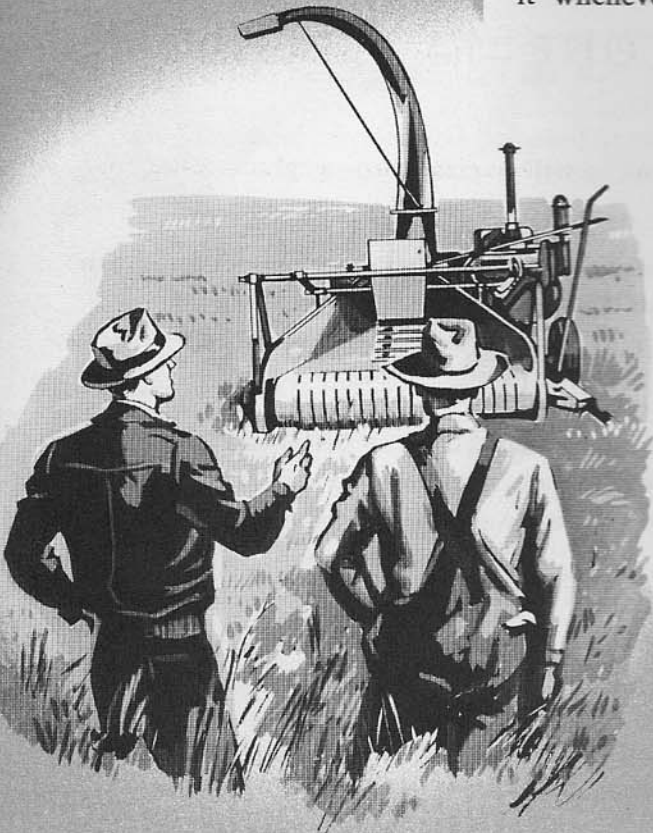
SPECIFICATIONS for Dearborn Forage Harvester (NOTE: Specifications subject to change without notice)

FRAME:	All welded tubular and structural steel.			
CYLINDER:	Length of knives No. of knives	17" 4	Type of bearings R.P.M.	Taper Roller 900 @ 2300 engine R.P.M. 900 @ 545 PTO R.P.M.
BLOWER:	Diameter No. of blades	30" 4	Type of bearings R.P.M.	Ball 762
SHEAR BAR:	Four steel cutting edges with mild steel core.			Direction of discharge Side or rear
LENGTH OF CUT: (Theoretical Length in inches)	SPROCKET 48 Tooth Sprocket 32 Tooth Sprocket 18 Tooth Sprocket	4 KNIVES ¾ ½ 1	2 KNIVES ¾ 1 2	1 KNIFE PLUS COUNTERBALANCE 1½ 2 4
THROAT	Width Height	16" 5½"	Area	88 sq. in.
CAPACITY:	Hay Attachment	15 tons per hour, green hay 5 to 6 tons per hour dry hay	Row Crop Attachment	15 tons per hour (approx.) (depending on moisture content)
POWER UNIT:	Wisconsin VP4D Air-Cooled 4-cylinder Engine	Mfg. Rating 31.0 H.P. @ 2200 R.P.M. @ 60°F.	Recommended Operation Speed	2290 R.P.M. at no load 2140 R.P.M. approx. full load
HAY PICKUP:	Width	54"	Diameter	10" approx.
ADJUSTMENTS:	Pickup reel height max.	10" approx. through manually operated lever	Row-crop height max. Deflector	6" approx. through manually operated lever Side or rear delivery
WHEEL AND TIRE ASSEMBLY:	Dearborn standard wheel	6.50 x 16 implement tires	Bearings	Taper roller
OVER-ALL DIMENSIONS:	Width Height (less spouting)	7'1" 5'11"	Length, over-all	13'6" (not including deflector)
GROUND CLEARANCE:	6½" approximately			
WEIGHT:	Basic engine Basic PTO machine	2624 lbs. — (14-43) 1975 lbs. — (14-44)	Hay pickup unit Row-crop attachment	485 lbs. — (14-46) 661 lbs. — (14-45)
FUEL TANK:	Capacity	9 gallons		
OPTIONAL EQUIPMENT:	For side delivery Extra set of knives	20" extension and spout supports 4 knives per set	Engine driven machine	Self-starter kit includes wiring, starter, starter cable, and control panel.

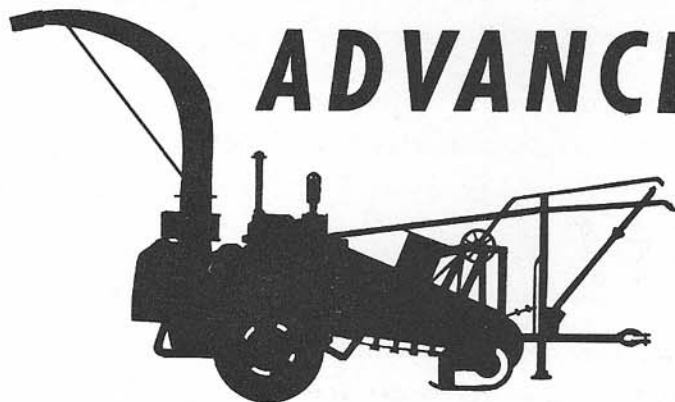
SELLING

the Dearborn Forage Harvester

In the last section, we were concerned with the operation of the Dearborn Forage Harvester and the many features that make this operation possible. In this section, we are concerned with combining these features into usable operator advantages and with furnishing helpful forage harvesting information that will provide you with a sound, practical sales presentation. This section, and the other two, give you a complete forage harvesting story to help you sell more Dearborn Forage Harvesters. Read this book over carefully, study it, and refer back to it whenever necessary. You'll find it a mighty handy tool when out selling, so be sure to always carry it with you. Now let's see what important features a farmer wants and needs in a Forage Harvester.



The Dearborn Forage Harvester Offers Its Users the Most **ADVANCED DESIGN**



From an over-all point of view, the Dearborn Forage Harvester is truly a machine of *Advanced Design*. It incorporates the latest engineering thinking with all the desirable features that years of field experience have developed and proved. The result of this combination is a finely balanced

machine, light in weight, rugged and compact, plus a machine that has all the important qualities that the farmer wants and needs in a forage harvester—Efficiency in Operation—High Capacity—Economy—and Convenient, Safe Operation.

with **EFFICIENCY IN OPERATION**

MANY MACHINES IN ONE — Here's a versatile machine that will harvest a variety of crops.

- ★ With its row-crop attachment, it will harvest corn, sorghum, cane, and other row crops for silage.
- ★ With its windrow attachment, it handles grasses and legumes for silage and hay—also straw for bedding.


MAKES TOP-QUALITY FEED


- ★ Its cylinder-type cutter cuts forage that will keep better in storage and be more palatable when fed because the forage is cut uniformly (in selected lengths from $\frac{3}{8}$ to 4 inches).


HARVESTS MORE OF THE AVAILABLE CROP

Gathering mechanisms on both the row-crop and the windrow attachment can easily be adjusted to just the right height for best operation.

- ★ On the row-crop attachment, a pressure tine holds cut stalks in the gathering section, helping assure that all the cut crop is harvested.


 A tall corn deflector helps assure that even the tallest corn stalks are properly fed into the machine.


 On the windrow attachment, a wide 54-inch pickup unit gently and efficiently picks up crops from large or small windrows.

 A powered hay wheel helps assure an even and uniform flow of the crop into the machine, contributing to continuous trouble-free operation.

with **HIGH CAPACITY**

The capacity of a forage harvester is usually measured in tons per hour. The average harvesting capacity of the Dearborn Forage Harvester is:

 15 tons of grass or corn for silage per hour

 6 tons of grass or legumes for dry hay per hour.

The most important reason for the high capacity in this relatively lightweight, compact machine is its *Balanced Design*.


Each operating section of this harvester has been designed to do just one job, and therefore can do that job most efficiently. Each section—pickup, feeding, cutting, and blowing is balanced in size and capacity with the rest of the machine.


This type of designing contributes to high capacity by providing a steady flow of harvested material through the machine.


The combination of efficient and balanced operating sections contributes even more to high capacity because it makes most efficient use of the power available.

For really tough going, *reserve power* is readily available, because the 31-horsepower engine provides more power than is necessary for normal operating conditions.

While capacity is generally measured in tons per hour, it's the total continuous working hours that really count. The Dearborn Forage Harvester is designed to provide its owners with continuous, trouble-free operation day after day, with the very minimum of work stoppages because:

 It is sturdy and rugged in construction throughout.

 Safety slip clutches and shields adequately protect all operating parts from foreign objects and overload.

 Its cylinder type cutter has low momentum which minimizes damage even when foreign objects do get into the cutting mechanism.

with **OVER-ALL ECONOMY**

There are many good reasons why the Dearborn Forage Harvester is an economical machine to own.

- § It is one of the most reasonably priced machines on the market.
- § Its cost of operation can be spread over a variety of crops—row crops: corn, sorghum, and cane—windrowed crops: grasses, legumes, and straw.
- § It requires less power and fuel to operate because its balanced design provides an even flow of harvested crop through the machine.
- § Its maintenance costs are low, because while it is a rugged machine, many of its moving parts are protected from damage.

It has:

- A sturdy tubular frame.
- A rugged cylinder-type cutter, adequately protected against damage by a safety slip clutch.
- A low momentum cutter, which minimizes damage when foreign objects do get into the cutting mechanism. This also reduces the possibility of damage to the blower.
- Adequate lubrication through pressure fittings at all points of wear.
- A windrow pickup that is protected against damage by a safety slip clutch.



These reasons all add up to a machine that is cheaper to buy, cheaper to operate, and cheaper to maintain. In the long run, this can mean substantial savings for its owner, which is like putting extra dollars in his pocket.

with **CONVENIENT, SAFE OPERATION**

The Dearborn Forage Harvester is a convenient, easy, and safe machine to operate because:

- ✔ It hitches to any tractor, having A.S.A.E. hitch.
- ✔ An adjustable jack makes it easy to vary height of hitch for varying drawbar heights.
- ✔ An adjustable tongue adapts the harvester to tractors with fixed drawbars.
- ✔ An adjustable wagon hitch simplifies positioning the trailing wagon.
- ✔ A flexible PTO mounting (on PTO models) simplifies PTO attachment.
- ✔ The harvester operation is completely controlled from the tractor seat—one control starts, stops and reverses feeding mechanism. On the engine model, another control engages and disengages the engine clutch.
- ✔ The adjustment of windrow and row-crop attachments for ground clearance is easy because lifting mechanism is spring-loaded.
- ✔ The adjustment for length of cut is simple and convenient because all parts are easily accessible.
- ✔ Changing from either windrow or row-crop attachments only involves eight bolts, apron and drive chain, and two lift link pins.
- ✔ Optional equipment provides additional ease of operation—automatic starter for the engine model—and a blower pipe extension for use when harvester is operating with high-sided trucks.
- ✔ Shields and guards for grass, chains, and belts plus safety slip clutches help assure safe and trouble-free operation.

Yes, these are the qualities that farmers want and need in their farming equipment: efficiency, high capacity, economy, and convenient, safe operation. These are the qualities that make . . .

**THE DEARBORN FORAGE HARVESTER
THE BEST BUY IN THE FIELD**

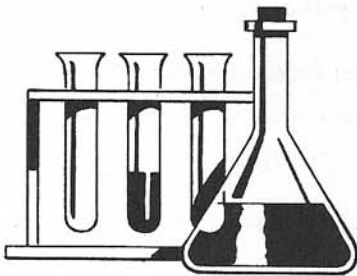
Operational **INFORMATION**



This additional information is to further aid you in making your sales presentation. It will be to your advantage to know these facts and figures as they may provide answers to the questions that your prospects will ask.

WHEN TO HARVEST

(These are general recommendations. Contact your County Agent or Vo-Ag Teacher for local practices and recommendations.)



The quality of the feed produced can either be made or lost in a matter of a few days at harvest time and the difference depends to a large extent on the timing of the harvesting operations. The forage crops should be harvested at the most succulent stage, while still possessing the highest possible content of protein, minerals, and vitamins. This is usually in the early bloom stage, or just before, for hay. For corn, the early dent or dough stage is best. Forage from corn cut when the kernels are in the milk

stage or earlier will supply only 60 to 75 per cent as much digestible nutrients per 100 pounds as that which has reached the dough stage. If harvesting is delayed beyond the dent stage, excessive spoilage is very likely.

CHOPPED FORAGES

The desired moisture content and the length of cut vary according to the method by which the crop is to be preserved. The following chart indicates five different methods of harvesting forage crops and the recommended moisture content and length of cut of each:

METHOD OF PRESERVATION	LENGTH OF CUT (In Inches)	MOISTURE CONTENT
Grass Silage	$\frac{5}{8}$ to $\frac{3}{4}$	over 70%
	$\frac{3}{8}$ to $\frac{1}{2}$	60 to 70%
	not over $\frac{3}{8}$	under 60%
Corn Silage	$\frac{5}{8}$ to $\frac{3}{4}$	milk stage
	$\frac{3}{8}$ to $\frac{1}{2}$	dough stage
	not over $\frac{3}{8}$	late dough stage
Straw	3 to 4	23 - 25%
Field-cured Hay	3 to 4	22 to 25%
	1 to 3	21 to 23%
Mow-cured Hay	3 to 4	35 to 40%
	1 to 3	30 to 35%

It is important to know why the recommended length of cut and moisture content for each method of harvesting are essential to the production of top-quality feed. In the following paragraphs, you will find these important factors discussed in some detail.

REQUISITES OF GOOD SILAGE



To produce satisfactory silage the green forage crop must have certain definite characteristics. First of all, it must be neither too dry nor too high in water content. If it is too dry, it will not pack sufficiently in the silo, and enough air will remain to permit the development of mold. If the forage is too high in water content, the silage is apt to be very sour or may even spoil. A considerable loss of juice will occur unless the silo is water-tight. This loss is often greater than realized because it represents juice from the stalks, leaves; and in corn, the kernels.

Since it is of utmost importance that the silage be packed well, it is usually cut about as short as possible. Air is thus eliminated and spoilage is reduced to a minimum.

GRASS SILAGE



The most popular method of making grass silage is to cut the crop and allow it to wilt until the moisture content of the hay is about 65 to 70 per cent. It is put into an air-tight silo and in most cases no preservative is used.

A good rule of thumb to follow to determine this moisture content is to take a handful of chopped forage and squeeze it very hard; then release the grip. If it remains in a ball, it is too wet, if it falls apart readily, it is too dry, and if it gradually separates

it is right for ensiling. Three points favor the wilt method: (1) There is no cost of preservatives. The preservation is at the expense of carbohydrates in the plants. (2) There is little seepage from the silo. (3) The material handled weighs less because of lower moisture content. A length of cut $\frac{3}{8}$ " to $\frac{1}{2}$ " is most common.

A direct cut method is sometimes used, in which case, the silage is usually very high in moisture. Molasses or some other kind of preservative is needed to increase the sugar content so that enough acid is formed in the fermentations to preserve the silage properly. Because this material packs well, a longer length of cut, $\frac{5}{8}$ " to $\frac{3}{4}$ " may be used.

CORN AND SORGHUM SILAGE

Corn and the sorghums are ideal silage crops. At the proper silage stage, they contain enough sugar so that sufficient acid is produced in the silage fermentations to make silage of high quality. The stage of maturity is again of utmost importance so that the crop contains the proper amount of moisture. The chart gives the best lengths of cut as moisture varies. At the ideal stage of maturity, a $\frac{3}{8}$ " to $\frac{1}{2}$ " length is used.

FIELD-CURED HAY

It is important to keep in mind that to keep well in the mow, chopped hay must be slightly drier than when stored long. Long hay can be safely stored at a moisture content of 25 to 28 per cent. When chopped 3-4 inches in length the crop is more dense. Less natural ventilation is possible and the crop may become overheated. This results in a poor-quality feed or even a possibility for spontaneous combustion. If the crop is chopped 1 to 2 inches in length it should not contain over 23 per cent moisture for safe storage. If the crop is chopped as long as possible and is slightly drier than long hay, spontaneous combustion and spoilage can be eliminated. When a sample of hay is taken from the center of the windrow, twisted between the hands and shows no signs of moisture, the hay is cured for chopping.

MOW-CURED HAY

The most desirable moisture content for hay to be partially cured in the mow is 35 to 40 per cent. If the moisture content is above this, drying is expensive and spoilage is likely to occur before the crop is dry. The crop is about 35-per cent moisture just before the leaves begin to shatter in handling. The finer the material is chopped, the denser it is and the harder it is to dry. It is, therefore, desirable to chop the crop as long as possible.

In mow curing, a fan forces air through a system of ducts under the pile of hay and then up through the hay.

A properly designed system properly loaded will dry the crop from 35 to 20 per cent in five to fifteen days depending on the weather conditions. The air moving through the mass of chopped hay eliminates any possibility of spontaneous combustion.

STRAW

Straw chopped with the forage harvester has many advantages. It requires less storage space than straw stored long, is more absorbent, remains under stanchioned cattle better, is easier to handle with manure loaders, and is easier on manure spreaders and spreads more evenly in the field.

LENGTH OF CUT

In speaking of length of cut of forage chopped by any forage harvester, two terms are often used. One is "theoretical" or "machine" cut, and the other is "actual" or "true" cut. "Theoretical" length of cut refers to the setting made on the machine, which under ideal conditions would produce a cut corresponding to that setting. "Actual" cut refers to the length into which the forage is actually chopped, regardless of machine setting.

The discrepancy between the two lengths occurs because the material is not fed into the cutters straight, but much of it passes through more or less crosswise.

