



Articulated Kockums 10-ton Whole Crop Harvester is equipped with a 238 hp Detroit diesel, hydrostatic transmission and 4-wheel drive.



Harvester uses a roll-in, roll-out system to pick up and put down containers. Quick-Attach header can be replaced with windrow pick-up.

KEY TO A WHOLE NEW WAY OF FARMING?

Whole Crop Harvesting

Swedish 'all-in' harvesting system will challenge the supremacy of the combine by:

- Clearing corn fields in one pass
- Continuing to work independently of the weather
- Eliminating grain losses and straw handling
- Making economic use of all parts of the crop
- Converting bulk fiber to marketable pellet form
- Adapting to green crop dehydration and fractionation
- Increasing the potential range of crop varieties and types
- Extending the cropping and harvesting season
- Expanding farm production to serve other industries
- Securing sufficient extra yield to pay for itself

Motor up to the small town of Kopingebro at the southern tip of Sweden and one of the first things you will see is the world's second and largest commercial plant for drying and processing whole crops.

The Swedish Sugar Co. is investing \$4 million in its construction. It will take cereal crops from some 10,000 acres of surrounding farmland and dry it at the rate of 30 tons per hour.

The project is the result of some revolutionary thinking about harvesting by Ingemar Bjurenvall, President of Kockums Construction AB, Höganas, Sweden, which is supplying and erecting the plant. Its design is based on experience gained with a pilot installation having one-third of the capacity (10 tons/hr.) built and operated by the company over the past two seasons at Hogesta.

The argument for whole crop harvesting rests on its efficiency as an energy system. The objective is to harness the power of the sun, utilizing all the products of photosynthesis and wasting nothing. Put it how you will, it means exploiting to the full what is sometimes called the biomass — that reservoir of energy created by the sun out of soil, air and water.

Kockums' whole crop harvesting

process can be broken down into three stages:

The harvester: In essence this is a self-propelled forage harvester but, because the economy of the system depends upon harvesting 24 hours a day, conventional machines are of no use.

Kockums' harvester, although based on an American model, has been redesigned and strengthened to stand up to continuous operation. It has a 250 h.p. engine, articulated steering, all-hydrostatic drives and transmission to four equal-sized wheels with wide-tread tires, a cylinder chopper and alternative quick-attach direct-cut, pick-up and row-crop headers.

The machine is expected to cost \$121,000, but its daily output will be up to 10 times that of a large combine. In addition its use will not be restricted to the harvesting of cereals.

Transport: An established system is employed on the harvester and transport trucks for setting down and picking up the containers. It consists of a hydraulically actuated arm and hook designed to engage a lug on one end of the container, which rides on rollers as it comes on and off the vehicle.

Drying and processing: A new type of rotary drum drier has been developed, employing lower temperatures and a longer run than a conventional grass drier. At Köpingebro, three different burners are available to suit the nature of the incoming material.

Apart from the ease and efficiency of grain separation during the drying process, an outstanding advantage of the plant is its ability to separate the remainder of the crop into different and highly individual fractions.

The implications of switching from combine to whole crop harvesting are, of course, enormous. For a start, take the harvester itself. Kockums point out that its whole crop machine does a simple, straightforward job at high speed, regardless of the weather.

The whole crop harvester is also equally capable of handling fresh or wilted green crops, just like a conventional forage harvester. This means that its capital and operating costs, in common with those of the whole system, can be spread over both forage and cereals harvests.

It is the implications of the processing plant, however, that are the most far-reaching. In the first place, it is a grain drier, capable of relieving the farmer of the need to dry, clean and store his grain. It is also a green crop dehydrator, the proximity of which will increase the attractiveness — and the economy — of conserving fodder crops by drying.

Then, it recovers the vitally important light chaff fraction, normally 10-15 per cent of the total cereal crop weight and sufficiently high in protein to be converted into cattle rations with a minimum of additives.

Finally, it processes the straw — for high-fibre-content stockfeed in the initial stages, but increasingly, as the supply grows, for the paper, building, chemical and human food industries.

Proving the reliability and capacity of the field machinery and processing plant will be Kockums' main concern through the 1979 season.

What is the farmer to make of all this? The possible advantages to him have already been touched upon: In-

creased grain yields and total energy production doubled, labor freed at the peak harvest period, relief from worrying about the harvest and escalating combine costs, easier cultivation with less weeds, more time for autumn work and tending stock, reduced nitrogen requirements with legumes and less dependence on the weather.

If he asks what difference it might make to his income, Kockums will reply that it might not be much in gross terms, but that he will emerge considerably better off because of substantial savings in variable and fixed costs. His machinery costs, in particular, they claim, could be cut by up to half.

Is it only for the business farmer, the big estate, the corporate owner?

"On the contrary," insists Bjurenvall, "This will tend to counter the further invasion of big business into agriculture. I think we will always have better farming with the family farmer, but parts of his job have got to be industrialized. The question he must face up to is 'Are you willing to lose a little of your independence in return for a lot more cash in hand?'"

"I believe his answer will be yes. And that will make sense, because this system does not tie him down — it frees him from the mechanical chores of handling bales, conditioning grain and compounding feed and allows him more time for his real job, which is growing crops and raising stock.

Bjurenvall thinks cooperative ownership could be a sound idea because the farmer's interests will be tied up closely with those of the processor. In many situations it would be advantageous to add comprehensive feed milling and mixing equipment to the plant's facilities.

But whoever owns and operates the installation, Kockums has no doubt that it will be profitable. After a first year of running-in and solving

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