

Another Use for an Old Machine:

SUGAR BEET PLOT HARVESTER

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Expanded research with sugarbeets at NDSU created a laborious, time-consuming harvest problem. In the plots, beets were dug with a blade-type lifter, then topped, cleaned and weighed by hand. Machines, including a modified carrot digger and conventional field machines, were tried and discarded for various reasons. Available funds and time would not allow development of an entirely new machine, consequently a commercial harvester was modified.

Design

The plot harvester is built around a one-row, tractor-mounted "Mar-Beet" harvester. This machine was used in the Red River Valley before the introduction of lifter wheel machines. The Mar-Beet machine has two standards which run beside and under the beets to loosen them from the soil. The loosened beets are impaled on a spiked wheel which lifts them from the ground, then are topped with two discs as the spiked wheel revolves. Tops are discarded, and the beets are cleaned by potato chain conveyors. For field use, a two-wheeled hopper equipped with an unloading elevator is pulled behind the tractor. For plot use, a castor wheel platform was designed to facilitate handling of the beets (Figure 1). The platform contains an adjustable, rod bottom cleaning and bagging chute, room for empty and full "sample bags", and space for two or three men to clean and handle the samples. The chute has a divider which allows one bag to be filled while the other is being changed. The chute can be lowered to the platform by loosening two bolts. This feature provides clearance for the elevator when the machine is loaded on a tilt trailer.

The platform floor (Figure 2) was made of

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2" x 2" expanded metal to allow dirt and trash to fall through. For future models, a smooth metal or wood floor may be desired. The 2" x 2" expanded metal gives good operator footing but doesn't allow adequate trash flow, and some small beets fall through.

Operating Details

The harvester has adjustments for various size beets and soil conditions. It is compact, maneuverable and easily transported. It worked well in the first field season. However, it may not work well in excessively wet clay soils. Best results were obtained when beet tops were "roto-beat" prior to harvest.

The harvest crew consisted of a tractor operator and three persons on the harvester. In addition, three persons were engaged in hauling bags, weighing, and taking samples. With this system, about 250 plots were harvested per eight-hour day, or more than double the production of the former system.

Summary

A commercial one-row beet harvester was successfully adapted to plot harvesting. Main features are compactness and maneuverability. Cost will vary with the availability of used components.

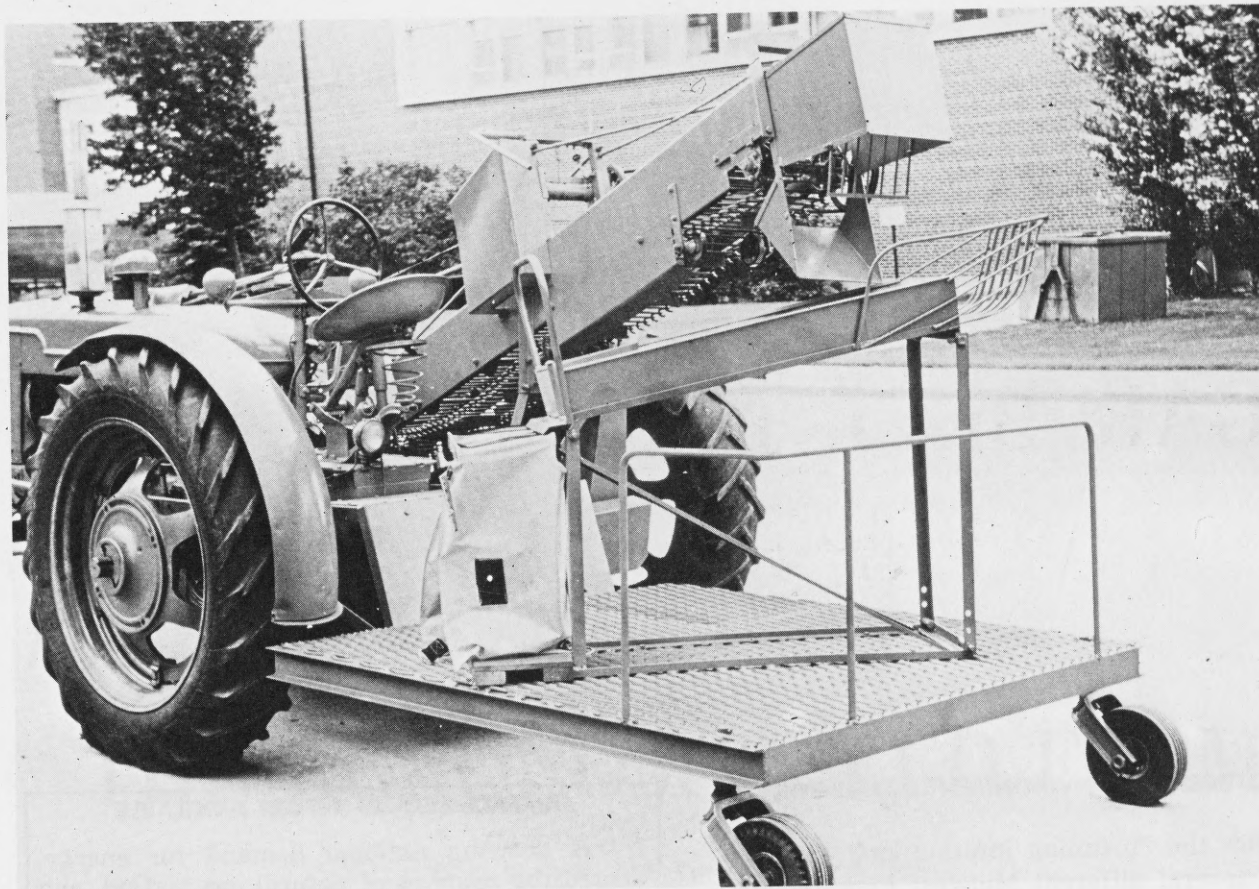


Figure 1. Sugar beet plot harvester.

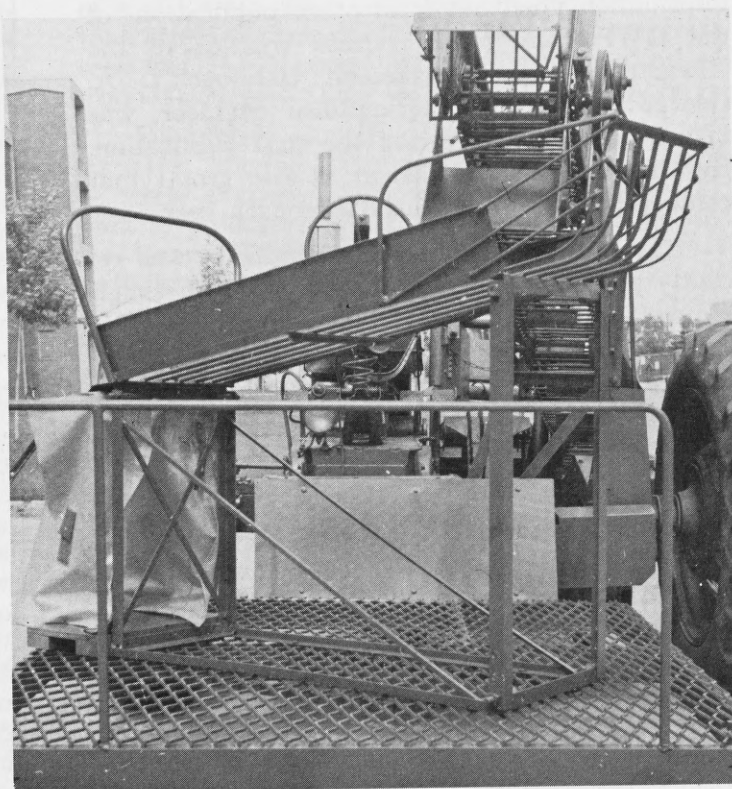
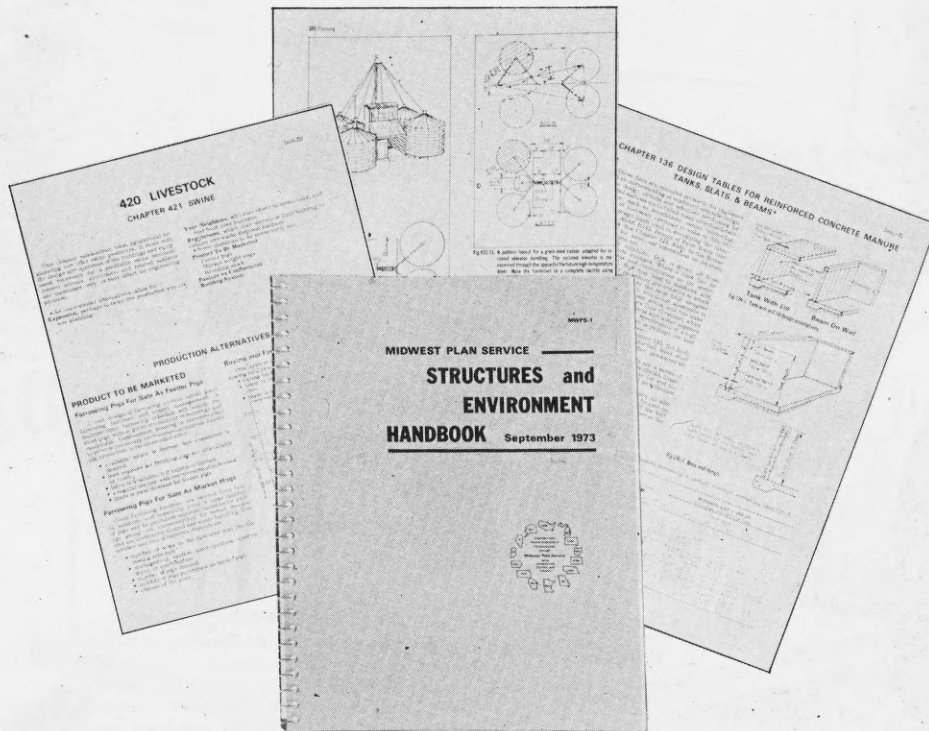


Figure 2. Rear view of sugar beet plot harvester.



STRUCTURES AND ENVIRONMENT HANDBOOK

In 1969, the "planning information" portions from the several different Midwest Plan Service planbooks on beef, dairy, swine, poultry, horses, grain handling and housing was compiled. This information plus that from other publications of the MWPS and other sources was called the "Structures and Environment Handbook." Dr. George Pratt, NDSU agricultural engineer, was instrumental in organizing the first publication. He then acted as chairman of the group that continued to revise the handbook each year.

The fifth revision of this handbook was recently printed. This new edition was a thorough revision of the contents. It includes the original basic information plus more recent data and related information such as ventilation fundamentals, design of waste storage tanks, beam design and structural loading analysis.

The revised 364-page "Structures and Environment Handbook" is intended as a basic reference for information on planning and design of farm structures. It has particular information on animal housing. It is used as a text and reference by teachers, researchers, Extension workers, designers, builders and others concerned with farm buildings. Cost is \$5.00 per copy. A limited supply is available from the Extension Agricultural Engineer at North Dakota State University, Fargo.

SURFACE MINING REPORT AVAILABLE

A growing national demand for energy, decreasing reserves of natural gas and oil, and a growing public concern for environmental protection have made energy development a matter of great public interest in North Dakota. The Northern Great Plains area of North Dakota, Montana, South Dakota and Wyoming contains vast coal reserves; and the development of these reserves could supply a significant portion of the national energy needs. Large-scale development of these coal reserves is either in the planning stages or already underway in all of the Northern Great Plains States; and community leaders are uncertain as to the implications for their constituents of widespread industrial development.

As an aid to those concerned with the economic and social problems posed by coal-energy development, researchers of the Agricultural Experiment Station have prepared a selected bibliography on surface coal mining and reclamation. The literature cited is directed at the coal producing states of the Great Plains with particular emphasis placed on the states of Montana, North Dakota and Wyoming. Publications from the areas of law, engineering, and certain biological sciences, as well as economics, are included. Copies of the bibliography can be obtained by writing to the Department of Agricultural Economics, Agricultural Experiment Station, North Dakota State University, Fargo.