

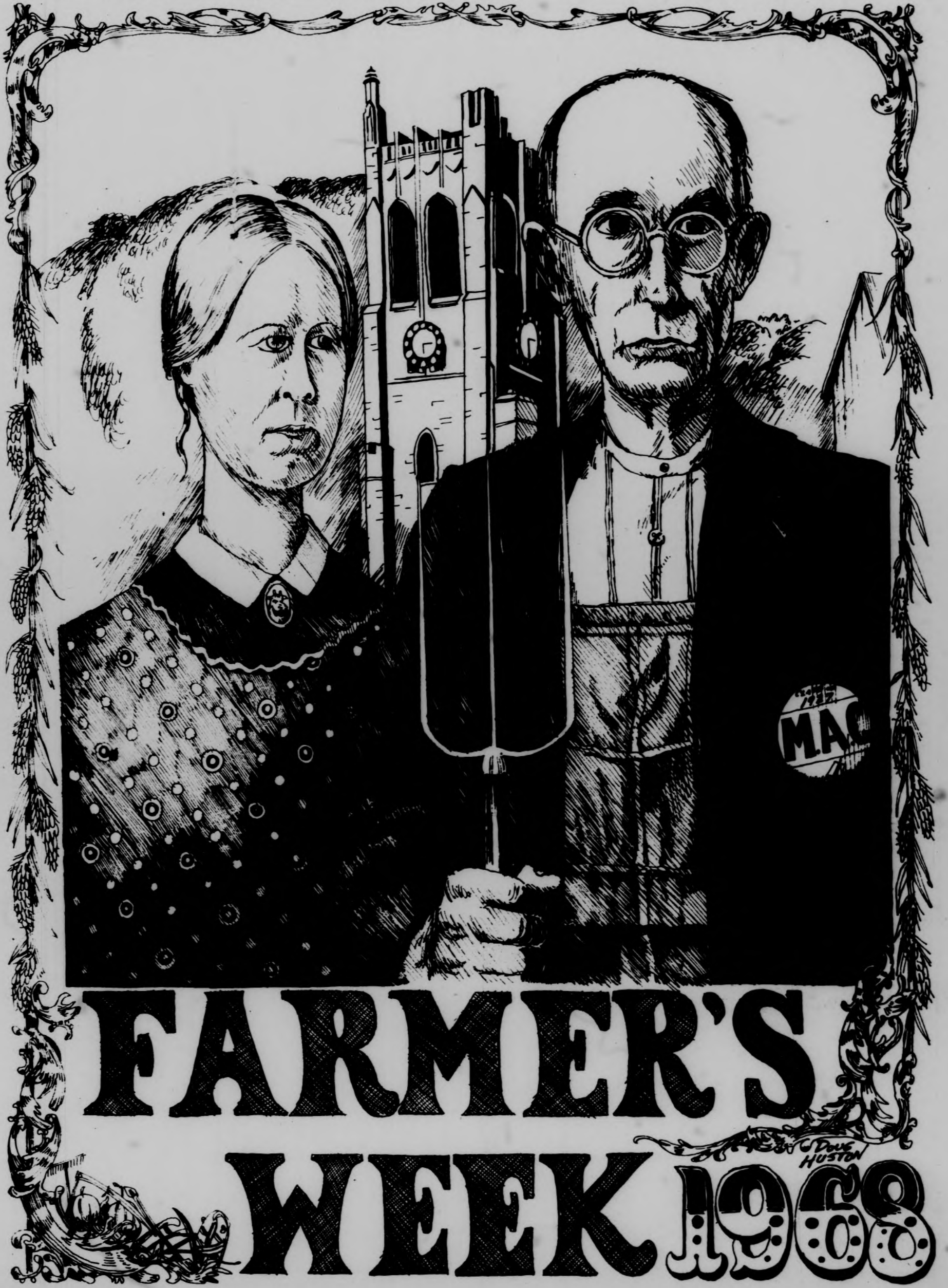
MICHIGAN  
STATE  
UNIVERSITY



# STATE NEWS

East Lansing, Michigan

January 29, 1968



## FARMER'S

## WEEK 1968



# A chic in sheep's clothing

By ROBERTA YAFIE  
State News Feature Editor

Back in the days when I was growing up and liking it I was a pretty straight kid, a little chubby but nice. And in all of my toddler's recollections, some of my finest hours, aside from when I saw Mary Martin at the Winter Garden in "Peter Pan" and got sprinkled with pixie dust, were spent on the farm.

In an effort, no doubt, to keep me pure from the perils of Big City Air, every Sunday my parents would snatch me up, complete with stuffed lambs, and motor over to Rutgers University, right in my backyard, and their agricultural college, known to the locals as College Farm.

Aside from frolicking in the grass, I derived most of my pleasure from the animals—cows, sheep, pigs and horses. I was particularly fond of lambs, as evidenced by the shape of my toys.

At the tender age of three or four, however, just peering into a pen wasn't enough. Needless to say I was quite put out when the student farmers wouldn't let me assist in operating the milking machines.

And then there was the sheep affair.

I just happened to be carrying my pink lamb and thought the other sheep might be interested in getting to know him. So nimbly, despite my childish bulk, I flipped into the sheep pen. Mother's never quite been the same.

My maturation process, however, interfered with my taste for the bucolic life, and it was as a product of the cosmopolitan New York Metropolitan Area that I returned, so to speak, to the womb.



Sitting in Fee Hall, I wondered if it left room for me.

My uncertainty was reinforced when I ran into my first Farmers' Week and spent the time wandering aimlessly in search of my displaced classes, leaving me little time to cash in on the special events.

Having become acclimated to the ways of MSU, I've taken this year's Farmers' Week in stride. 1968 marks the 53rd annual staging of the affair, which traces its origins to 1873-76, with the Michigan Livestock Breeders and Feeders Assn. and MAC's Farmers' Institutes. In 1914, the first annual Farmers' Week, featuring lectures in soils, crops, dairying, livestock husbandry, horticulture, poultry raising, farm mechanics, domestic science and domestic art was held.

Since its conception, the electronic media, combined with lectures, exhibitions and a variety of banquets and luncheons complete with speakers have been added to the five-day program.

The farm and its related arts have changed, too. The cows I once so fondly watched being milked are now faced with the development of a synthetic milk which could very easily revolutionize the industry.

Science and technology are broadening the farmers' vistas, both in agriculture and research. The farm has mushroomed from a small business to an ever-expanding industry.

While the events are designed so as not to disrupt the University's academic pace, it might not be a bad idea to ignore a classroom change and stop in and see what the farmers have to say. Drink a lot of milk. Visit the sheep. I think I'll take a farmer to lunch.

I must admit, I was a little abashed to see railroad tracks passing through the center of town, especially in conjunction with the tall buildings lining the city streets. One college town, I learned, isn't just like another.

Then, after placing the residence halls in their proper perspective, it was off to the cow barns, tinted with shades of the prodigal daughter returning to the fold.

Bravely, without the use of a campus map, I went out to seek my fortune and the Administration Building and ran into Ag. Hall. Taking a short cut, my travels took me to the Horticulture Building, replete with greenhouses.

Then I went to take my tests,

in Anthony Hall, of course, and stumbled past the department offices of poultry, animal husbandry and dairy. Finally I came upon the MSU Dairy.

A little pushy, I thought.

Then I met some of the kids I was to go to school with for the next four years.

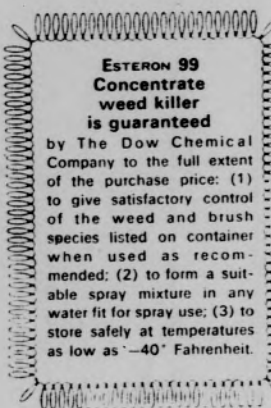
The heart of the Midwestern Mystique is the farmer and his daughter, the cows and other sundry animals, acres of corn, checked shirts and overalls and a generally bucolic way of life. The legend leaves little room for Grosse Pointe.



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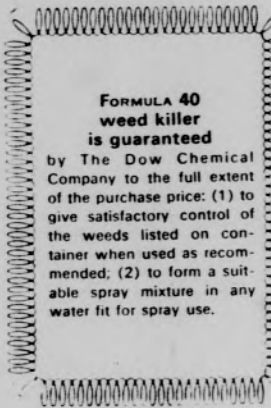


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**LIFE STYLES**

# Studies conducted on deer, grouse

Ever wonder where the run-of-the-mill rough grouse spends his time?

The College of Agriculture and Natural Resources is conducting studies to determine whether deer and rough grouse make their homes in dense forests or fields and where they get their food (Frander?) The number of animals per area in different environments is estimated and statistical procedures are used to determine the animals' abundance in each area, said Peter I. Tack, chairman of the Dept. of Fisheries and Wildlife.

Radioactive chromium is being used to study the rate of digestion in pheasant and deer. Since it stays in the digestive system instead of going to other parts of the body, their food is marked with it, and the digestive rate is determined by the amount of time the radioactive chromium takes to go through the digestive system. This method is also used to determine the nutrients used by the animal's body.

Researchers are also in Africa

studying the relation of pigmy hippopotami and other animals to their environment.

Back home, there are studies to determine the number of pounds of fish an acre of water or a mile of stream will produce.

Research is also being conducted on the effect of pesticides on fish, fish foods and aquatic plants. Researchers are interested in which fish and fish food organisms will take in a pesticide and how the pesticide travels from one to another.



## The eyes have it

An MSU, or perhaps MAC, native, scans the campus scene, and no doubt, this week's Farmer's Week activities. State News Photo by Gordon Moeller

## Farm exports to remain at \$6.8 billion

U.S. agricultural exports for 1968 are expected to remain at the level of \$6.8 billion reached in 1967, according to Vernon Sorenson, MSU agricultural economist.

Sorenson says that continued expansion can be expected over time, but problems in price stability and supply control will remain.

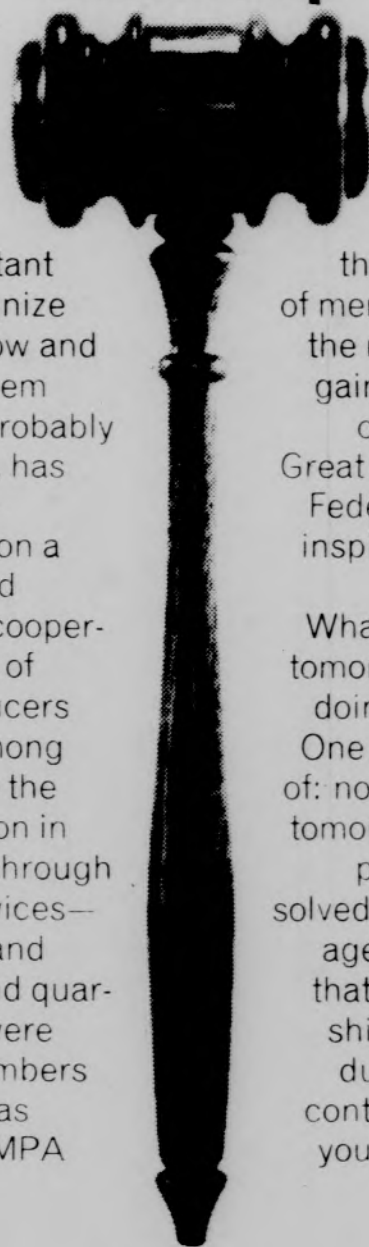
A report by the U.S. Dairy Association gives the 1968 prospects for wheat, flour and feed grain exports. Oilseed and variety meats should increase somewhat. Dairy products are expected to increase slightly due to increased shipments of non-fat dry milk. Poultry will probably decline because of increased supplies in Europe.

"Population is expanding rapidly and major efforts will be required in less developed countries to meet increasing food requirements," Sorenson said, taking a long-term view of the world food situation.

While new technology has aided increased production of wheat, rice and other basic products, he noted that there remains a need for concern with world food problems. Sorenson referred to a study made by the USDA, which says the needs in grain imports of less developed countries will increase to about 52 to 54 million tons in 1980 as compared with 29 million tons in 1964-65.

He said major emphasis must be placed on expanding production in underdeveloped areas and an increased concern with population control programs will be needed.

## Leadership



What is the most important quality of leadership? Wisdom? Courage? Determination? All are important. But perhaps most important is the ability to recognize the needs of tomorrow and take steps to meet them today. That quality, probably more than any other, has made Michigan Milk Producers Association a nationally recognized leader among dairy cooperatives. The founders of Michigan Milk Producers Association were among the first to recognize the need for unified action in price negotiations. Through the years, many services—guaranteed market and payment, disaster and quarantine protection—were provided MMPA members because the need was recognized early. MMPA

facilities for processing surplus milk met still another marketing need that was recognized early—to the long-lasting benefit of members. More recently, the need for regional bargaining groups was seen on the horizon. Result: Great Lakes Milk Marketing Federation, which MMPA inspired and helped form.

What are the problems of tomorrow? What is MMPA doing about them today? One thing we can be sure of: no matter how complex tomorrow's milk marketing problems, they can be solved with foresight, courage, determination. And that is the kind of leadership Michigan Milk Producers Association will continue to provide. With your support.

**Michigan Milk Producers Association**

Owned and operated by Michigan Dairy Farmers



# Ag Station sees 80th year

By JIM GRANELLI  
State News Staff Writer

One of the two sponsors of Farmer's Week, the Michigan Agricultural Experiment Station, has been in existence for nearly 80 years.

The Experiment Station, established Feb. 26, 1888 as a result of the Hatch Act of 1887, was set up "for investigation and experiment in agriculture". Ed-

win Willits, president of Michigan Agricultural College, 1885-1889, served as the first director.

Three of the six scientists who staffed the first Experiment Station have been immortalized by campus landmarks, Bailey Hall, Beal Street and Kedzie.

The four-month budget in 1888 of \$15,000 seems modest, to say the least, compared to 1967 figures. Department heads were paid \$200 each. Buildings erased

\$3,000 of the allocation and just under \$10,000 went for the animals, supplies, implements and equipment needed to conduct the experiments. Other personnel were paid out of any remaining funds.

The 1967 budget reached near \$8.4 million, \$3,973,130 from the state, \$1,379,344 from the federal government, and around \$3 million in gifts and grants.

Today there are 250 scientists instead of six. The Station does research for 26 departments, 17 of which are in the agricultural field. There were only five departments serviced in 1888.

But true to the land-grant philosophy, the Agricultural Experiment Station is still a public servant. The research must serve the homemaker who wants quality and the farmer or "convenience" foods of the highest quality and the farmer or businessman who wants to know the economics of agriculture today and tomorrow.

Due to this service and to Michigan's varied agriculture, the Station must be diversified. The state ranks in the top 10 in the nation in more than 30 commodities.

The benefits of this research to the Michigan consumers, ac-

ording to the Station officials, are a variety of quality products at lower prices.

One of the objects of the Experiment Station is to coordinate research findings on this campus with 11 outstate experiment stations. With a strong central organization, more interdisciplinary research is becoming a reality.

Agricultural research is basic to fulfilling the needs of everyone. Obviously, we have to eat some food to stay alive.

But in another way this research is basic. Because of

the efficiency created by agricultural research, less people are needed to produce food products.

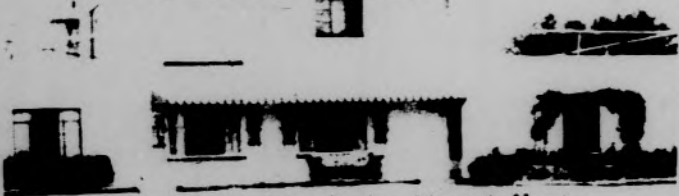
Only five per cent of our population is needed on farms, according to statistics released by the Station. This allows a large share of agricultural workers to work in industry.

Whether farm workers are actually being released to enter other phases of employment and whether industry is actually able to soak up the flow of these workers are matters that sociologists and economists are continually trying to answer.

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State News Photo by Gordon Moeller

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These luminaires were constructed to provide long service, eliminating replacement costs. Weatherproof construction and easy access for cleaning and relamping are additional features. All are available with photo-controls for automatic "on" - "off" light. Authorized M-E/ Michigan distributors listed to the right will be glad to provide technical data, lighting application data or any other service relevant to installation. Call your nearest distributor soon - you'll be glad you did.

- Dusk-to-dawn lighting provides:
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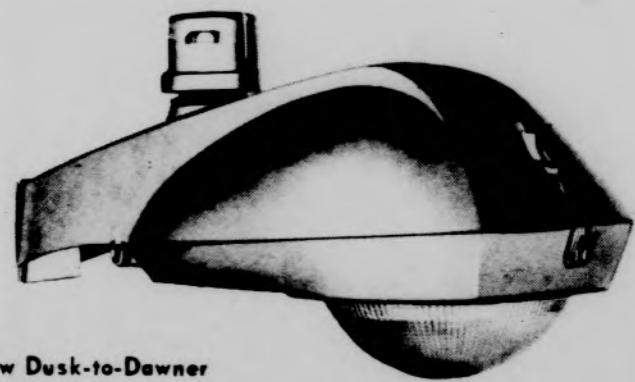
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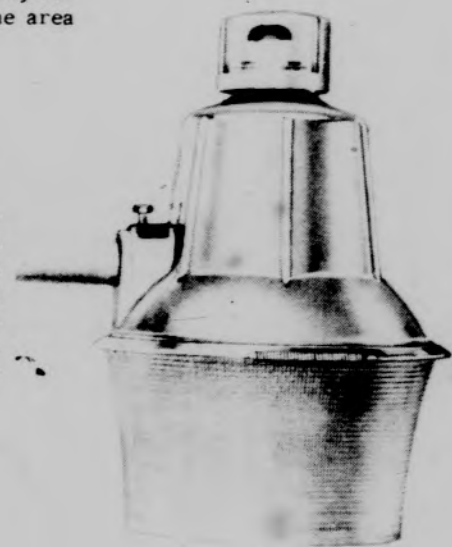


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# Agriculture set for change

By JENNY POPE  
State News Staff Writer

The agriculture industry is likely to experience a dramatic change within the next 10 years, said George Stachwick, marketing program director, MSU Extension Service.

The change could conceivably follow any one of three possible alternatives: a well organized collective bargaining and coordinated marketing system, a government managed industry or a large yet highly integrated conglomerate organizational structure.

"It is the feeling of most responsible people that the collective bargaining structure is the most desirable alternative,

not only for the farmers but for society as a whole," Stachwick said.

Collective bargaining is a tool with which the farmer will have more influence in the buying and selling of his product, and the primary concern of agricultural bargaining is getting better prices for the farmers' products, Stachwick explained. Bargaining will also involve the cost of inputs (tractors, seeds, fertilizer) which in turn influence what and how much the farmer raises and sells.

The farmer is the one sector in our economy which has not shared the increasing economic prosperity of the last 10-15 years.

"Out of every consumer dollar spent for food, the farmer's share

is 37 cents, with the rest going to marketing services and costs," Stachwick said.

The modern consumer wants pre-processed foods. The farmer is no longer selling a basic food commodity. His raw product is bought by a manufacturer and, after processing, the product is sold to the consumer. Stachwick says that the costs of processing are increasing and this puts a "squeeze on the farmer."

"If we would go back to buying flour and other raw products and make our own things, there would be much less concern with food prices," Stachwick commented.

There would be many advantages to agricultural bargaining.

The farmer would be able to command better prices for his produce, although there is a limit as to how much farm prices can be increased, as indirectly evidenced by the 1966 housewife picketing.

Through effective bargaining, a processor can be guaranteed of a sure product supply. This guarantee will in turn eliminate the processors' use of field men. The bargaining organization will provide the guarantees and will also attempt to equate supply with demand.

"Reduced marketing costs will be a great advantage of this system. Besides cheaper procurement for the processor and improved product quality, the manufacturer will be dealing with only one organization rather than hundreds of farmers.

There are also a few economic, political and social limitations to the agricultural bargaining system.

"This form of bargaining can tend to be self defeating," Stachwick said. Growers might increase production to take advantage of higher prices and then supply would be greater than demand. Prices will decrease if the above happens. "If the bargaining organization is well run and



*Galumph, galumph, galumph*

Taking his cue from the Jaberwocky, a wallabee, native to Australia, romps through the snow at the MSU Research Farm. State News Photo by Bob Ivins

its policies properly implemented, in the long run there will be an effect upon the farmers' income if the organization has a means of controlling supply," Stachwick added.

Under political limitations, the law affects any group's effectiveness in bargaining for higher prices. Stachwick feels that "the farmer is both laborer and entrepreneur and needs additional legal tools if he is to bargain collectively."

All of us are consumers and, if not already, we soon will be concerned with food prices. "The urban sector of the population is politically stronger and there is a limit as to how much it will tolerate increasing food prices," Stachwick explained. There is no concern when the cost of education or cars increases but "if

food prices rise, there are boycotts and picketing."

"The University's role is to help the farmer understand the principles of collective bargaining," Stachwick stated.

The farmer must have a better return for his labor and capital. The University sponsors two to three agricultural bargaining workshops in various Michigan cities. These workshops provide the farmers with information on what agricultural bargaining is, what it can do and can't do, and also help them understand the limitations of this activity.

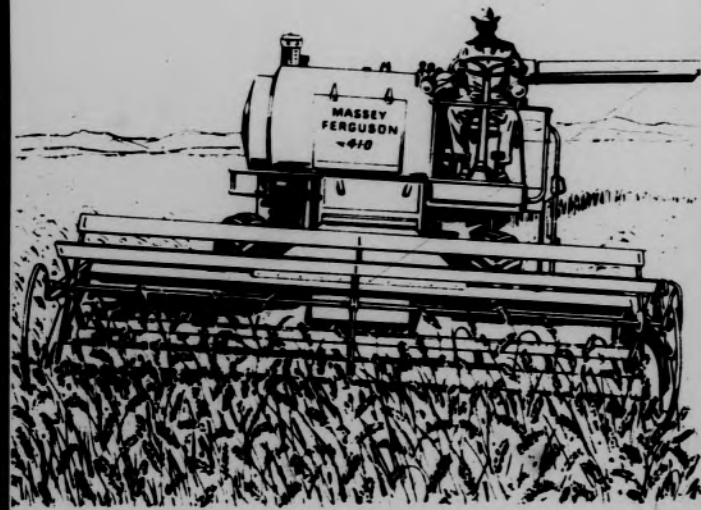
Stachwick says that there is much misinformation and lack of information on this subject. In the future the problem lies not so much in acquainting the farmer with the facets of agricultural bargaining but in actually setting up an effective organization.

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# Study shows farm of future

By DELORES MAJOR  
State News Staff Writer

Tractors that run by remote control, environment controlled high-rise cattle barns, super tools for the super farmer—these will be commonplace to the farmer of the future.

High rise apartments will dot the agricultural landscape. But the residents will be animals—cows, steers, sheep, hogs or chickens—not people. The building temperature, humidity, fresh air and light will be carefully regulated. Feed and water, stored on the top floor, would be released automatically as needed.

Waste products would be flushed through disposal pipes

to a nearby purification plant, where after treatment it is recirculated to the animals as drinking water.

These projections into the future of agriculture are part of a study conducted by Ford Motor Company's U.S. Tractor and Implement Operations, "Agriculture 2000," based on a consensus of leading world farm experts.

One of the most astonishing sights on the farming horizon will be huge plastic or glass domes, sprawling over ten or more acres of high value crops. Light, water and nutrients will be precisely controlled and plants will be protected from all pests. Plant growth will be automati-

cally recorded so the farmer can provide proper light, water and nutrients simply by turning a dial.

Unmanned tractors would be controlled by computer tape, buried wires or sensing devices, and their courses would be plotted on headquarter units similar to radar sets which follow today's airplane flights.

One such machine will scoop up a ribbon of soil, condition it and plant seeds and fertilizer in one easy operation.

Another machine will shoot seeds into the ground by pneumatic injection. These seeds will be chemically coated so that they will remain dormant until the proper season.

Harvesting of the future will be a simple operation requiring complex equipment with electronic eyes, computerized fin-

gers and ultrasonic sound waves. These will decide whether the crop is ripe, and then pick, sort and package it right in the field.

There already is in use a lettuce picker which checks each head for maturity, picking those which are ready and leaving the others to ripen.

The local feedstore, where the farmer of today buys farm materials, equipment and feed, will have an entirely different look and provide additional services ranging from custom made hog houses to estate planning.

Space satellites, too, will have their place in the agricultural world. By using special sensing devices, they will circle the globe, reporting weather conditions, both nation-wide and world-wide.

They also will be able to spot insects and diseases long before

they gain a toehold. When an infestation is detected, farmers will spray with ultra low volumes of powerful chemicals at a fraction of an ounce per acre.

They will also combat the good bugs against the bad ones and let nature eliminate the problem.

What will be the results of all this super farming? Fantastically huge crops that scientists hope will battle against threatened mass starvation as the world population continues to multiply.

The report notes that the future "projects yields of 300 bushels of wheat per acre, compared with today's 27; 175 bushels of soybeans, compared with today's 25; 30 tons of forage, compared with today's 3; 30,000 pounds of milk per cow, compared with 8,000; and 1,000 pounds of beef at 10 months of age, compared with 750 today."

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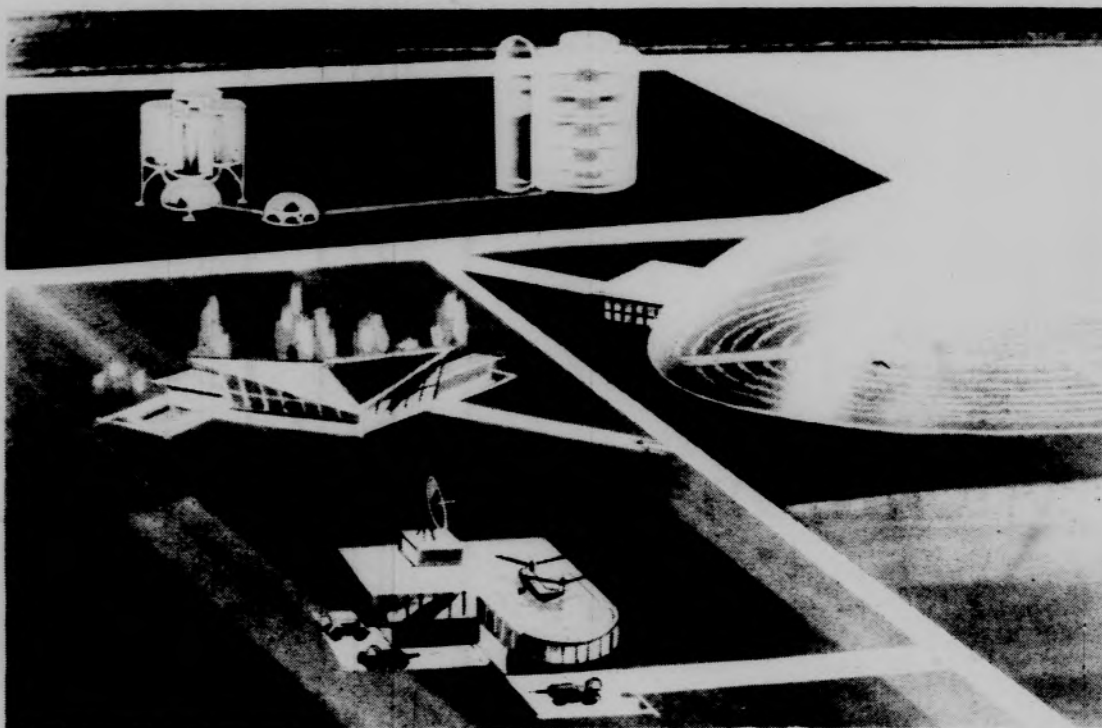
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## Super-farm

In the year 2000, this may very well be the typical American farm. In the right background is a high-rise cattle barn with completely controlled environment; to its left, a warehouse complex and refinery where waste from the barn is purified and recirculated back. The huge plastic dome covers 10 or more acres where crops are grown under a controlled environment. To its left is the "farmhouse," and in front of it the control center from which the farm will direct by electronic machines, equipment and personnel.

Photo by Ford Motor Company

# Lost? Tired? Hungry?

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# 'ASPHALT TECHNIQUE' Soil regains use

There are estimates that 10 million acres of droughty, sand soils in Michigan alone may be reclaimed by a new asphalt technique, developed by two MSU scientists. An asphalt layer, 1/8 inch thick, placed two feet under a sand soil, can double the soil's water holding capacity and can increase some crop yields by over 100 per cent.

Agricultural engineer Clarence M. Hansen and soil scientist A. Earl Erickson, worked in conjunction with the research and development department of the American Oil Company on the new method. Using present research equipment, the asphalt would cost \$225 an acre but the equipment and method of application will be modified and improved.

The asphalt layer is nearly permanent, with an estimated 15 years of life. The permanency makes the asphalt less expensive

than tilling, a technique that must be used on land with too much water.

In tests, "the asphalt was placed at a two-foot depth to provide the maximum water shortage capacity which can be readily used by plants," explained Erickson. "Roots can penetrate the layer, but do not emerge on the other side, since the ground under the layer is completely dry and there's no reason for the roots to keep on going," he added.

"The end result is a mat of roots which eventually begins to form at the top of the layer," Erickson said. "We haven't had a chance to test the full effect, but we believe it helps to build up a supply of organic matter in the soil."

Hansen and Erickson have already seen crop production jump 20 to 100 per cent on beans, potatoes and cucumbers. They expect

similar results on tomatoes, cabbage, strawberries and melons. In 1965 the scientists saw sand soil with an asphalt layer produce 50 per cent higher potato yields, than irrigated plots with no asphalt. Besides the extra profits from higher yields, there was also a considerable saving in irrigation costs.

This technique will be useful in a climate which is humid or semi-humid and limited rainfall may be extended or conserved. Good crop production can be attained on land where virtually no marketable crop was grown before.

The method will also have great potential throughout the world, particularly in such areas as the Coastal Plains (along the eastern coast of the United States) where sand is deep and dry and the climate is humid. It has already been estimated that a soil "barrier" like the asphalt layer, could mean doubling the acreage of rice paddies in some Far Eastern countries.

The asphalt layer might also have additional uses. It could prove valuable for raising turf (on sandy golf courses); for preventing excessive water seepage from ponds or during flood, furrow and ditch irrigation; and for providing the barrier needed to reclaim millions of acres of sand soil throughout the world.



**Soil saver**

A layer of asphalt, 1/8 of an inch thick, is placed two feet under the surface of sand soil, doubling the water holding ability of the soil and greatly increasing the yield of crops grown on it.

## SHORT COURSE

# Institute attracts Michigan farmers

Providing Michigan farmers with an up-to-date education in various fields of agriculture, the Institute of Agriculture Technology (better known as Short Course) is a post-high school extension program.

The Institute has, since 1894, produced many agricultural leaders in Michigan. Over the years, it has offered different programs, from dairy production to horse shoeing.

At present it offers eight programs, with a new program opening in the fall of 1968. These programs are aimed at the high school graduate who is interested in pursuing a career in some aspect of agriculture, but who does not have the money or the time to spend going to college for four years.

The students of the Institute also include older men and women who have come to MSU to further their education in agriculture.

The entrance requirements are a high school diploma or two years of work experience in his chosen field and a recommendation from his employer. Young high school drop-outs are recommended to return to their high school for their diploma before entering the Institute.

The student participates in a study-work situation where he is on campus for two terms of classroom instruction. He is then sent off campus to a work situation for two consecutive terms. The student then returns for his second and last year at school. Most of the programs are an 18-month to two year course.

The Institute's programs break down into several technical fields. Young farmer agriculture production is designed for the young man preparing for modern-day scientific farming.

Commercial Floriculture prepares men and women as flower growers, greenhouse managers, salesmen, designers, and florists.

The Farm Equipment Service and Sales Program offers students the opportunity of technological training in retail sales, servicing and the repairing of farm machinery.

The Institute's Landscape and Nursery Program provides training for those who wish to work with nurseries, landscape construction firms, parks, private estates, cemeteries and industrial grounds.

The student who enters the Soil Technicians Training Program is prepared to aid farmers and fertilizer industries in determining the soil content and what kinds of things are needed to build the soil up for better farm production.

Turfgrass Management provides the fundamentals of turfgrass technology necessary for the supervision and management of golf courses, parks, athletic fields, highway roadsides and sod farming.

Graduates of the Elevator and Farm Supply Program will go into the various industries related to feeds, grains and farm supplies.

The newest program being taught at the Institute is the Food Processing Industry. The student will learn the many different food processes and will be able to work in any aspect of the industry.

In the fall of '68, the Institute will begin a new program for technical training for the pesticide industries, which will prepare students for work in pest control. The program is 18 months long, with four terms on campus and six months in a work experience.

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# New cattle foods studied



By AIMÉE PATTERSON  
State News Staff Writer

The possibility of beef cattle being raised on food that man could never utilize is the subject of the study now under way at the MSU Beef Cattle Research Center.

Under the direction of Barrie Purser, associate professor of animal husbandry and Werner G. Bergen, assistant professor of animal husbandry, the research has been going on since last September, when they first joined the MSU staff.

Ruminant animals such as cows, deer and sheep, which can convert substances that man could never use into palatable foods, are the focus of the nutrition experiments. A ruminant animal is so called because of its rumen or fermentation vat filled with bacteria which ferment the food it eats. The waste products produced by these bacteria are used by the animal and the bacteria then are digested in its stomach.

Now being studied at the Research Center are sheep which have had a tube surgically inserted in their side directly into the rumen and plugged with a removable cork through which chemicals can be added or substances removed. Eventually, it is theorized, animals will subsist on a diet of sawdust, urea, minerals and vitamins, thereby reducing all competition with humans for food.

"This may never happen, however, because the animal may not eat it or production problems could arise," Bergen said.

"We are still in the understanding stages, trying to find out how the animal works," he said. After the key to understanding is found, the next step for the researchers is to generate their ideas on nutrition and then to test them under actual farm conditions as provided by the Research Center.

Under the Agricultural Extension Program, the successfully tested methods will be passed on to the farmer, who can safely incorporate the new methods into his farm routine. Every land-grant college is doing this type of work, according to Bergen.

The colleges first devise systems suited for their own locale and then dispense the general information to the public, he said.

"American agriculture is the envy of every other country in the world because of its excellent soils and climate and because of the intensive research being carried on," Bergen noted.

While Purser and Bergen conduct research on the diets of individual ruminant animals, Hugh E. Henderson, professor of animal husbandry, is working on a larger scale with the applied program. MSU has the largest applied research program in the United States, and although Purser's research division is just beginning, expansion of the Research Center to accommodate it is already under way.

With 550 head of beef cattle to feed (each one weighing 700 lbs.), 135 different diets are prepared each day, according to Henderson, each one weighed and balanced for the nutritive elements needed.

The inclusion of a type of birth control pill has already been proven to be a growth stimulant for steers and heifers. Pesticides are also fed to them to see the effect on the animal's well-being and on the meat for human consumption after slaughter, according to Henderson.

The results of the research at the MSU Center are passed on to farmers throughout the state by a series of "short courses" given by the MSU Department of Animal Husbandry during February and March each year. They are attended by owners of 80% of the beef cattle in the state and are offered in cities throughout Michigan.

"Farmers are not using the 'cookbook method' of caring only how to run a farm any more," Henderson said. "They are now concerned with the why, and this is what they are taught in the short courses."

Where 20 years ago, there was a 10 year lag in research and application on the farm, the gap is now less than a year, according to Henderson.

## Do you want to know a secret?

These residents of the MSU Beef Cattle Research Center aren't about to let any of the researchers' findings get past them. State News Photo by Gordon Moeller



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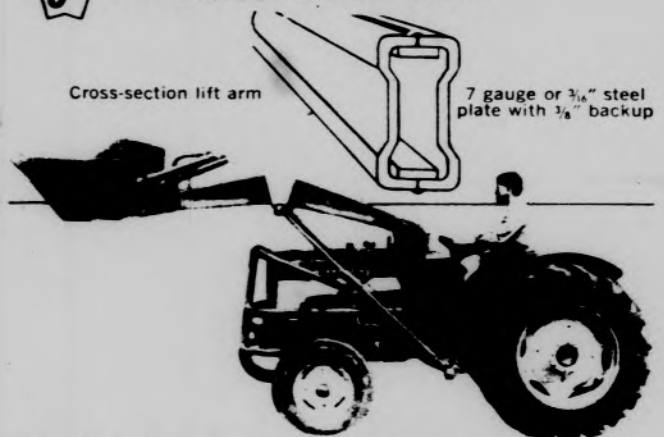


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# New aerial sprays improve efficiency

By MARION NOWAK  
State News Staff Writer

The shift in agriculture toward bigger farms and fewer farmers demands new ways of saving labor, said Howard S. Potter, associate professor of botany and plant pathology.

Underlining one vital method of effecting this, he said the procedure of chemical spraying for disease control in plants is one way of improving efficiency.

"You can't load a tremendous amount of water on an airplane," said Potter. "Traditionally, spraying chemicals has been done using water and ground equipment.

"Formerly when a plane was used, dilute sprays were employed for adequate coverage," he said. But he is conducting research on concentrated aerial sprays.

The purpose of airspraying is to protect the plant from harmful fungi or bacteria, Potter explained. Chemicals act as a barrier to prevent germination of these harmful forms on the plant surface.

The manner of applying fungicides and bacteriocides to plants differs. Most common, and cheapest, is spraying with ground equipment, he said.

He noted the advantages of this as the low cost, low incidence of drift and waste in windy weather and ease of around-the-clock operation.

Disadvantages are found in crop damage and soil compaction by the equipment, the work needed to handle and haul both water and equipment, high capital investment in the equipment and inability to spray when the ground is too wet, he said.

Airspraying, a more expensive method, is limited to daylight spraying, Potter said, and other obstructions are the cost (which varies with proximity to airports and cost of hiring the plane), drift and waste of a spray in the wind, difficulty of reaching

smaller, more obstructed fields with fixed-wing aircraft (helicopters may be substituted) and occasionally inadequate coverage in some orchards, in tall dense fields and some vine crops.

But advantages, he believes, overcome the disadvantages of ground spraying.

Potter said that the problem in airspraying of the limited volume of spray carried is leading to use of a new method of spraying.

Formerly, he explained, dilute spray using, for example, two pounds of fungicide to 100 gallons of water were employed. Now use of a more concentrated spray using the same two pounds of fungicide in from three to ten gallons has been initiated in research conducted here by Potter.

"To be economical," said Potter, "no more than 10 gallons of water per acre can be sprayed.

The average plane has a capacity of 100 to 150 gallons," he said. "To economize on space, the more concentrated spray can be substituted for the dilute."

Potter mentioned other advantages to this. "A thin chemical film from dilute spray is easily washed away," he said, "but concentrated deposits are redistributed over the plant surface. They may provide far better weathering characteristics by providing a better protection for a longer period of time."

Other experiments revolving around the new spray formula include the method of distribution of the spray.

The boom-nozzle sprayer is the most conventional form of aerial spraying, Potter noted. This type of sprayer consists of a pump and tubular boom fitted with 30 or more nozzles.

A more novel spray device is the rotary atomizer. Consisting of four propeller-driven rotating wire cages and a pump, the atomizer produces more uniform droplet size with a flexible range of from less than one gallon to 30 gallons per acre.



## Wanted: a shepherd

Mary could have her pick of these lambs, participants in the work of the MSU Beef Cattle Research Center.  
State News Photo by Gordon Moeller

*at the Campus of Michigan State University*



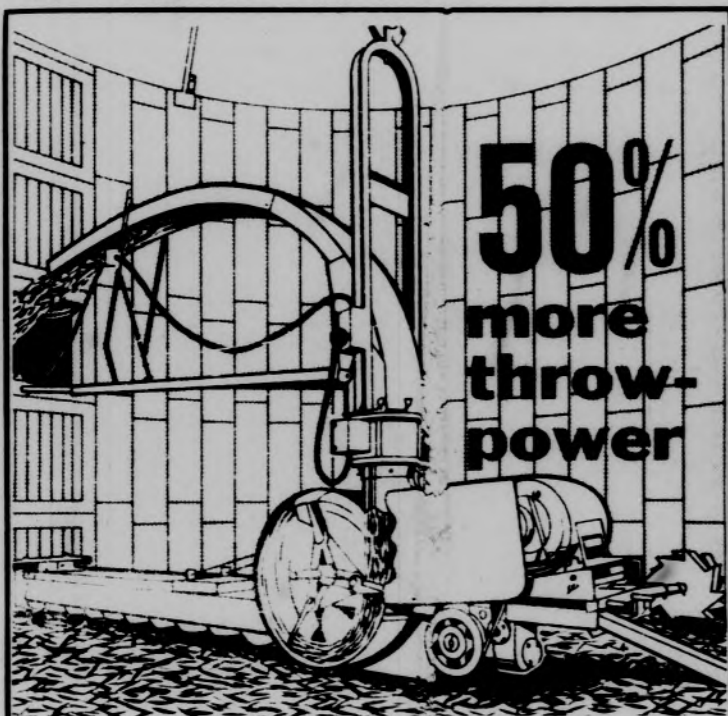
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# Pseudo milk threatens cows

By PAT ANSTETT  
State News Staff Writer

Imitation milk, the latest dairy product substitute, is causing an alarming threat to the entire dairy industry.

Costing only 20-30 cents per half gallon as compared to milk's 40-46 cents per half gallon, imitation milk appears to be the answer to supermarket boycotting housewives who plea for an alternative to rising milk prices.

Imitation or non-dairy milk is a type of chemical milk in which its fat and skim contents are replaced by a protein compound, usually soybean proteins.

A market for this new product has already developed. In Central Arizona, for example, this milk substitute has taken over five per cent of the regular milk sales in the past 15 months.

A Wisconsin market test indicated that imitation milk with its lower prices outsold fresh milk three to one.

If imitation milk performs like other substitutes, a definite market decline is anticipated. Margarine, whipped toppings, chip dips, and other dairy substitutes have taken away 25 per cent of the dairy product market.

Charles A. Lassiter, chairman of the dairy dept., felt that these products created "no real danger" to the industry. "They are merely short run products that do not offer a major market challenge," he said.

The quality, flavor, and nutritional value of the imitations is probably the biggest case for farmers. Elmer E. White in the Michigan Mirror stated: "They taste good; are just as nutritious as milk."

Other dairy associations claim that the flavor of this new product is inferior. Lassiter said, "these products aren't comparable in taste or quality and are less nutritious in value."

Dan Reed, secretary-manager of the Michigan Farm Bureau, listed one definite approach of



farmers to this problem as "convincing people that milk solids are more nutritional. Milk before was a protected industry that had no incentive to promote its universally popular product." Promotion for the industry is also being increased. If an increased charge per product that the farmer sells is obtained through a referendum, the money will be used for advertising farm products.

The referendum will attempt to raise the present two cent voluntary tax per hundredweight charge to a four cent mandatory tax.

Reed felt that the referendum was a partial answer to the problem. He estimated that more than half the farmers would favor the tax hike.

The tax could also provide another threat to the farmer. Not only is he worried about new product competition loss of the market, but he is also worried about rising promotion costs.

Complicating the issue, for the past four years there has been a 10 per cent decrease per year in the actual number of dairymen. "Some see this issue as a threat to their farms, and decide to get out before it is too late," Reed said.

"It is not too far off in the future that dairy farming will be operated by a few large farm corporations," he speculated.

Reaction among the agricultural and dairy fields has been varied. Instead of issuing an attack on the milk substitutes, similar to the attempt to defeat oleo-

margarine legislation, a positive approach is stressed.

"The farmer is looking at the issue open-mindedly and prepared to approach it with a positive and sound program. He looks at it as an opportunity not a problem," Glen McBride, MSU agricultural economist said.

McBride described this approach as "if the consumers want it, give it to them." In com-

peting with new products, farmers plan to renovate old programs and innovate new ones.

New product development exemplifies this attempt to please the consumer. The manufacturing of strawberry flavored milk is one possibility. "The farmers will now maintain an enlightened attitude and constant awareness of the consumer element," McBride said.

## Retiring Ag adviser honored at banquet



DON SHEPARD

Donald H. Shepard, retiring adviser of MSU's Agricultural Technology program, will be honored at the association's annual banquet and meeting at 6 p.m. Wednesday in the Union Ballroom.

Shepard, who will be retiring July 1, has guided over 25,000 young men pursuing farming careers in his 29 years with the Institute of Agricultural Technology here.

He will be given a citation for "Outstanding Service to Alumni" by Ralph Tenny, the program's director. A bound collection of letters from graduates, associates and friends will also be presented to him.

Henry W. Schriver of the Ohio House of Representatives, known as a national farmer-philosopher, is the featured speaker for the banquet. "Farmer Wears Many Hats" is his topic discussion.

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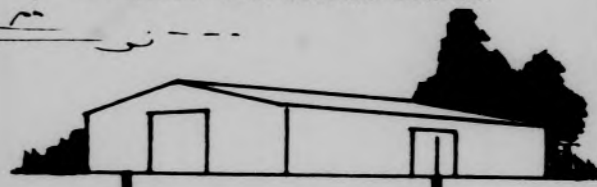
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# Science improves horticultural study

Phosphorus placement through fertilizer, bedding plants by automation, and forcing early bulb blooms by refrigeration are among the experimental projects being conducted in the horticultural greenhouses.

The phosphorus placement experiment involves determination of effective use of phosphorus fertilizer. This research, using bluegrass rather than the common long grass native to Michigan, has been conducted in two ways: first, mixing fertilizer into the top two inches of the soil and second, applying the fertilizer into the top two inches of the soil as it is being seeded.

Another fertilizer experiment, in floriculture, involves tests on new slow-release fertilizers. Many floriculture tests are made on pot crop plants. In testing slow-release fertilizers are mixed with liquids in varying proportions during a plant's growing cycle to determine the most effective usage of such fertilizers.

Another floriculture project

## Poultry men use research, experiments

Research, experimentation and education are fast becoming the key words in poultry science today and MSU's Poultry Science Dept. has taken an active part in all three.

Artificial insemination of turkeys has been the subject of a two-year research project conducted by Robert Ringer, professor of poultry science. Asked to do the experiment by the National Turkey Federation to confirm similar findings of turkey growers in other parts of the nation, Ringer has shown that male turkeys produce more semen for artificial insemination purposes when deprived of food for 24 hours.

Obtaining enough semen for artificial insemination has been a major problem for the turkey grower, according to Ringer. He will address the Michigan Turkey Growers Association concerning his project Feb. 1 at 2:30 p.m. in 110 Anthony Hall.

In the field of education, the MSU poultry extension service has reported success in its series of area programs designed to bring area egg producers into contact with others connected with the poultry industry. The sessions, which began in October and will last through March, feature speakers who stimulate thought rather than just "feeding" of information, according to participants in the programs.

The sessions are providing egg producers and associated allied industry personnel with a source of useable technical information, an environment in which ideas can be discussed and originated, and a place to meet individuals with similar problems to discuss possible solutions. Approximately 200 people have attended each of the sessions held in various cities throughout Michigan representing individuals controlling 50% of the Michigan egg-type chicken population.

currently being conducted involves the bedding plant industry. Three million flats of plants are produced in Michigan annually. Much of the industry is automated.

However, all plants must be transferred into flats by hand. To eliminate or speed up this step, floriculture research is being made toward automating this step either by planting flowers by machine or machine-seeding the flats.

A major floriculture research area is forcing bulb flowering through refrigeration. In this process, bulbs are planted and refrigerated for a minimum of thirteen-fifteen weeks.

Bulbs partially growing are then removed from "cold storage," and placed in a greenhouse environment. Yellow at first from the cold room, they gradually turn green and flower in 20 days.

Remarkable success in flowering tulips has been accomplished with this experiment. Easter lilies, whose production is crucial to commercial florists' markets, are also being experimented upon with refrigeration techniques.

Other research under a grant from the Netherlands Bulbs Co., is investigating accurate prediction of flowering time, height control and highest number of blooms per plant.

Genetics experiments using poinsettias, form another project in floriculture greenhouses.

Previously, it was believed that a poinsettia contains a set of 14 chromosomes. Investigations here led to the discovery that the plant contains only a set of seven chromosomes.

Other research with the plant has produced a highly desirable type of poinsettia with a set of 32 chromosomes. Experiments crossbreeding the plant for color by researching various species have been supplemented by a student contribution of poinsettias brought back with him from South America. Another species used was brought here from Mexico.



## Pig in a poke

This sow certainly isn't making a hog of herself. She's part of a controlled experiment to see if, by keeping her chained to one spot, she can produce a healthy litter, conserve food bills and stay fit herself. This method began in Europe, where pigs are chained due to lack of open space for them to roam.

State News Photo by Gordon Moeller

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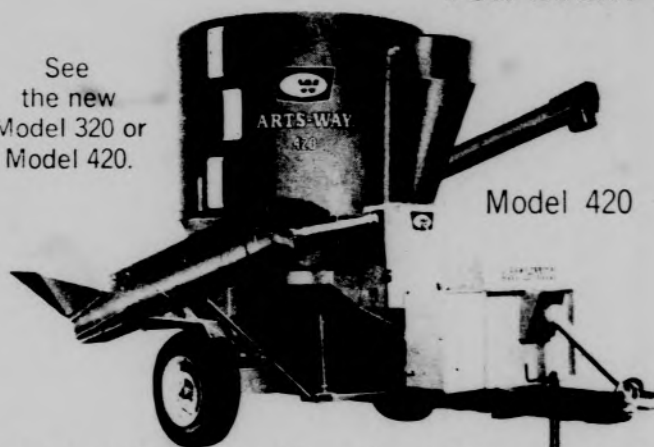
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# Livestock studied by Block and Bridle

Block and Bridle Club, covering both the live and the meats divisions of the livestock industry, offers the interested student experience in any phase of this work.

With a membership formed largely from pre-vet and animal husbandry majors, Block and Bridle's interests are extended to a range of students varying from English to Justin Morrill College.

A variety of activities centered around livestock are the major part of the club's activities.

Recently Block and Bridle sponsored an international show with animals from University farms. (An international is a livestock show of several types of animals.)

Additionally, the organization sponsors the University's meats and livestock judging teams.

These teams start out in a fall term Animal Husbandry III class. Then, following a winter-spring-fall sequence, students learn how to judge meats through written reasons or livestock through oral reasons.

These "reasons" are evaluations of a class of animal or meat. There are always four examples in a class. For instance, in judging a class of sheep the team member must tell a judge (who often wakes up only for mistakes) specifics about the class while placing each sheep according to relative worth and naming specific physical characteristics.

Important in judging is accuracy, truthfulness, terminology ("This steer is easy in the top") and, generally, how well the class is remembered.

Fall term, the club's livestock judging team participated in several intercollegiate national livestock competitions.

The group first participated in the Eastern States Exposition held in Springfield, Mass., in Sept. 1967.

At this competition the team became the first University team



*Close fit*

Sharon LePard, Dearborn junior, "fits" her sheep in preparation for the Block and Bridle Club's livestock show. State News Photo by Jerry McAllister

to win first place in a major contest of this type.

The livestock team also participated successfully in other regional and national contests, such as the American Royal at Kansas City, Mo., winning first place and the Chicago National, winning eighth place—the only eastern team to place in the National's top 10.

The meats team participated in several national contests while also placing first in the American Royal. This marked the first time that both the livestock and meats judging teams from the same school have placed first in the Royal.

To finance these teams, Block and Bridle presents several exhibitions regularly.

The first weekend of spring term annually, the club sponsors their horse show. Features of the show are a show of breeds from statewide breeders and English, western and bareback equitation classes and several performances.

Additionally, special exhibitions in cattle cutting are presented by the club. Cattle cutting involves "cutting" a single animal out of a herd while riding on horseback.

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**AG HALL OF FAME**

# 3 farmers honored

Three Michigan men will be honored for "distinguished service to agriculture" during the annual Farmer's Week at the University.



**WOODS**

The trio, Stanley H. Woods, Deerfield; Duane Baldwin, Stockbridge; and Garfield G. Wagner, Jr., Flint, will be inducted into the MSU Agricultural Hall of Fame on Jan. 30.



**BALDWIN WAGNER**

Woods is a certified seed grower, cattleman and currently president of the Michigan Crop Improvement Assn. He also operates a 1500-acre farm in Lenawee County.

Baldwin is a partner in a 2500-

## Farmer's Week

**ROBERTA YAFIE**  
Feature Editor

Contributors . . . Pat Anstett, Marian Gardner, Jim Granelli, Delores Major, Marion Nowak, Aimee Patterson, Marilyn Patterson, Jenny Pope, Betsy Roach, Dennis Hall.

acre operation near Stockbridge and is the new president of the Michigan Agricultural Conference. Known as "Onion King" and former president of the state onion growers, Baldwin is now an Ingham County vegetable farmer.

Wagner is general manager of the McDonald Cooperative Dairy Company in Flint. He is an active leader in the state's dairy industry and will be cited for contributions to Michigan agricultural progress.

# Farm innovations shown on campus

Apple harvesting machines, hydraulic machinery, the International Grand Champion steer and the beef barn.

These and other facets of and innovations in farming and farm living will be on display from noon Monday to noon Friday during Farmers' Week.

More than 120 exhibits provided by industries, companies and departments of the University will be displayed in the east and west concourses of the Stadium, the Agricultural Engineering Bldg., the Stock Pavilion, the Dairy Barn and the basement of the Auditorium.

The exhibits will feature everything from \$12,000 high powered tractors to \$100 chain saws, from potato diseases to water quality analyzers to wetland fowl, according to Robert Maddox, exhibit co-ordinator.

A new exhibit this year is the rural art exhibit which will display the works of artists from rural Michigan. It will be in the basement of the Auditorium.

Nearly 30,000 people view the exhibits every year, Maddox said. The display which draws the most public attention is the hydraulic equipment exhibit.

The displays are set up by the companies and the University de-

partments at their own expense, Maddox said.

Many companies take the opportunity to introduce new machines or innovations but they must sign an agreement that no sales will be made at the exhibit centers.

The companies and departments are responsible for staffing their exhibits, Maddox said. Students or faculty members usually man the department displays while men trained in answering questions technically work at the company exhibits.

## Farm week to sponsor youth series

Michigan youth and their parents alike will have the opportunity to acquaint themselves with careers and educational opportunities in agriculture at the Farmers' Week youth program.

The program, "Opportunities Unlimited," will be held in the Auditorium at 10 a.m. Tuesday and Thursday. A special adult program "Careers, Kids and Kinfolks," will begin at 1:15 p.m.

Following general sessions of "Opportunities Unlimited" the youth will be able to attend a series of programs dealing specifically with the MSU's 21 areas of study from agricultural education and farm production to nursing and veterinary medicine.

# WELCOME . . . FARMERS!

ENJOY A

## BIG BARNEY



# 45¢

Two big beef hamburgers topped with crisp lettuce, melted cheese, pickle and sauce. M-m-m!

## RED BARN<sup>SM</sup>

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## Sir PIZZA

AMERICAN Not too spicy / ITALIAN Some like it hot

Dinner \$1.35

Sir PIZZA Meat Sauce Salad, Garlic Bread

A la Carte (full order) \$1.05 (Allow 20 min.)  
A la Carte (small order) .75 (Allow 15 min.)

Garlic Bread 15¢  
Extra Meat Sauce 30¢  
Mushrooms 30¢

### Salads

CRISP Green Salad 25¢  
CHEF'S Salad Bowl Ham, Egg, Cheese, CROUTONS \$1.15

DRESSINGS: French, 1000 Island, Vinegar, Mayonnaise, Italian

### PIZZA 10" 14"

Cheese	\$.95	\$1.70
Onion	1.00	1.80
Green Peppers	1.00	1.80
Pepperoni	1.25	2.30
Anchovies	1.25	2.30
Mushrooms	1.35	2.50
Hamburger	1.40	2.60
Baked Ham	1.45	2.70
with	add	
Bar-B-Q Sauce	.10	.20
Extra Cheese	.15	.30

Royal Feast \$1.85 \$3.50  
Pepperoni, Sausage, Mushrooms, Onion & Green Peppers

EXTRA SAUCE, HOT PEPPERS, GARLIC, ANISE SEED BY REQUEST ONLY NO ADDITIONAL CHARGE

### Beef Boat

Whole \$1.20 Half 60¢

### Crusader (MEDIEVAL SUBMARINE)

Whole \$1.30 Half 65¢

### Wine-Baked Ham Sandwich

Plain or with cheese. Served on large bun with dill pickles. 60¢

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# Welcome Farmers!



Filet Steak . . . . 1.37  
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Pork Chops . . . . 1.18

includes texas toast  
baked potato, tossed salad

Steakburger Special . . . . .72

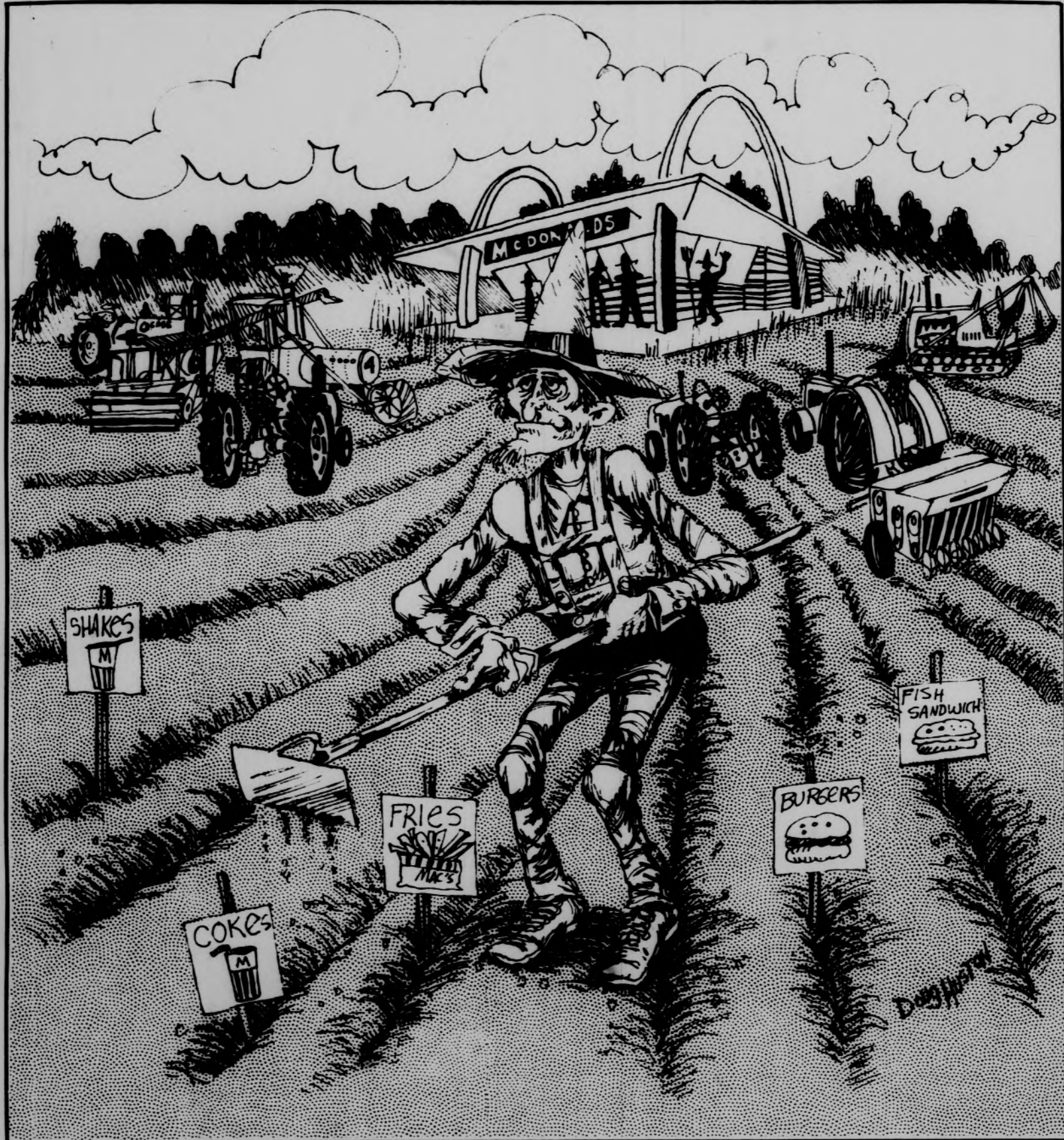
includes baked potato,  
texas toast

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