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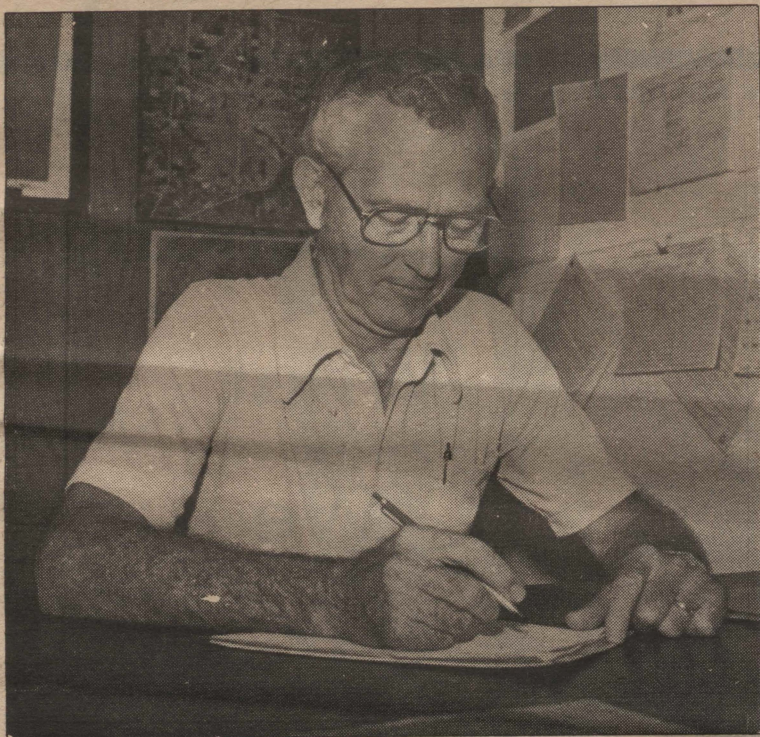
THE
SOIL CONSERVATION
SERVICE

ANNUAL REPORT

of the Dickinson County Soil Conservation District Conservation

A Special Soil Conservation Supplement

Guest Editorial



Clarence Call
District Conservationist

What About No-Till Planting

by Clarence M. Call

Various methods of conservation tillage have been discussed and tried in the past. Probably the most popular method is chiseling or disking cornstalks in the fall, disking twice (or field cultivating) in the spring and then planting. Cultivating at least once is required. This is a good method and does achieve the purpose of leaving crop residues on the surface. But this system still requires at least five times over the field before the crop is harvested. There is a way to reduce the number of trips to three. Instead of using a tillage system why not try no-till?

No-till has been around for several years but hasn't become too popular in this section of Iowa. It is difficult for anything to replace established tradition and the moldboard plow is certainly a tradition in north-west Iowa. But change is certainly coming and no-till may possibly be the farming method of the future.

Getting started in no-till isn't all that difficult. Drag the corn stalks down, if you want to, then plant. You won't be able to use herbicides that require incorporation. Cultivation may not be required but if it is, be sure you have a cultivator that is made to go through crop residue. All that is left to do is harvest. It isn't quite this simple, of course. There are details to be worked out in fertilizing and herbicide application. But all problems can be solved. A no-till planting guide appears elsewhere in this report.

There are several advantages to no-till farming. Besides the obvious one of holding soil erosion to a minimum, we save fuel and time. And what about the saving in machinery? All that is needed is a planter, cultivator, good sprayer and a medium size tractor. You won't need a big tractor to pull the plow or chisel.

How about trying some conservation tillage in 1981? Accept the challenge of the 80's!

Earlier this summer, Iowans witnessed some of the worst soil erosion to occur in the state for more than thirty years. Fast, hard rains swept through county after county, ravaging unprotected fields just after farmers had finished planting record acreages of corn and soybeans.

The resulting soil losses, which were highly visible and widespread, magnified what often occurs to a somewhat lesser degree each year. The amount of soil lost to erosion—261 million tons per year from cropland alone, or an average of 9.9 tons per acre per year for all lands in the state, is twice the acceptable erosion level for most soils.

The gullies, rills, and sediment-filled ditches we witnessed last spring and summer have long since been smoothed over by tillage equipment or covered by green foliage. And larger equipment, commercial fertilizers, and improved hybrids have masked losses in soil productivity due to erosion. Because erosion is usually a gradual process over time, most Americans have tended to develop a sense of complacency about it.

Do we have enough time to be complacent? Will the problem wait until 1985 or the year 2000? I think not.

Soil conservationists tell us that the topsoil might be gone from some of our more fragile land in less than twenty years. We are literally "losing ground" to erosion, so we should recognize our responsibility to do more to preserve this rich resource.

Improved program strategies developed in recent years at state and national levels must now be put into action. After all,

those who use it today are its stewards for only a relatively short period of time.

We in Iowa have led the nation with the level of support and innovations we have offered to our soil conservation programs. We took a significant stride earlier this year when the state's soil conservation laws were amended, putting in place the "Iowa Soil 2000 Program", a twenty-year plan to reduce the state's soil losses to acceptable limits. I recommended additional monies for cost-sharing with landowners even though our budget is tight. Nearly \$6 million in state funds are now available for incentives to landowners for installing permanent and temporary soil conservation practices this coming year.

Commendable as all of this is, a renewed emphasis on this

priority is the only way we will reach our ultimate objective of reducing erosion to acceptable limits by the year 2000.

While soil conservation districts and their elected commissioners have demonstrated their ability to deal with soil and water resource problems at the local level, accelerated soil conservation programs will require even greater coordination among federal, state, and local units of government.

I urge you to extend your support to conservation officials, farmers, landowners who are providing leadership to existing programs. Let's all commit ourselves to a better conservation ethic so that coming generations will know the same productivity and wealth of our beautiful state that we have so fortunately enjoyed.

It takes 250-1,000 years to build an inch of topsoil so



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Guest Editorial



Betty Farmer

Farm Windbreak

by Betty Farmer

A windbreak, as we generally think of it in Iowa, is a narrow belt of trees planted to give the farmstead protection against winter winds. Much of Iowa's land is relatively level to gently rolling. There is little native timber except along rivers and streams. This combination permits northwesterly winter winds to make a clean sweep across the land. Something is needed to break their force.

Most of us want greater comfort for our farm homes. No amount of other improvements will replace a windbreak for protection from winter winds. A windbreak will make the home more comfortable. Fuel require-

ments can be cut by as much as a third.

A windbreak means a good deal, too, when working outdoors around the barns and lots. Livestock can be kept in condition on less feed when protected from the cold. A good windbreak permits you to keep livestock in lots when you ordinarily would have to keep them inside.

A windbreak will prove its worth after every snowstorm. It will keep the snow from banking around buildings and blocking the farm lot.

The snow is held within the rows of trees or near them. It melts slowly, distributing the moisture over a longer time in a manner which helps the trees themselves.

A good windbreak adds to the beauty of your farm. It makes farming more pleasant. You'll find, too, that ornamental trees, shrubs and flowers are more

easily grown on a protected farmstead. And useful birds are attracted where trees are provided for nesting and protection.

Should you decide to sell your farm, its value will be increased by a windbreak planting.

An added function of a windbreak is to give shelter to pheasants, partridge, song-birds and other wildlife during the winter. Many times a good windbreak will mean the difference between survival and death of game birds.

The Dickinson County Soil Conservation District Commissioners have trees available for farm windbreaks each spring. During the spring of 1979 the commissioners sold 10,875 trees and shrubs to 75 farmers in Dickinson County. You may receive technical help in planning your farm windbreak at the Soil Conservation Office in Spirit Lake.

Soil Erosion

If you don't think soil erosion is a problem on land you farm, or in this country, this is for you. I think there are still many farmers who question whether the soil loss figures they see and hear are accurate. There are many who believe soil erosion is a problem in another part of Iowa, but not in their neighborhood or especially on their own farms.

On one hand, it's understandable. A soil loss of 10 tons an acre (the Iowa average on cropland) is only 1/14 of an inch across the acre. That's very difficult to notice, especially if you'd rather not see it. Of course, there are years soil loss is less than that, too.

On the other hand, there are years when soil loss is much greater. The erosion that occurred this year over much of the state was all too easy to see. Or think about how your land looked 10 years ago and how it looks today. Anyone with any sloping land at all has probably seen lighter colored soil in spots and a build-up of soil at fencelines--sure signs of erosion.

Look at soil surveys, where

topsoil depths are described. Then compare that to original topsoil estimates, and you'll find the soil loss figures being quoted fit the historical picture.

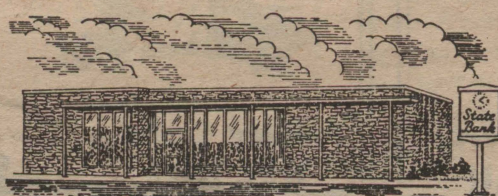
Figures like two bushels of topsoil loss for a bushel of corn produced, and an inch of soil lost every 14 years are attempts to help visually explain soil losses.

I have an idea, though, that deep down most of us who work with the land know if we're losing soil. The question then is whether we care enough to do something about it.



Charles Shorey

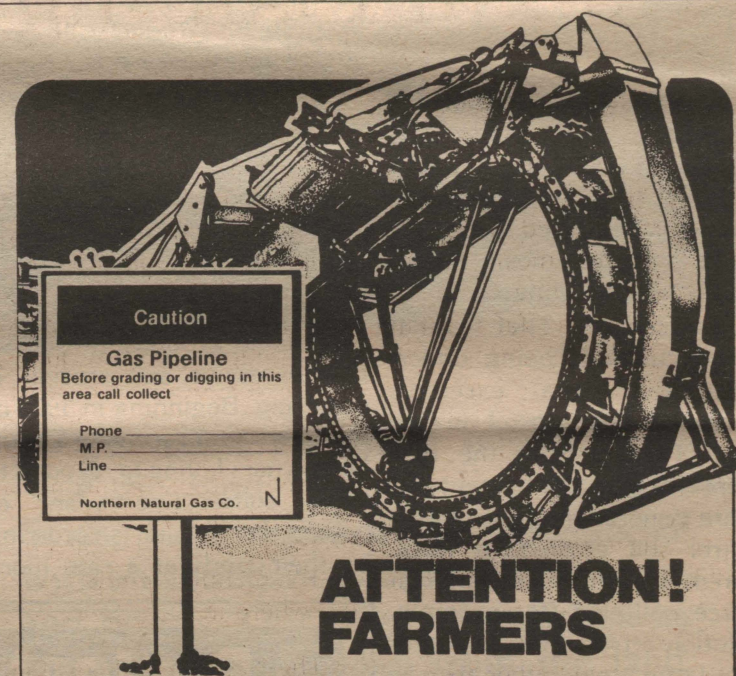
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Iowa Soil 2000

Future of state's soil resources

Iowans express concern

"Iowa Soil 2000" offers an indication of concerns being expressed by Iowans about the future of the state's soil resources.

The program proposal was developed by an interim study committee of the 68th General Assembly. It offers a 20-year master plan for reducing soil erosion to acceptable levels by the year 2000. Five-year goals established as a result of the interim committee's recommendations will seek to provide each farm unit with a conservation folder by 1985, control erosion on the state's most fragile soils, and reduce excessive erosion on all agricultural lands by 40 percent.

Under the leadership of co-chairman Senator Forrest Schwengels of Fairfield and Representative Wendell Pellett of Atlantic, the interim study committee developed the following policy statement: "Agriculture is the foundation of Iowa's economy. That foundation is currently being undermined by critical excessive erosion of the topsoil in the state. Thus it is in the best interest of both the present and future generations to promptly control soil erosion in Iowa. Moreover, control of nonpoint source pollution (for example, pollution attributable to runoff from large areas rather than to specific points, such as sewage treatment plants) of the state's rivers and lakes can be largely achieved by proper soil conservation techniques..."

Specific policy goals are to provide better education to build awareness of the need for soil conservation at all levels, provide incentives for good soil management, provide technical assistance, and control soil erosion within the state by the

year 2000.

A proposed \$7,110,000 increase to the Iowa Department of Soil Conservation's budget accompanied the committee's recommendations. Appropriations subcommittees had earmarked nearly half that amount for such purposes late in the legislative session.

House File 2561, a bill signed into law by Governor Ray last spring, deals with a number of the interim study committee's recommendations. An inter-agency committee to coordinate water management problems was established. The required time for maintaining permanent soil conservation practices built with state funds was extended from 10 to 25 years and new landowners were made responsible for maintaining soil conservation improvements installed by the previous owner.

Soil conservation district commissioners were given authority to inspect land on their own initiative when they have reasonable grounds to believe that excessive soil erosion is occurring. Beginning in 1990 or five years after receiving a plan, landowners failing to respond to three consecutive years of notices that erosion is occurring on their lands at a rate more

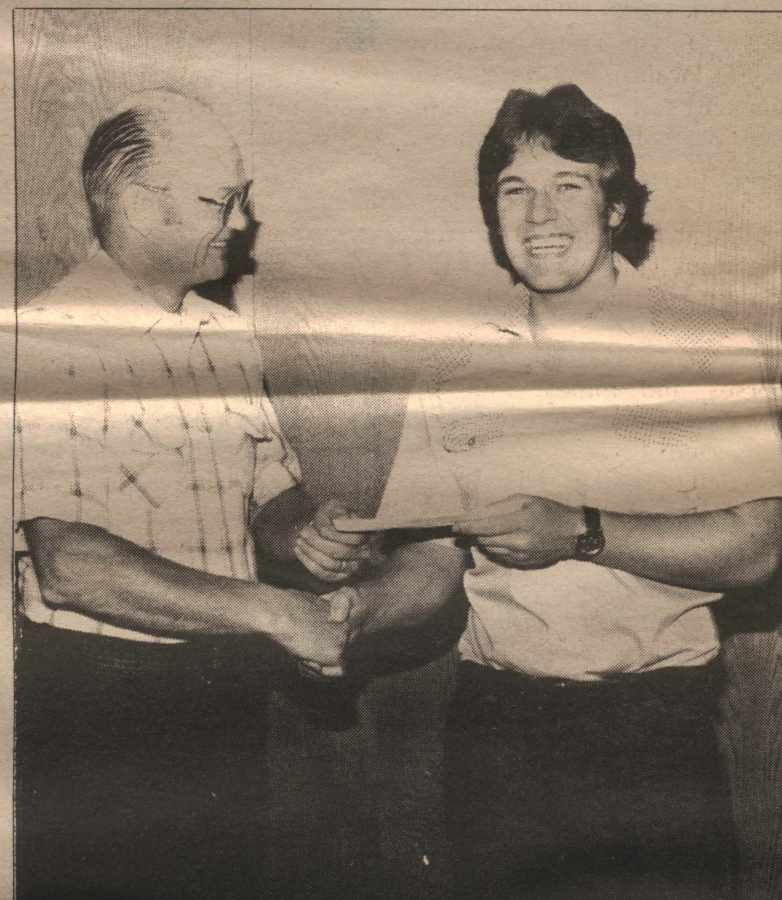
than twice the established limit will be mandated to establish soil conservation measures.

House File 2561 also addresses land disturbing activities in development areas where zoning ordinances or building permits are required. The bill requires that erosion control plans be approved by the soil conservation district before permits are issued.

The priorities identified in the Iowa Soil 2000 program are similar to other planning goals established in ongoing "208" water quality management and conservation needs inventory programs designed to establish the state's five-year resource conservation plan.

Hearings held in each of Iowa's 100 soil conservation districts as part of a nationwide effort to evaluate the effectiveness of current soil and water conservation programs were used as the basis for establishing a statewide five-year resource conservation plan. That statewide plan concluded that "soil erosion must be reduced to the allowable soil loss limits before the current productive capability of the soil is permanently impaired..."

The plan further called for a vastly accelerated soil conservation effort, recommending a four-fold increase in available cost-share funds, the addition of technical personnel to meet requirements of the districts, providing additional incentives for installation of soil conservation measures, and renewed efforts to increase landowner awareness.



KEN MAY, of Spirit Lake, was presented a college scholarship check by Robert Ingwersen, of Spirit Lake, on behalf of the Soil Conservation Service. The scholarship check was presented last fall and is an annual project of the Soil Conservation Service.

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Native Grasses

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'New prairie' will appear

Iowans are again catching glimpses of waving tall prairie grasses much like their forefathers saw, notes Iowa State University extension agronomist Steve Barnhart.

When civilization came to Iowa, it brought with it intensive livestock production, tillage, and crops which were not native to the locality. Prairie grasses were not suited to any of these, Barnhart notes. The moldboard plow and overgrazing eliminated nearly all the prairie. European forages and crops were found to be better adapted to crop rotations and livestock management systems.

As machinery replaced horses and mules, much of Iowa's forage acreage was converted to row crops. The profitability of row crops led to the dispersal of many small dairy herds, elimination of fences and more conversion of forage acres to row crops. As a result, millions of acres of sloping farmland are being tilled annually and subjected to wind and water erosion, Barnhart says.

The renewed interest in native grasses actually came from the loss of wildlife. Early investigations by the Soil Conservation Service were directed through their plant materials program toward the use of native tall grasses for wildlife habitat plantings. The Iowa Conservation Commission supported these efforts with research. The soil erosion control benefit of maintaining a permanent vegetative cover was recognized as an asset, reports the agronomist.

Although the native prairie grasses have potential for soil erosion control and wildlife habitat, little farmer participation was achieved until these grasses were considered for their forage value.

Barnhart reports the commonly used forage grasses such as Kentucky bluegrass and smooth brome grass are "cool

season" grasses. They produce their highest yields and have their best nutritive value in the spring and autumn. In contrast, native tall prairie grasses, such as big bluestem, Indiangrass, and switchgrass, begin growing in May and produce the majority of their growth during late June, July and August. This makes the native grasses good candidates for mid-summer pasture.

Farm scale production of native grass plantings is still experimental. Forage producers do a reasonably good job of establishing and managing the familiar, cool-season grasses, but some have problems with the native warm-season grasses.

According to Barnhart, native grasses generally establish very

slowly, often requiring two full growing seasons to develop into vigorous plants. Competition from warm-season weedy grasses such as foxtail and crabgrass seems to be the biggest problem. Selective herbicides such as atrazine have been used successfully in some cases for establishing these grasses. Herbicide rates, timing of application, and weather conditions apparently affect the consistency of warm-season grass establishment.

The best grazing and cutting managements for native grasses are still being developed. Carefully controlled rotational grazing is necessary to maintain plant vigor. Extended periods of continuous grazing damage the plants, Barnhart notes.

The bottom line must be economics, he says. Cool-season grasses may be as productive and as effective in controlling erosion as warm-season grasses. By including legumes with the cool-season grasses, an ample supply of high-quality forage during the midsummer can be produced. However, native grass seedings also have potential economic yield as seed. Producers must evaluate their own specific forage needs, management skills, conservation objectives and economic position in evaluating the potential for use of native grasses.

Barnhart says the native prairie grasses may have a place in the new "mix" of agricultural production systems. Their

potential is yet to be fully evaluated. Perhaps in the final scheme of effective soil, water and wildlife conservation, a few areas of "new" prairie will dot the countryside for the enjoyment of future generations.



GORDON LEADER, of Milford, was presented a college scholarship check by Andrew Hoffman, of Lake Park, on behalf of the Soil Conservation Service. The scholarship check was presented last fall and is an annual project of the Soil Conservation Service.



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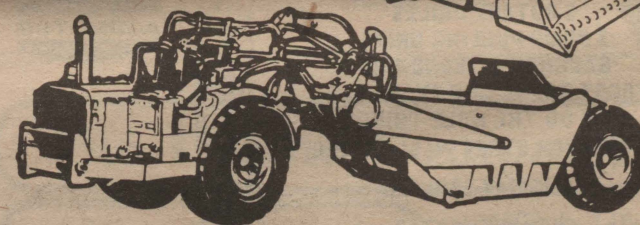
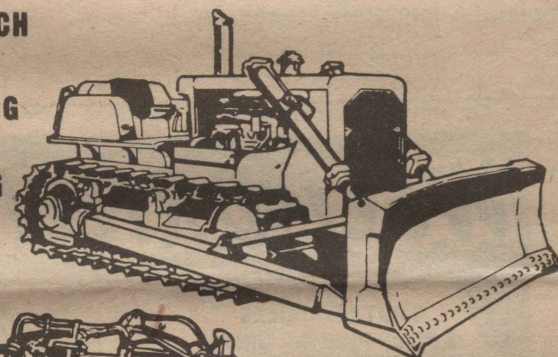
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Fiscal Year 1978 - 1979

Accomplishments

FISCAL YEAR 10/1/78 to 9/30/79

Conservation District Cooperators (no.) and ac.).....	10
	2082
Conservation District Cooperators Canceled (no.) and ac.)...	6
	1529
Individuals and Groups Assisted (no.).....	155
Technical Services for Land Unit Conservation Planning and Application (no.).....	298
Individuals and Groups Applying Practices (no.).....	72
Conservation Plans (ac.).....	393
Conservation Plans Canceled (ac.).....	920
Conservation Plans Revised (ac.).....	61
Technical Services for Area Planning (no.).....	6
Governmental Agencies Assisted (no.).....	2
Soil Surveys (ac.).....	41,433
Conservation Tillage System (ac.).....	1,294
Farmstead and Feedlot Windbreak (ac.).....	21.5
Grassed Waterway or Outlet (ac.).....	11.8
Structure for Water Control (ac.).....	6
Terrace (ft.).....	5,300
Subsurface Drain (ft.).....	19,393
Tree Planting (ac.).....	6
Wildlife Upland Habitat Management (ac.).....	1.6
Windbreak Renovation (ac.).....	7
Wildlife Land Benefited by Application of Conservation Practice (ac.).....	1.6
Land Adequately Protected (ac.).....	1,417
Land Benefited by Application of Conservation Practices (ac.).....	2,063
Wildlife Land Adequately Protected (ac.).....	1.6
Pasture and Hayland Adequately Protected (ac.).....	35
Cropland Adequately Treated (ac.).....	348



A waterway on the Dick Taylor farm, west of Milford.

WATER MANAGEMENT PROGRAMS ARE IMPORTANT

Water management programs are becoming more important in soil and water conservation efforts. This new emphasis in traditional soil conservation programs is evident in several new developments in Iowa.

Legislation enacted by the General Assembly and signed into law by Governor Robert Ray last spring enables Iowa's conservancy districts to elect their own governing boards. The conservancy districts were created by the legislature in 1971 to deal with water management problems in each of the state's six major river basins.

Conservancy districts are involved with public participation and planning efforts to identify problems and to set priorities. Conservancy district staff and public participants have both been responsible for "208" water quality management planning for nonpoint source pollution, a process that takes its name from Section 208 of the Clean Water Act Amendments of 1972.



Cindy Lilienthal
ASCS Program Assistant

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Commissioners

Financial Statement

Fiscal Year 1978 - 1979

District's IM Budget

Receipts

Allocation from State Soil Conservation Committee... \$ 2,117.94

Disbursements

Commissioners' mileage, meals and lodging.....	\$ 902.71
Office Supplies.....	268.98
Printing.....	85.03
Prizes for Contests.....	20.00
Rental for Meeting Halls.....	22.00
Office Expense.....	631.77
Meeting Expenses.....	187.45
Total Expenses.....	\$ 2,117.94

District's IIM Budget

Receipts

Allocation from State Soil Conservation Committee... \$10,497.56

Disbursements

Clerk's Salary.....	\$ 9,126.00
Travel.....	68.49
Office Equipment.....	142.76
Employer's Contribution to F.I.C.A.....	555.85
Employer's Contribution to I.P.E.R.S.....	479.18
Life Insurance.....	66.00
Disability Insurance Contribution.....	59.28
Total Disbursements.....	\$10,497.56

IIIM Budget [State Cost-share]

1975-1976 Allocation.....	\$11,500.00
Total Spent.....	10,893.16
Total Returned to State Soil Conservation Committee....	606.84
1976-1977 Allocation.....	8,000.00
Total Spent.....	6,835.63
Total Returned to State Soil Conservation Committee....	1,164.37
1977-1978 Allocation.....	\$ 8,000.00
Total Spent.....	6,308.31
Total Returned to State Soil Conservation Committee....	1,691.69
1978-1979 Allocation.....	\$12,000.00
Total Spent.....	4,587.99
Funds Obligated.....	860.00
Refunded to State Soil Conservation Committee.....	6,552.01

AREA PERSONNEL

Wallis R. Tonsfeldt, Area Conservationist
Lee C. White, Area Engineer
Wayne L. Eberly, Civil Engineer Technician
Judy Rathel, Area Clerk
Margaret L. Walker, Clerk-Typist (PPT)

AGRICULTURAL STABILIZATION AND CONSERVATION SERVICE

Larry Lago, County Executive Director
Ruby Caskey, Program Assistant
Pat Achenbach, Program Assistant
Cindy Lilienthal, Program Assistant



1979-1980

Soil Conservation Commissioners

PICTURED ARE THE current Soil Conservation Commissioners including from left to right, front row, Andrew Hoffman, Don Schubert, and Bob Ingwersen.

Second row, from left to right, Ernest Skow, Charles Shorey, Assistant Commissioner Maurice Dougal and Assistant Commissioner Orville Berg.

DISTRICT COMMISSIONERS

Charles Shorey, Chairman
Robert C. Ingwersen
Don Schubert
Andrew Hoffman
Ernest H. Skow
Orville Berg
Maurice Dougal

FIELD OFFICE PERSONNEL

Clarence M. Call, District Conservationist
Dennis Rustman, Conservation Technician
Betty Farmer, State Clerk

EXTENSION SERVICE

James Yungclas, County Extension Director
Holle Smith, County Extension Home Economist
Laurie Rosendahl, County Extension 4-H and Youth Leader
Evelyn Albers, Office Assistant

COUNTY ASCS COMMITTEE

Neal Delaney, Chairman
Don Gruhn
Dean Wallace

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A Look At No - Till

Roger Heikens -

Dickinson County Pioneer

by Susan Reiser

Soil and wind erosion control, and the saving of time and fuel is why one rural Dickinson County farmer switched from the conventional method of farming to a no-till method.

Roger Heikens, 49, of Milford township, made the switch from conventional to no-till farming in 1966 on about 500 crop acres of land.

No-till methods basically mean no tillage of the ground before the crops are planted.

Harvesting the crop on a no-till

field or on a conventional field is done the same way.

During the last cultivation of the crop before harvest, Heikens tries to ridge the row. In the fall, after harvest, Heikens chops the corn stalks and spreads dry fertilizer on the field.

In the spring, in preparation of planting, Heikens again spreads the dry fertilizer and starts planting.

By using a special no-till planter attachment, Heikens is able to push last year's row off the ridge while at the same time placing the new seed

in the ground in the same row.

There are a few farm machinery manufacturing companies who manufacture a front end no-till planter attachment for regular planters. Heikens first started using a Buffalo till planter attachment. Through the years Heikens has revised that particular planter and last winter decided to build his own attachment the way he wanted it to be designed.

The no-till attachment that Heikens designed cost roughly between \$1,000 and \$1,200 with no labor costs included.

Heikens said that depending on how hard he wanted to work, he could, under ideal conditions, plant about 80 acres a day with his six row planter.

With the no-till method, the seed is always being planted in moist ground. After the seed has been planted, Heikens sometimes uses a rotary hoe to help the emergence of the corn or bean stock. Heikens said that he makes a point not to run the combine or tractor wheels on the rows so that the ridges do not get smashed down.

Heikens rows are planted 36 inches apart and are ridged between six and eight inches. Heikens said that he doesn't ridge the beans as much as the corn and has had good luck in controlling weeds in the field.

Heikens said that according to Iowa State University test plots, that the yields are about the same in the no-till planting and the conventional planting methods.

MANY ADVANTAGES

The main advantage of no-till planting, according to Heikens, is the control of soil and wind erosion. He said that he has very little erosion with this method and that on the fairly flat ground, the no-till planting stops the water "pretty good."

Time and fuel were the other advantages to no-till that Heikens cited. He said that there are not too many facts available on the amount of time and fuel saved but that he uses about roughly four gallons of diesel fuel per acre per season including the planting, cultivating and harvesting.

Heikens said that he probably had some machinery savings also because he had no investment of a plow, disc, etc.

"The reason I switched was because my father had gone to a conservation field day one day. He came home and that's when we were first exposed to no-till methods," Heikens said.

"Lots of people stop out and look at the planter. There is a lot of interest in it. There is however, trash on top of the field. Some people don't

like the looks of the trash and it doesn't look that good I agree. One reason that more people haven't gone to no-till planting is because there is only one company building the machines so there is a lot of room for improvement," Heikens said.

One of the disadvantages of this system is that it takes the ground longer to warm up in the spring and the land is slower to dry in the spring also. No-till planting, Heikens said, can be a real problem in heavy soil. He said that no-till works better on higher and dryer soils.

Another difference between conventional and no-till planting is the type of chemicals, especially herbicides, that can be used.

In conventional farming, pre-plant or pre or post emergence herbicides can be used. Pre-plant herbicides can not be used in the no-till system.

Future plans for Heikens includes staying with the no-till planting

system and making any necessary improvements on the system in the future.

Besides farming 500 acres of land, Heikens also feeds 150 head of cattle and between 700 and 800 head of hogs per year.

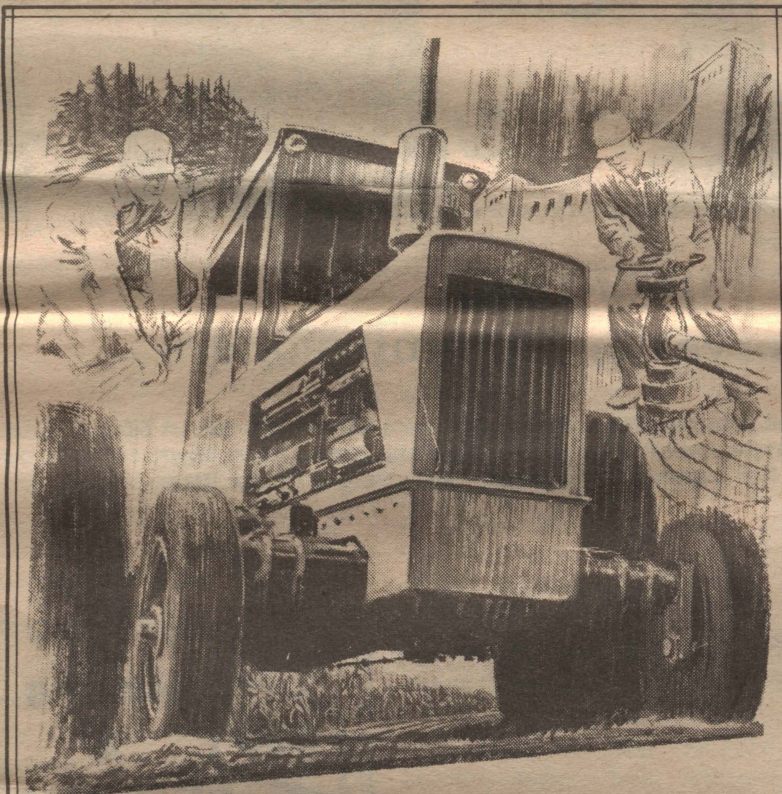
Heikens' family includes wife, Mary, and children Norman and Randy.

Three farming terms are often confused and are clarified in the following:

Conservation tillage: Simply means leaving the old crop residue on the surface as opposed to plowing it under.

Till planting: Tilling back in the old residue running a shovel to till right in front of the planting unit usually using a 10 inch sweep.

No-till or slot planting: Planting the seed back in the old row with no tillage or back into the slot using a knife, disc, or fluted coulter.



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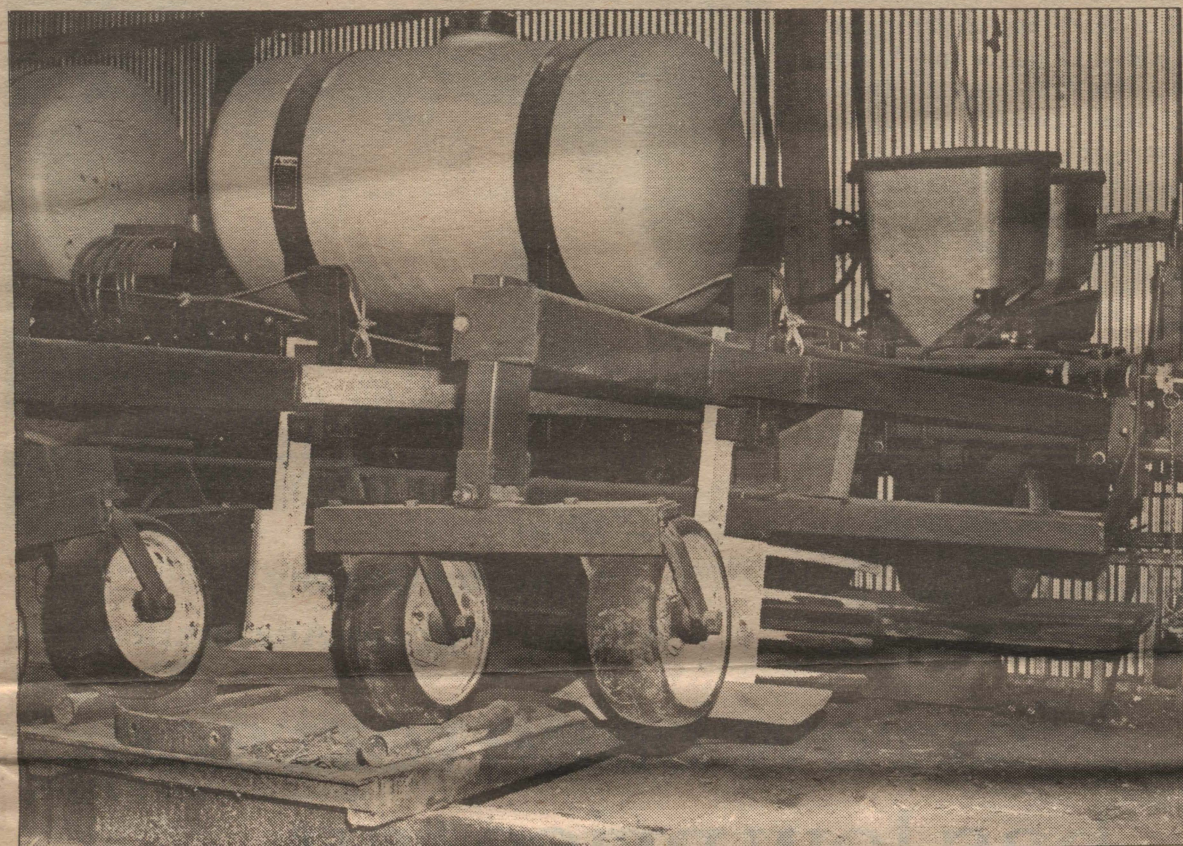
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THIS PICTURE shows last year's residue still remaining on this year's crop. Heikens comments on the "trash" that appears on the surface every year in the story. Read it for more details.

Planting Systems

Deer In No-Till Planting



HEIKENS MADE a few modifications on his John Deere planter to meet his specifications. Fertilizer and

or herbicide can be carried in the tanks shown in the picture. See the story for more details.



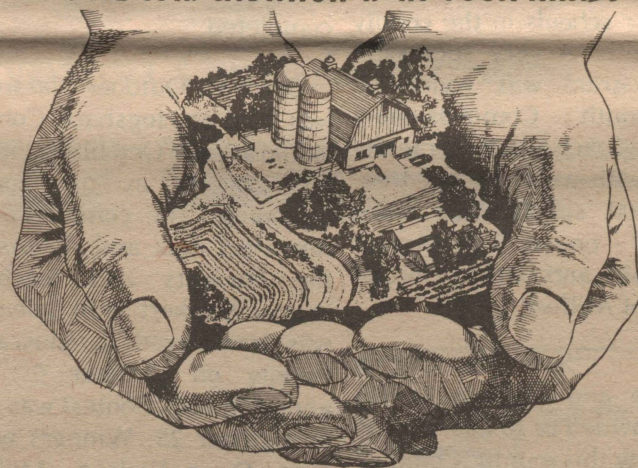
PICTURED is the guards on the corn planter that push the old crop residue aside allowing the new seed to be planted in moist dirt in the ridge. See the story for more details.



HEIKENS OPENED this corn field with a field cutter. Notice the ridges that will be used to plant next

year's crop in. See story for more details about Heikens' operation on a farm southeast of Milford.

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Activities

January - Clarence Call and Maurice Dougal attended the commissioners Short Course held in Ames on January 16 and 17.

February - The SCS and ASCS Dickinson County offices moved to their new location at the junction of highways 9 and 71 on February 23.

March - A four-county meeting on conservation tillage was held in Terril on March 15 with Ernest Behn as speaker. Charles Shorey, Robert Ingwersen and Clarence Call attended regional commissioners' meeting in Pocahontas on March 16. Clarence Call attended statewide meeting for district conservationists in Des Moines on March 19-22. District commissioners met with the county supervisors on March 27 to discuss current conservation activities in the county.

April - Commissioners provided 540 conservation workbooks for schools in the county this month. A very successful tree program was concluded this month. Commissioners presented each 6th grader in the county with a green ash tree. Two \$300 scholarships were awarded - one to Ken May of Spirit Lake and one to Gordon Leader of Milford.

May - Soil Stewardship bulletins and bulletin covers were provided to 16 churches in the county this month. Commissioners sponsored one county 4-H'er to camp at Madrid. Dennis Rustman, conservation technician, attended a three day technicians' training session at the Presbyterian Camp.

June - A conservation tillage tour was held in Clay and

Dickinson Counties on June 18.

July - Open house was held on July 13 at our new office. All commissioners were in attendance and a fair crowd attended. Commissioners' annual picnic was held on July 23 at Gull Point State Park. All commissioners and wives attended the picnic this year.

August - Owen Primavera, a Milford high school teacher, was declared an area Short Course winner in the Marc Cox Soil Conservation Program Awards Contest.

September - "Last Acre" Ceremony for Dickinson County Soil Survey was held September 20. Larry Hanson, Soil Scientist, retired on September 21. Commissioners presented a check for \$500 to the new Agronomy Building at Iowa State University. Soil survey for Dickinson County was completed.

October - Outdoor Classroom was held at Hogsback Conservation area on October 4 with all 6th graders in the county attending. The commissioners furnished milk and donuts for the students and teachers. Wayne Dankert, Soil Scientist, was transferred to Muscatine County on October 5. The annual Speech Contest was held on October 25. Winners were: first, Doug Nielsen, Milford; second, Mike Clark, Milford; and third, Ted Schumacher, Milford.

November - Commissioners Bob Ingwersen and Maurice Dougal, Don Nielsen, Doug Nielsen and Jerry Galbraith,

FFA teacher from the Milford High School, attended the Regional Speech Contest and commissioners' meeting in Fort Dodge on November 5. Mr. and Mrs. Orville Berg attended the RCA Workshop on Agricultural Lands in Dubuque on November 8 and 9. Clarence Call, District Conservationist; Charles Shorey, Commissioner; Mr. and Mrs. Owen Primavera and Mr. and Mrs. David Leith, contest winners, attended the annual Marc Cox banquet in Sioux City on November 15.

December - Mr. and Mrs. Robert Ingwersen, Mr. and Mrs. Orville Berg and Mr. and Mrs. Maurice Dougal attended the annual commissioners' conference in Des Moines on December 12 and 13. Commissioners' annual Christmas party was held at the Black Coach on December 19.



Ruby Caskey
ASCS Program Assistance

Narrow base terrace has low price tag

NEW TERRACES ARE TRIED IN IOWA

A new type of terrace is being tried in Iowa, with an advantage over other terrace types that is particularly appealing to farmers. It's referred to as a narrow base terrace, and its advantage is its comparatively low price tag.

"Broadbase terraces require considerable earthwork to make both sides of the terrace farmable," says Douglas Seibel, Soil Conservation Service state engineer.

"Earthwork is less with grass backslope terraces because one side of the terrace is left steep. Narrow base terraces are the least expensive because both sides of the terrace are left steep and seeded to grass," Seibel reports.

He estimates that narrow base terraces cost about 40 percent less than grass backslope terraces.

One of the first to build narrow base terraces was

Bremer County farmer Neal Smith.

"They're cheaper to build than other terrace types," Smith says. "I'll put in more if they continue to work as well as they do now."

Narrow base terraces have other advantages, according to Seibel. Farmers don't have to farm around the terrace intake, so equipment size isn't a limiting factor. In addition, there's no worry about farm equipment tipping over, because the terrace isn't farmed.

But there are other considerations, Seibel says. Narrow base terraces aren't easily compacted, so there is a greater chance of rain or livestock damaging the terraces before the seeding is firmly established. The narrower base also may mean more susceptibility to rodent damage.

On the other hand, grass backslope terraces have the advantage of flattening out the land and broadbase terraces don't require any seeded

slopes. "There's a place for all three terrace types," says Seibel. "A farmer must compare construction cost against costs of maintenance and land taken out of production."

According to Seibel, a grass backslope terrace takes about two rows out of production and a narrow base terrace about four rows.

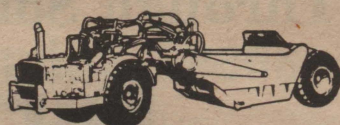
Equipment size and land slope are other considerations, Seibel notes. SCS suggests terraces not be built on land steeper than 8 percent slope for broadbase, 14 percent for narrow base, and 18 percent for grass backslope design.

"Terraces are a proven soil saving practice and a lot more are needed," says SCS state conservationist William Brune.

"But what we're really advocating is a resource management system. Conservation practices need to be selected that best fit each farmer's operation and his land."

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Spirit Lake

Sludge Management



Grassed back slopes on the Bob Ingwersen farm, northwest of Spirit Lake.



SPEECH CONTEST WINNERS in the local Soil Conservation Service competition were (l-r): first place, Doug Nielsen, Milford; second place, Mike

Clark, Milford; and third place, Ted Schumacher, Milford. All speeches were under the general category of "Save Our Soil."

Land - economical disposal system

Domestic sludge from municipal treatment plants and individual sewage systems also can be used beneficially on Iowa land. Sludge management may be a problem for some municipalities on a local basis; however, the quantity of sludge produced is actually much less than animal manure.

Melvin said the major concerns with municipal sludge application on land are pathogen control, heavy metal accumulations and aesthetic problems. Proper sludge management and application techniques can alleviate these problems.

Alternatives to land disposal of sludges are sludge thickening followed by sanitary landfill disposal or incineration. According to Melvin, neither land filling nor incineration accomplishes the resource recovery that is possible through land disposal.

Land is Iowa's primary natural resource. It must be protected to achieve sustained food production for future generations. Melvin says that proper land disposal of domestic and agricultural wastes can be environmentally sound, and still recover the resources present in waste materials.

Land is the final recipient for much of the agricultural and domestic wastes produced in Iowa. Even though potential environmental hazards exist, proper land application of wastes can benefit the land while providing an economical disposal system, reports Iowa State University extension agricultural engineer Stewart Melvin.

Much of the organic waste materials such as manure and sewage sludge is applied to crop and pasture land. Since Iowa has a large number of livestock, manure utilization on land is of great economic importance.

Livestock and poultry operations in Iowa generate over eight million tons of manure annually on a dry weight basis. Although some manure is not economically recoverable and some is improperly managed, it annually provides about \$150 million worth of crop production nutrients. Potential exists to improve management of manure to achieve higher efficiency of use, Melvin says.

Manure also provides organic matter and micronutrients to the soil. Melvin said the value of these additions is significant, particularly on low organic matter soils.

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Actual and potential soil loss

Steps are being taken by cooperators of the Iowa Soil Survey Program to develop a comprehensive program placing completed soil survey maps on computer file, says Iowa State University extension agronomist Gerald Miller.

The task of coding soil maps onto computer file is being handled by the Land Use Analysis Laboratory in the department of agronomy at Iowa State University.

Miller explains that computer files of soil maps allow soil conservation districts and farmers an opportunity to develop and evaluate alternative crop management plans and cropping sequences, conservation tillage systems, and soil conserving structures. Using current cost estimates, the economics of alternative management plans can be evaluated

in terms of net earning capacity, productivity, soil depletion, and environmental degradation.

A recent study was completed by soil scientists and an economist at Iowa State University using soil map data stored on computer file to evaluate a 7,100-acre watershed area.

On-site observation and assessment by local soil conservation district and extension personnel indicated that the cropping sequence of the land was continuous row crop with only a small amount of conservation tillage associated with fields harvested for corn and soybeans. Based on this assessment of cropland use a combination of five alternative cropping sequence and tillage systems were developed for the watershed, reports Miller.

One plan was based on an

estimate of cropping sequences and tillage management systems presently used in the watershed. The remaining four plans required increasing kinds and numbers of conservation practices.

Soil losses for each soil unit used for cropland in the watershed were computed for each plan, Miller says. In addition, soil losses were computed for soil units used for woodland and pasture. The computed soil losses were summed over the land use categories for all soil units in the watershed. The average annual soil loss for cropland in the watershed under present conditions was calculated to be over two times the tolerable soil loss limit. Only two alternative plans reduced the soil loss estimate to acceptable levels, Miller says.

A 160-acre farm unit located within the watershed was also analyzed in the study. The present cropping sequence on the farm was corn-corn-soybeans, with a minimum of conservation tillage practices. The total annual soil loss for the farm under present management was calculated as 14.2 tons per acre. Each of the five alternative tillage management plans reduced the soil loss below 14.2 tons, according to Miller.

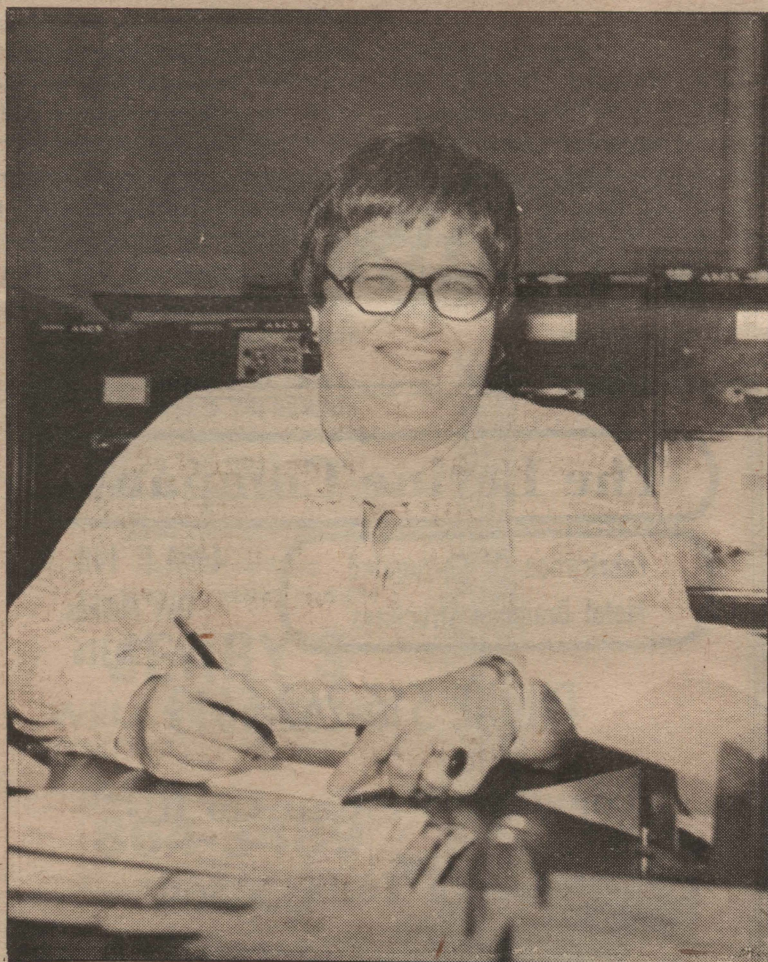
An alternative plan was then developed for the farm, which combined conservation management plans. Using this approach, the average annual soil loss for the farm was calculated as 5.5 tons per acre.

An economic analysis was made of the present plan versus the alternative combination plan. The alternative conservation plan resulted in fewer dollars returned to the land than the present plan. However, offsetting the decrease in direct economic return to land of the conservation plan is the savings of more than 1,400 tons of soil, Miller reports.

The evaluation of different combinations of tillage systems and cropping systems is through the use of the Universal Soil Loss equation. This equation is used by soil scientists to predict potential soil loss. The parameters of the equation are varied according to the conditions specified by the conservation practices and cropping sequences selected. The advantage of the methods used in the study revolves

around the efficiency and speed of the computer in performing rather routine calculations as the variables change, Miller says.

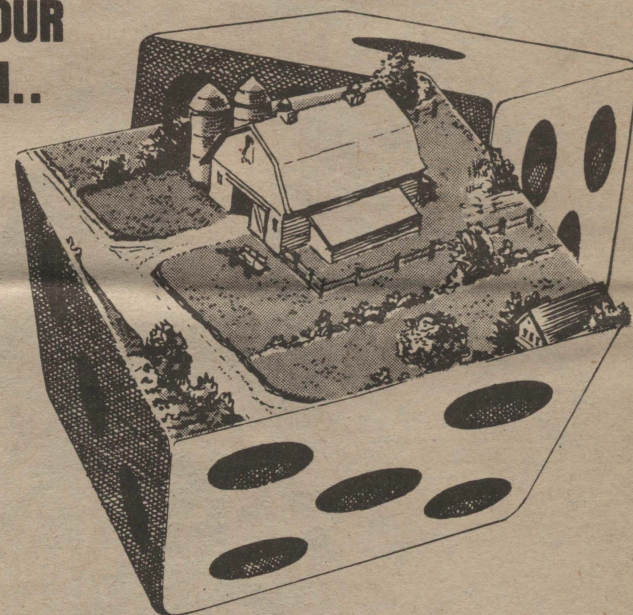
Miller reports that computerized soil maps, knowledge of land use and conservation practices, plus the use of the Universal Soil Loss equation, provide a means to evaluate and study actual and potential soil losses under a wide range of conditions.



Pat Achenbach

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Crop Residues

Help control erosion

It is not uncommon to hear people refer to crop residues as "wastes." However, crop residues are valuable in controlling erosion, maintaining soil organic matter levels, and returning nutrients to the soil, reports Garren O. Benson, Iowa State University extension agronomist.

Most of the erosion control benefit of conservation tillage is due to crop residues left on the soil surface, Benson says. Other factors influencing erosion include the crop grown, steepness of slopes in the field, slope length, and rainfall intensity.

In a corn-soybean cropping sequence, plowing under corn residue and spring disking soybean residue reduces erosion up to 25 percent, compared with fall plowing both crops. The reduction in soil loss can rise to 40 percent if fall chiseling or disking replaces the moldboard plow. This assumes that secondary tillage is not excessive. In a no-tillage system, the reduction in soil loss would be in the range of 60-80 percent, Benson notes.

Although the amount of crop residue on the soil surface is the key to preventing soil erosion, residues also have some conservation value when incorporated into the soil. Erosion is reduced nearly 10 percent when crop residues are incorporated into the soil rather than removed. One Iowa study indicates about two to three tons of corn residue is needed each year under a conventional tillage system to maintain soil organic matter levels, Benson says.

Crop rotation is also important, the agronomist notes. A corn-soybean sequence is more erosive than continuous corn, assuming all crops are used for grain. A corn-soybean-corn-oat-meadow rotation will have less than half the erosion potential of a corn-soybean rotation, according to soil conservation specialists.

A study conducted by several soil scientists indicates that

some midwest soils could provide considerable residue as a fuel source and still meet soil loss tolerance limits.

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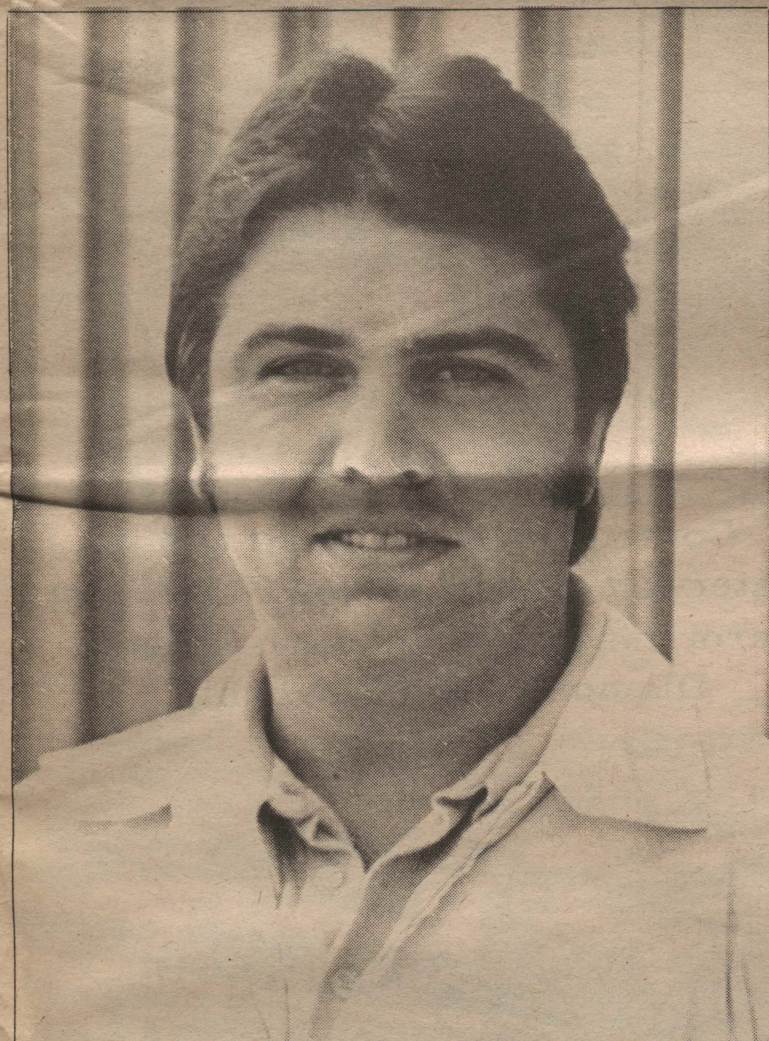
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An older wildlife area on the Rodney Graham farm south of Lake Park



Larry Lago

ASCS County Executive Director

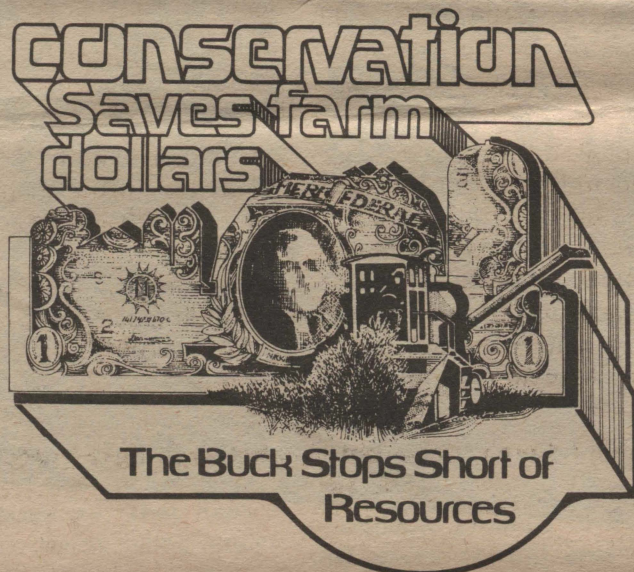
Conservation At Work



Don Schubert, south of Spirit Lake.
Six parallel tile outlet grassed backslope terraces.



Jim Cravens' wildlife area near West
Lake in Manhattan Beach area



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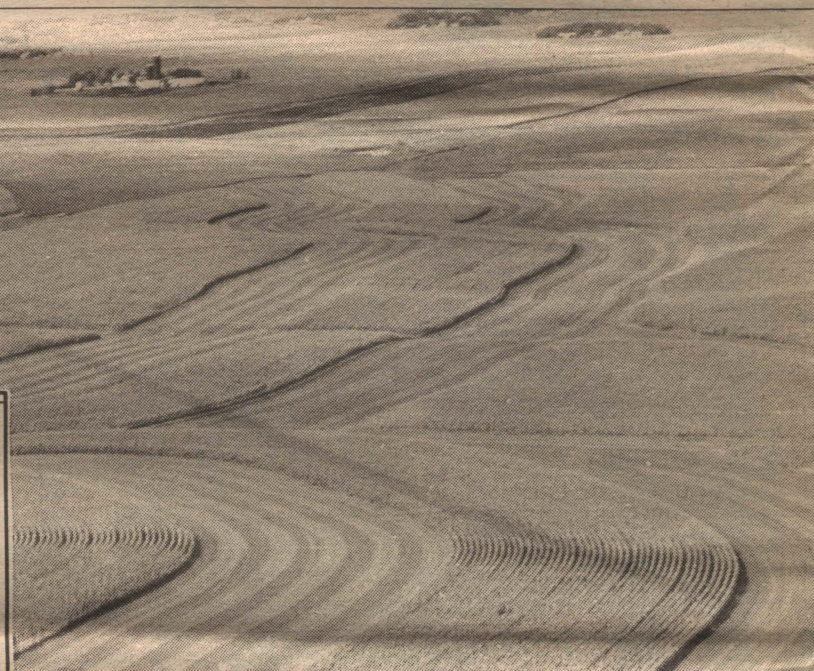
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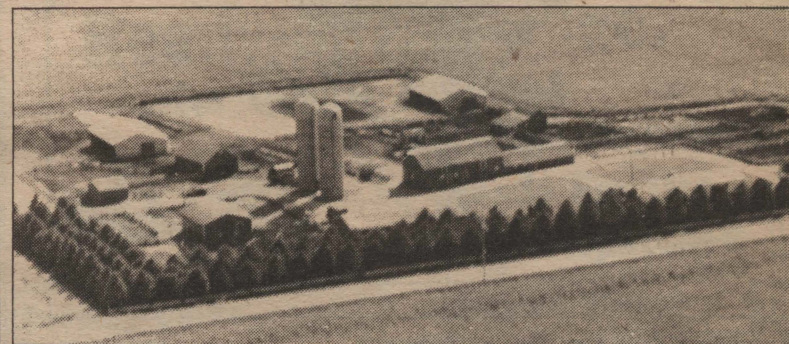
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Dale Johnson's all evergreen
windbreak in rural Milford.

No-Till Corn

Dave Podhajsky

Increases yield to 150

NO-TILL CORN SAVES SOIL, TIME AND FUEL

Dave Podhajsky had many skeptical eyes looking his way back in 1974 when he first experimented with no-till farming. But now, some of these eyes are beginning to believe what they are seeing.

During his first year of planting no-till corn, Podhajsky increased his yields by nearly 50 bushels per acre.

"That convinced me," he says.

While using conventional tillage methods, Podhajsky had been getting 90-100 bushels of corn per acre. His ground was dry and cloddy, and his stands were poor. He said he knew there had to be a better way of farming.

So, six years ago, he tried a no-till planter loaned free to farmers in his area from the Ortho Chemical Company. Although 1974 was exceptionally dry, Podhajsky saw his best yields ever — nearly 150 bushels per acre.

Podhajsky, who farms 210 acres of hilly land near Clutier in Tama County, is enthusiastic about his no-till operation. He admits he was the talk of the neighborhood when he began planting no-till, however.

"I never saw so many people nearly drive into the ditch watching me plant corn," he laughed. "It takes guts to do this."

He says many farmers still are not convinced, but they are "waking up" to the success he's had with no-till.

After seeing how well no-till worked on his farm the first year, Podhajsky bought a four-row International "Co-Till" Cyclo planter, which he has been using since. The planter features fluted coulters, which cut a narrow track for receiving seed. It also has center ribbed press wheels that press the seed down into the furrow track.

He generally rotates his crops between corn and soybeans, although he does plant some continuous no-till corn. He uses soil samples as guidelines for fertilizer rates each year.

Podhajsky's pre-plant operations on his cornfields this year included 200 pounds per acre of 10-20-20 dry granular bulk fertilizer. On some land, he injected liquid manure from his hog operation instead of the

10-20-20 pre-plant fertilizer.

On continuous no-till corn, his pre-plant herbicide treatment was one pint of Paraquat with X77 spreader and one gallon of Bladex. With the herbicide, he applied 120 pounds of 28-0-0 liquid nitrogen as a carrier. If the crop needs a "rescue" treatment, he applies Banvel, or 2, 4-D.

During planting, he applied 50 to 60 pounds of 8-32-16 starter fertilizer and 10½ pounds per acre of Mocap insecticide.

He employs a crop monitoring service to monitor his fields for pests. This year he applied insecticide to only half of his fields during planting.

In no-till corn following soybeans, he used a pre-plant treatment of three quarts of Lasso and piggybacked on one-half pint of 2, 4-D and one-half pint of Banvel combination in addition to one pint of Paraquat and X77 spreader. Soil samples on all his fields were similar, so Podhajsky applied the same rate of fertilizer to both corn following soybeans and continuous corn.

Podhajsky says he still experiments with herbicides, since weeds seem to be his biggest problem with no-till. Other than Paraquat, he doesn't use much more herbicide than conventional tillage farmers. Weeds don't seem to affect yields in a no-till field as much as in a conventionally tilled field, Podhajsky says.

"There will always be a few

weeds that come back in a no-till situation. When they do come back, the corn is already knee high or better, so the corn isn't really bothered," he said.

Podhajsky says he avoids planting corn after alfalfa since alfalfa is especially difficult to kill. When he tried this in the past, he used a quart of Paraquat and X77 spreader, plus four to five pounds of atrazine.

Podhajsky said he was told to plant heavier than usual when he first began no-till, since the ground is generally colder during planting. His planting rate of 24,500 seeds per acre the first year turned out to be too heavy, and he had a lot of barren stalks. Since then, he plants around 23,800 seeds per acre, and gets a final stand of around 20,000.

Podhajsky plants a medium maturity variety of seed corn. This year, he began planting his 120 acres of corn April 28 and finished May 3.

Podhajsky adds that he is never in a hurry to get his fields planted since he's been practicing no-till.

"It (no-till farming) is just a whole different ballgame; it's so relaxed. Other farmers are still out in their fields after dark, but I go out there at seven in the morning and I'm always back by six at night," he said.

By planting no-till, Podhajsky not only saves time, but also fuel. He uses about one-half gallon of fuel per acre to plant

corn, at a cost of about 50 cents. In table 1, Dick Pulse, Tama County extension director, compares Podhajsky's direct costs per acre for planting no-till corn with conventional plowing and planting.

In table 2, Pulse compares returns per acre over growing costs for conventional corn production and Podhajsky's no-till operation this year.

Podhajsky said the Ortho Chemical Company warns farmers to expect a 10 to 15 percent yield reduction when

planting no-till. But Podhajsky said he hasn't seen much loss in yield.

"I won't claim that you will get the same yield as with conventional tillage, but you'll get as many dollars in your pocket at the end of the year," he said.

Podhajsky says he thinks more farmers will be turning to conservation tillage and no-till as fuel prices continue to rise. He says he's seen more reduced tillage this year in his area, but most farmers still insist on plowing. "Plowing is a tradition that's hard to break," he admits.

Podhajsky's wife, Irene, says she thinks the appearance of the fields is one reason why many farmers are reluctant to farm no-till.

"A plowed field looks so nice and clean. When you look at a no-till field, it just doesn't appear as pretty. Appearance is a big thing," she said.

Her husband agreed. "When you get done planting no-till, you just have to close the gate

behind you and don't look back."

For farmers just getting into no-till, he suggests reading books on the subject. One which he found helpful is "No-Tillage Farming," by S. H. Phillips and H. M. Young, Jr.

Podhajsky emphasizes the need to go into no-till farming with an optimistic outlook.

"You've got to have your mind made up that it will work, and you need to keep trying, he said. "I had no one around to help me when I first started, and it took pure determination.

"A lot of others tried no-till, but never came back to it. They'd say that it didn't work the first year. But, you've got to keep trying and learning through experience, or it'll fail."

Although some farmers may still be pessimistic about no-till farming, Podhajsky says he has no doubts.

"The only thing I regret is that I didn't start no-till farming a lot sooner," Podhajsky laughs.

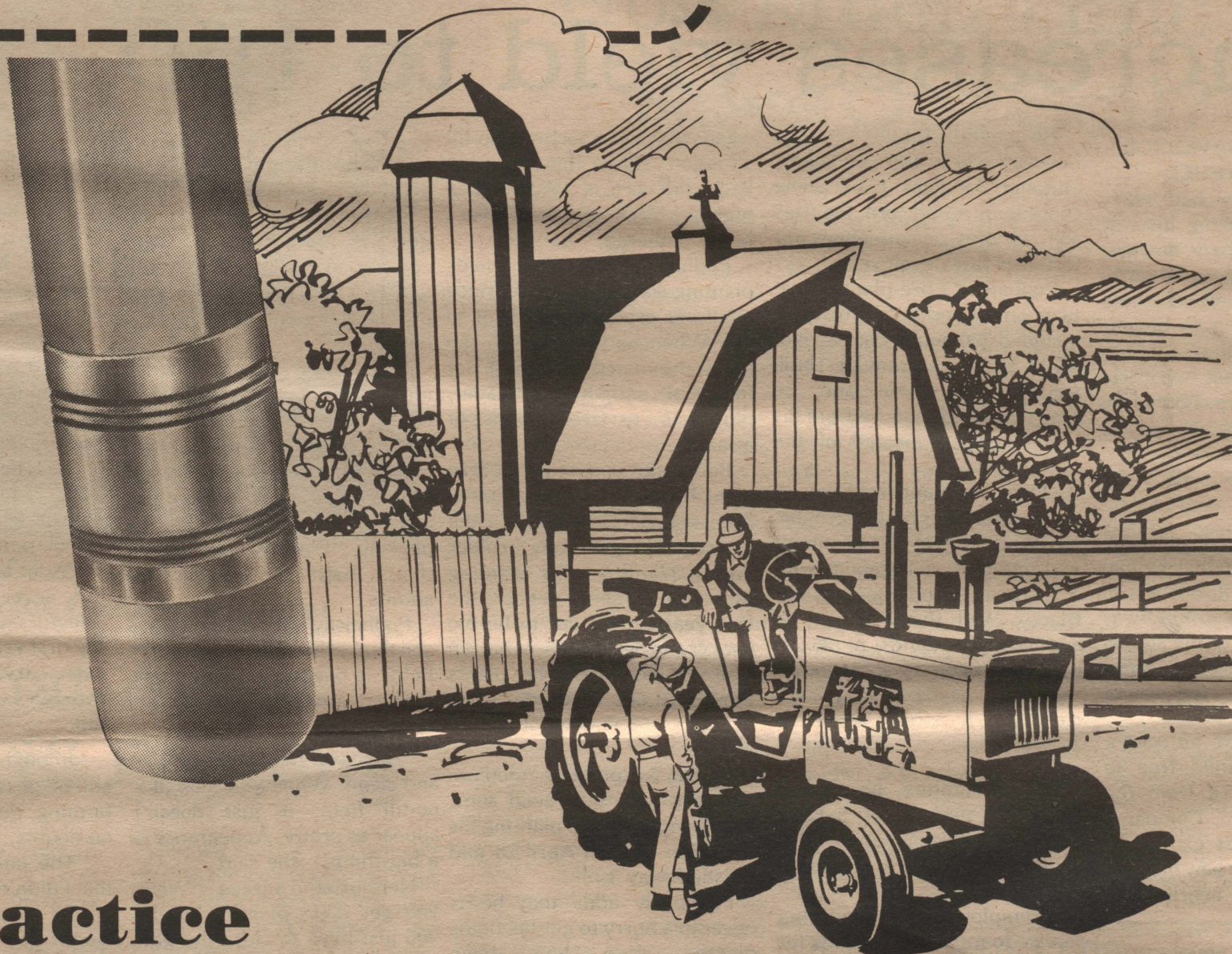
Table 1. Corn variable [out of pocket] growing costs per acre.

Item	No-Till	Conventional
Seed	\$ 14.00	\$ 14.00
Fertilizer	56.00	56.00
Insecticide	6.90	6.90
Herbicide	24.00	14.00
Planter	1.30	1.30
Chopping	—	1.25
Plowing	—	2.90
Discing twice	—	1.70
Cultivating	—	.95
Field Cultivator	—	.78
Hoeing	—	.50
TOTAL	\$102.20	\$100.28

Table 2. Corn returns per acre over total growing costs. [Reflects all variable and fixed machinery costs, labor, seed, and other costs. Fixed costs spread on 240 tillable acres.]

Item	No-Till	Conventional
Returns	\$148.27	\$113.42
Gallons of fuel	.95	4.73
Hours	.30	1.08
Labor cost	1.50	5.40
Machine cost per acre	30.58	71.53
Machine cost, fixed	32.00	63.00
Number of operations	2	7
Tractor size, H.P.	85	125
Yield, bu./A	125	125

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