



AgEcon SEARCH
RESEARCH IN AGRICULTURAL & APPLIED ECONOMICS

The World's Largest Open Access Agricultural & Applied Economics Digital Library

This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.

Help ensure our sustainability.

Give to AgEcon Search

AgEcon Search

<http://ageconsearch.umn.edu>

aesearch@umn.edu

*Papers downloaded from **AgEcon Search** may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.*

Waite Memorial Book Collection
Division of Agricultural Economics
LIBRARY USE ONLY

MINNESOTA farm business NOTES



NEW ZONING AUTHORITY FOR RURAL AREAS

Robert B. Morrow and Philip M. Raup

The expansion of cities is the major evidence in America of the population explosion that has occurred around the world in recent decades. Rural people cannot ignore this trend, for it is moving populations from the hearts of cities into suburban areas and introducing urban type settlement far beyond the formal boundaries of our metropolitan centers. Because most of the job opportunities still lie in the cities this expansion and consequent dispersion of urban workers into the countryside can be expected to continue.

The private automobile has been the key force leading to this increase in commuting to city jobs. As we get more and better highways, our suburban residential and business areas tend to form in clusters along the main transport arteries. This ribbon pattern of settlement together with the rapid growth of the more conventional suburbs has moved urban types of land use problems far into the once open country.

Problem Situations

These expansion and settlement patterns have led to a variety of related problems. The major ones are listed below:

- 1. Incompatible Land Uses.** This arises when adjacent land uses are completely unsuited to each other. Examples are a junk yard next to a trailer court or a livestock feeding operation next to a school.
- 2. Pollution.** The most common cases involve the contamination of water supplies where private water and sewage systems are in use, and the contamination of air with smoke and smog.
- 3. Rural Slums.** Unrestricted construction and use of summer homes, hunting cabins, camp sites, or unsafe and un-

sanitary rural residences can lead to the development of rural slums. This is particularly true if temporary shack-type construction is permitted.

4. Public Services. Rural population increases lead to more and often conflicting demands for public services. Newer residents often do not settle near available public facilities, but they need schools, police, fire protection, and service road construction and maintenance. Financing these services is a problem since the tax base of most rural communities is low, and often is not improved by an influx of rural residents who work and shop elsewhere.

5. Roadside Land Use Conflicts. Problems of roadside "blight" may develop around approaches to the major highways, particularly along the new interstate highway system. Federal regulations strictly prohibit direct access to restaurants, motels, residences, or gas stations from the interstate highways. This will force these types of land use into clusters at the principal interchanges many of which will be located in the open country. The orderly development of these activities will become the direct responsibility of local units of rural government.

Zoning

Problems of concentration of persons and business activities have long been a part of the urban scene. Cities have found that they can best control these problems by designating certain areas for particular types of activities. Zoning is the general term applied to the system of controls, ordinances, and building regulations which are enacted to enforce compliance with a predetermined plan of development and the use of land.

Prior to 1959 some counties and townships in Minnesota have had authority

to zone, but there has been no comprehensive legislation for all rural areas. Townships also have some power to guide development through the use of the platting regulations. In general, the townships have made little use of zoning authority. This has probably been due to the fact that the township boards do not have technically trained staffs. Supervisors serve for nominal pay and it is generally only a part-time job. They are not in a position to devote time to the long-range planning which is a necessary aspect of effective zoning.

1959 Legislative Changes

Any township may zone under authority of the laws of 1959, Chapter 566, coded as Minnesota Statutes, Sec. 366.182. The township zoning plans must be approved by 70 percent of the persons voting on the issue. Counties with under 300,000 persons are also authorized to plan and zone. (Chapter 599, coded as Minnesota Statutes 394.21-394.37).

It is expected that the counties will be the most active in rural zoning. They have the authority and the capacity to raise funds for the preparation of comprehensive development plans and to employ planning directors, inspectors, or other personnel. They appear to be the more logical and effective units to undertake rural zoning activities.

The new procedure whereby counties may plan and zone is as follows: The board of county commissioners must first pass a resolution declaring its intent to proceed with planning and zoning activities. The board should next prepare a comprehensive plan for the orderly physical development of the county or for the parts of it that they wish to zone. The county board does not have to submit the plan to the voters, but hearings on the proposal are required.

(Continued on page 2)

Rural Zoning

(Continued from page 1)

The powers of counties to enforce their plans are derived from their "police power." This is the authority that any sovereign state holds for the protection and promotion of the health, welfare, and safety of its citizens. The police power is delegated to the counties, townships, and municipalities for zoning purposes. Ordinances are passed to insure compliance with the overall development plans. The major features of these ordinances are generally as follows:

1. The establishment of zoning districts. Certain areas are restricted to given uses, such as residential, agricultural, forestry, recreation, industrial, commercial, or combinations of these uses.
2. Regulations to guide building location, height, set-back, and size of yards or service areas of the various activities designated for the particular district. The regulations may differ between the zoning districts but they must be similar for all classes of property within a specified district.
3. The preparation of maps to show the planned location of roads, parks, streets, and service facilities such as schools, playgrounds, and water and sewage facilities.

Before any controls or plans are adopted, public hearings must be held in order that the public may present its views on the proposed zoning plans. These hearings must be announced at least 10 days before they are to take place.

Whenever a county board adopts official controls it must also set up a board of adjustment. This board must act upon questions which arise from the administration and interpretation of the maps and ordinances. The decisions of the board of adjustment are not necessarily final and aggrieved persons may appeal to the district court if they are dissatisfied.

Persons who are injured because of lack of enforcement of the ordinance may cause enforcement by bringing an action against the responsible officials.

In the use of controls on property the test of reasonableness must always be applied. Any unreasonable rules or the discriminatory treatment of similar types of properties would probably be reason for the courts to declare the ordinances invalid. Unreasonable ordinances could lead to an abuse of the police power or to the confiscation of property without due process of law.

Counties which had zoning authority under previous legislation now have the option of zoning under either the previous authority or under the 1959 laws. If they already have zoning ordinances they may incorporate them into any new plans or they may continue with whatever system they now have.

While the zoning jurisdiction of counties does not apply within the boundaries of incorporated municipalities, the two governing bodies may cooperate and draw up a joint plan. The plan would not, however, become effective in the municipality until it officially adopts the plan. This type of arrangement also applies to townships which may already have zoning regulations.

In the event townships have not acted and the counties adopt official controls, the townships (except those having power of villages) are then prohibited from passing any ordinances inconsistent with the county plan.

Effectiveness of Rural Zoning

In order for rural zoning to be an effective device in orderly land use development, the regulations should be

adopted before offending land uses begin. Once a land use activity is started, zoning ordinances alone are usually ineffective in stopping it. Zoning is most effective as preventative medicine rather than as a curative or "surgical" remedy.

In the final analysis the effectiveness of rural zoning will be determined by the electorate of the counties. Through their support of county commissioners who are associated with the zoning issues, the citizens can make their desires known.

Whenever roads, schools, or private homes or businesses are established within a county some sort of planning goes on as to where they will be located. The use of the existing authority to provide a comprehensive development plan for the county will aid integration of private and public planning. With this higher degree of planning some of the problem situations cited above may be prevented. The authority now exists whereby local officials may zone in rural as well as urban areas. The decision to act clearly rests with these officials.

Profits from Fertilizer Use

W. B. Sundquist¹ and
A. C. Caldwell²

Once again we are in the season when it becomes necessary to decide specifically which investments and expenditures will be most profitable in the year ahead. This article attempts to consider some of the relevant factors to keep in mind when making decisions about a profitable soil fertility program. Since expenditures for fertilizer and lime in Minnesota exceeded 40 million dollars in 1959 and may increase more this year, they represent one of the most important "out of pocket" expenses incurred by Minnesota farmers.

Current Fertility Practices

A farm survey yielded information on the fertility practices of 330 farmers in Central and Southern Minnesota for the 1958 crop year. The survey area was divided into the four sub-areas shown in figure 1. The subareas set boundaries to broad soil areas, numbered I to IV.

Table 1 summarizes farmers' fertilizer use practices and shows how these practices varied with farm size within soil

areas. The percentage of farmers using starter fertilizer on corn ranged from 46 to 100. Only from 0 to 37.5 percent of the farmers fertilized oats (which usually included a seeding), and from 0 to 26.8 percent fertilized either hay or pasture crops.

Fertilizer rates, for those farmers applying some fertilizer, did not vary significantly between soil areas or between farms of varying sizes. This was true even though the expected response within some of these soil areas differs significantly from that expected in others.

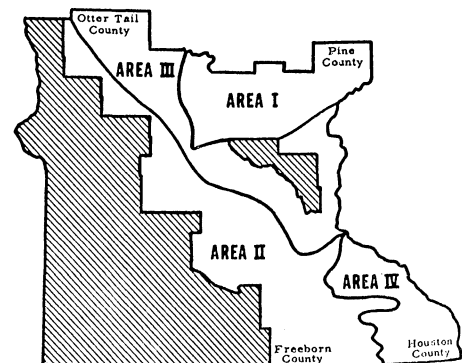


Fig. 1. General soil areas in survey area in Central and Southern Minnesota.

¹ Farm Economics Research Division, ARS, U.S. Department of Agriculture.

² Professor, Soil Science, University of Minnesota.

Expected Results of Improved Practices

Soil scientists at the University of Minnesota have made estimates of crop yields which might be expected on different soils with improved levels of fertility practices and soil management. Let us see what these estimates mean for Soil Area IV. Included in this soil area are all or most of Houston, Fillmore, Winona, Wabasha, and Goodhue Counties together with smaller portions of Olmsted and Dodge Counties. The primary soils in this area are of the Fayette-Dubuque, and Tama-Downs series, and the lesser soils are of the Wadena-Hubbard and Ostrander-Kenyon-Floyd or closely associated series.

Current fertilizer use practices (determined from the survey) and the average county crop yields (1954-58) were used in deriving one set of fertilizer practices and expected yields. These estimates were then compared with those based on improved fertility and management practices (see table 2).

The improved fertilizer practices are readily observable in table 2. The improved management practices (not shown) include minimum tillage for all crops and pre- and post-emergence

weed spraying for corn. These management practices were assumed in estimating yield increases.

The typical crop rotation in Area IV (as reported in the survey) was corn, corn, oats, hay, hay. Our estimates show that improved fertilizer and other management practices would have increased the value of crops produced over the 5-year period by about \$95.00 per acre using the typical rotation. The prices used in making these estimates were: \$1.00 per bushel for corn, \$.65 per bushel for oats, \$20.00 per ton for hay and \$.05, \$.10 and \$.15 per pound for potash, phosphoric acid, and nitrogen respectively.

The increased costs for fertilizers and sprays were estimated at about \$26.50 for the 5-year rotation leaving a net return of \$68.50 or \$13.70 per acre per year. No charge was made for the cost of harvesting or hauling the additional crop; neither was any credit given for the reduction in costs due to the use of minimum tillage.

The typical rotation in Area IV was used as an example only, and is **not necessarily** the best rotation for the area as a whole or for any particular farmer in that soil area. However, the

rotational effect on yields is not particularly important in most cases and a similar budgeting technique can be used for other rotations to estimate the expected profits from improved cropping practices. Crop rotations which result in excessive soil loss due to erosion should generally be avoided.

A Word of Caution

Not all expenditures made for fertilizer are economical ones! The extra yield fertilizer trials conducted by farmers in Soil Area IV in cooperation with "The Farmer" and the University of Minnesota Extension Service show varied results. In 1959 these trials show returns per \$1.00 spent for fertilizer ranging from \$-.30 to +\$5.36. Of course, these trials were not conducted in an attempt to maximize dollar returns, yet they do show a range of returns that did occur in a specific year.

Among the reasons for uneconomic returns from fertilizer use are: poor placement, improper nutrient balance, dry weather, poor stand of crop, disease, insect damage, and non-adapted crop varieties. Profits from fertilizer are more likely with overall good management.

The data presented earlier in this article, and for which costs and returns were estimated, are weighted averages for a large soil area and individual farmers need to obtain soil tests and recommendations more applicable to their specific farms.

Finally, a farmer needs to re-evaluate his fertility program continually. Factors which need to be considered are: new information on fertilizer response, moisture conditions, fertilizer prices, and expected crop prices. Then the farmer must decide how to spend his often limited capital among his various investment opportunities both off and on the farm and where fertilizer is only one of the alternative investment opportunities. Indications are that many Minnesota farmers could profitably increase their use of fertilizer.

Table 1. Farmer's fertilizer practices, 1958

Soil area	Range in crop acres	Avg. crop acres per farm	% Using starter fertilizer on corn	% Side-dressing corn	% Fertilizing oats	% Fertilizing hay or pasture
I	0-79	51	75.0	6.3	15.8	9.5
	80+	100	92.9	7.1	30.7	0.0
II	0-99	68	47.4	13.1	2.8	8.5
	100-169	136	54.7	10.9	4.8	26.8
	170+	272	82.5	25.0	2.8	17.5
III	0-79	46	47.1	11.8	4.5	0.0
	80-149	105	80.0	32.5	17.8	14.6
	150+	200	100.0	18.2	37.5	11.1
IV	0-129	86	70.6	23.5	6.7	0.0
	130-189	162	66.7	22.2	0.0	6.3
	190+	253	100.0	0.0	13.3	6.7

Table 2. Current and recommended fertility and management practices and expected crop yields, soil area IV

Crop	Current fertilizer use (lbs.)			Average yield obtained ('54-'58)	Recommended fertilizer (lbs.)			Average expected yield
	N	P ₂ O ₅	K ₂ O		N	P ₂ O ₅	K ₂ O	
Corn, 1st year (following legume)	7	12	14	63.3 bu.	10	32	75	83.8 bu.†
Corn, 2nd year	7	12	14		80	32	75	83.8 bu.†
Oats (with seeding)	*	*	*	48.5 bu.	20	28	37	61 bu.†
Hay, legume	*	*	*	2.2 tons	0	14	37	3.5 tons†

* Less than one pound of plant nutrients per acre.

† These figures are weighted averages for the several soils in the area and are not likely to be typical of the soil on any particular farm. Average yields of 100 bushels of corn per acre are assumed for the better soils and some farmers will obtain yields considerably in excess of 100 bushels.

MINNESOTA
farm business

NOTES

Prepared by the Department of Agricultural Economics and Agricultural Extension Service.

Published by the University of Minnesota Agricultural Extension Service, Institute of Agriculture, St. Paul 1, Minnesota.

THE OUTLOOK CORNER

Trends in Fertilizer Use

Expenditures for fertilizer are becoming an increasing portion of total operating expenses on Minnesota farms. In the past decade, expenditures for fertilizer and lime have increased from 2.3 percent to almost 5 percent of the total farm operating expenses. It is expected that fertilizer will become an even more important cost item for most Minnesota farmers during the 1960's.

Fertilizer Use More than Doubled since 1951

The tonnage of commercial fertilizer used in Minnesota increased 120 percent from June 30, 1951 to June 30, 1958 according to the State Department of Agriculture. The increase in statewide consumption of actual plant nutrients was 178 percent for the corresponding period. A comparison of these figures shows that more pounds of plant food have been added to the fertilizer bag without increasing its weight. In 1958 the average 100 pounds of fertilizer sold in Minnesota contained 43.5 pounds of plant food compared with only 34.4 pounds in 1951.

In recent years Minnesota farmers have bought relatively more nitrogen than phosphate in their fertilizer. The effect of this increased nitrogen use has been to change the "average" fertilizer grade from 4-21-10 to 11-20-12.

Reasons for Increase

1) Soil Testing Program

Fertilizer recommendations made on the basis of soil tests have been available to Minnesota farmers since 1949 when the Soil Testing Laboratory at the University of Minnesota first went into operation. In the ensuing decade, the number of soil samples tested annually at the laboratory has increased from relatively few to more than 30,000.

With the Soil Testing Laboratory making an impartial estimate of the farmers' soil nutrient resources and through the Agricultural Extension Service giving them specific fertilizer recommendations on an individual basis—this program has probably been more effective than any other single factor in inspiring real confidence in fertilizer use.

2) Favorable Fertilizer Prices

Plant nutrient prices in Minnesota have actually decreased since 1951, while other farm production costs have increased. In 1951 the "average" ton of plant food sold in the state contained 200 pounds of nitrogen, 1,200 pounds phosphate, and 600 pounds potash. At the wholesale prices of that year, the cost of this ton would have been:

Nitrogen @ 13.65¢	= \$ 27.00
Phosphate @ 9.10¢	= \$109.00
Potash @ 4.55¢	= \$ 27.00
Total	\$163.00

By 1958 the average plant nutrient ton contained 500 pounds of nitrogen, 930 pounds of phosphate, and 570 pounds of potash. At 1951 prices these nutrients would have cost \$179. However, the wholesale cost of this plant food was actually \$165.00 in 1958, which indicates that the average price of plant nutrients decreased by 8 percent during this period.

3) Greater Ease of Handling

Such practices as bulk spreading of dry goods and sidedressing corn with nitrogen materials in either liquid or gas form lend themselves particularly well to custom application. Increased availability of these custom services has relieved the farmer of much of the actual work connected with fertilizer application and has especially helped facilitate the increased usage of nitrogen fertilizers.

4) A Result of Pressures for a Larger Volume of Business

Because of the cost-price squeeze and

increased family living costs, the individual firm in agriculture has been under constant pressure to expand volume of output. Since land has been relatively scarce in most areas of Minnesota, this pressure for expansion has resulted in vertical expansion towards higher returns per acre. This is brought about through higher yields of cash crops and/or more intensive livestock programs which may necessitate higher yields of feed crops.

Expected Future Trends

The same factors which caused fertilizer usage to increase in the past decade will continue to encourage increased use in the next decade. Also, further development of newer technologies such as irrigation and dwarf corn may make even larger applications of fertilizer economical in areas where moisture is often a limiting factor.

Also, a rough estimate of the total annual nutrient removal from Minnesota soils indicates that less than 25 percent of the annual removal of nitrogen and potash is replaced by commercial fertilizer applications. About 60 percent of the amount of phosphate removed annually is replaced through commercial fertilizer applications.

These figures constitute only crude estimates of the balance between nutrient removal and replenishment. No allowance has been made for the contribution of legume crops to the nitrogen requirements of the non-legumes in the rotation. Also, a portion of the nutrients removed by grass crops fed to livestock would be returned to the soil in the manures. Nevertheless, it would appear that we have not begun to approach a "balanced budget" with respect to nutrient removal and replenishment.

Cooperative Extension Work in Agriculture and Home Economics, University of Minnesota, Agricultural Extension Service and United States Department of Agriculture Cooperating, Skuli Rutford, Director. Published in furtherance of Agricultural Extension Acts of May 8 and June 30, 1914.

AGRICULTURAL EXTENSION INSTITUTE OF AGRICULTURE
UNIVERSITY OF MINNESOTA
ST. PAUL 1, MINNESOTA
SKULI RUTFORD, Director
Acts of May 8 and June 30, 1914
Cooperative Agricultural Extension Work,
OFFICIAL BUSINESS
3-60 2,065

S. O. Berg
Ag. Economics
St. Paul Campus