

Adjusting Crop Acreages for
War Production to the Soil
Resources of Iowa

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Adjusting Crop Acreages for War Production to the Soil Resources of Iowa

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Adjusting Crop Acreages for War Production to the Soil Resources of Iowa¹

By A J ENGLHORN AND A C BUNCE*

To some people soil conservation is a peacetime luxury, to others it is a first essential of land use. Some say, "We are at war now, what does soil matter? Plow it up." Others say, "For many years we have been learning conservation, we must not now throw away our gains."

Both attitudes are right if we distinguish between soils which are subject to serious erosion and those which are not, but they are wrong when applied to all soils without regard to their differences. Actually, we face the necessity of exploiting our soils to the point where we will obtain the most food and raw materials over the next 3 to 5 years. We face a serious food shortage in terms of the needs of our armed forces, our civilian population, our allies and the hungry masses which will soon be freed from tyranny. To meet these needs we should produce the maximum amount of feeds and food products required. We also need to adjust our diets to consume more of those foods which yield the most nourishment per acre.

In Iowa we have increased our acreage of intertilled crops by almost 3 million acres from 1941 to 1943 in an effort to increase our output of required crops. Where land planted to corn or soybeans produces more food for human consumption than does land in small grains or roughage, this trend to expand the acreage of intertilled crops will probably continue over the next few years. This raises the vital question of how far we can go in expanding our intertilled crops and on what soils should these crops be grown if we are to avoid a serious increase in erosion. We should expand our intertilled crops where this will give the greatest production over the next 3 to 5 years, but, at the same

¹ This study was conducted as part of Projects 745 and 578 of the Iowa Agricultural Experiment Station. The Research Division of the Soil Conservation Service, United States Department of Agriculture, cooperated in the latter project but is in no way responsible for the material or the opinions expressed here.

² The authors wish to express their indebtedness to the many specialists who assisted in laying the foundations for this study. They are particularly indebted to Mr. L. G. Allbaugh, Associate Director of Extension; Mr. Frank Mendell, Assistant State Conservationist of the Soil Conservation Service; and Dr. W. H. Pierre, Head, Department of Agronomy, for their excellent criticisms and suggestions, and to Mrs. Lydia T. White who was mainly responsible for the tabulating involved in the study.

time, we have to avoid indiscriminate plowing up of pasture and hay on sloping lands because this may not produce the most food if serious erosion develops *To attain maximum production, therefore, the acreage of intertilled crops must be related to the soil type, the slope of the land and the erosion control practices adopted*

This study attempts to determine the maximum acreage of intertilled crops for war production and indicates the areas where they should be grown if we are to avoid permanently impairing our soil resources *This does not mean that these upper limits are recommended as the most desirable land use for war production* They merely indicate in what areas and on what soils intertilled crops may be grown intensively, without seriously increasing erosion The study also indicates the acreages of small grains, soil conserving crops and permanent pasture that should be associated with the maximum acreage of intertilled crops Because these acreages of intertilled crops can not be maintained over a long period, the probable post-war crop acreage adjustments are briefly considered

Each farmer in developing production plans for his own farm has to consider not only his land but also the labor and equipment available This makes it impossible to lay down hard and fast rules of land use that will apply to all farms Certain principles, however, may be used as a guide in order to maximize war production These may be summarized as follows

- 1 To obtain the greatest production during the war we need to draw more heavily upon our reserve of soil fertility
- 2 In order to avoid unnecessary destruction of soils by increased erosion, we should use our level lands not subject to erosion up to the limit for producing crops such as corn and soybeans The more we can increase these erosive crops on the level lands, the less the need to increase them on the slopes
- 3 On sloping lands agricultural production can be stepped up in three ways without increasing erosion
 - a More feed can be purchased thus enabling more livestock to be fed on the farm (Better balanced rations, improved sanitation and other desirable practices will help to make the available feed go further)
 - b Pasture and hay lands can be made to yield more by liming, fertilizing, reseeding with high yielding legumes and controlling weeds Controlled grazing will also help obtain the maximum amount of feed per acre
 - c The acreage of row crops can be expanded, *provided that the necessary erosion control practices are used to pre-*

vent soil washing This means that the land should be planted on the contour and, in many cases, strip-cropped so the downhill flow of water is controlled. These practices should also be applied to much of the sloping land at present in crops, both to reduce present erosion and to increase yields.

In order to maximize production, all the above principles and relationships need to be taken into account. It must be emphasized that good soil management to maintain or increase yields should always be considered with acreages to estimate total production, in many cases increases in yields provide greater opportunities for expanding production than do shifts in crop acreages. The present study touches upon the above practices only to show how they may modify the application and use of the estimates of maximum acreages of row crops as they are presented here. This publication brings together the available information on soil types and slopes and shows how these physical resources may be used if we are to maximize the production of intertilled crops and avoid serious soil erosion.

HOW THE ESTIMATES WERE MADE

All counties in the state were grouped into three classes according to the seriousness of erosion in the county as a whole. The three classes were

- Class A—Little or no erosion hazard
- Class B—Moderate erosion hazard
- Class C—Severe erosion hazard

The classification was largely based upon soil surveys, the reconnaissance erosion survey of the state and on our knowledge of topographic variations in the counties. The map (fig 1) shows the distribution of these classes by type-of-farming area.

For each county the acreages of all major soil types were estimated according to five slope classes as follows: Level (0-3 percent slopes), undulating (3-7 percent slopes), rolling (7-13 percent slopes), hilly (13-18 percent slopes) and steep slopes (18 percent and over).

These acreages of soil types in various slope classes were obtained from county soil surveys supplemented by additional data available in other surveys, such as the reconnaissance erosion survey. Since the soil survey reports give the total acreage for the county and include land in roads and towns, this figure had to be corrected to obtain the total acres of farm land. A correction coefficient was obtained for each county by taking the 1935 census figure for "all land in farms," subtracting "all

which would be in permanent pasture because of other physical factors

- 2 The distinction between plowable and other pasture is not based solely upon physical characteristics *but also upon intent*

To obtain an estimate of the total permanent pasture for each of the soil types, two criteria were used (1) Soil types on various slope classes which should be in permanent vegetation were all placed in permanent pasture, and (2) acreages of soil types subject to overflow or often needing drainage were also placed in permanent pasture and these figures were adjusted to the 1935 census data. The final figures, therefore, were based upon physical conditions and the 1935 census figures³

By deducting the acres in permanent pasture from the acres in agricultural land the acres of rotated land for the various soil types and slope classes were obtained for each county. To these figures were applied rotations designed to maximize the production of intertilled crops over a 3 to 5-year period. The rotations for the major soil types and slope classes are given in table 1 with the percentage of the land in corn (or other intertilled crops), oats (or other small grains) and in soil conserving crops (hay and rotated pasture), the total acres of rotation land in each soil type and slope class are also given for the state as a whole

The rotations listed in table 1 assume that present conservation practices are not changed, these rotations were modified to allow slightly higher percentages of intertilled crops where simple conservation practices such as contour planting and strip cropping could be adopted. By applying these two sets of rotations to the acreages in each soil type and slope class in the county, two sets of figures were obtained, these gave the acreages of row crops, small grains and soil conserving crops which could be grown under present practices and with simple conservation practices. The sum of the acreages of these crops on different soils gave the estimated war production acreages for each county (tables 10 to 14) and these are brought together by type of farming region for the state as a whole (table 2)

The detailed figures giving the estimated wartime acreages of crops on each soil type and slope class are presented for each type-of-farming area (tables 5 to 9)

³ In order to avoid confusion resulting from the fact that plowable and permanent pasture figures are indefinite permanent pasture figures and soil conserving crops (plowable hay and pasture) in the rotation land are combined and listed as all hay and pasture'

WAR ESTIMATES COMPARED TO PRE-WAR AND PROBABLE POST-WAR ACREAGES

In order to provide a basis of comparison, the acreages of crops and permanent pasture were calculated from the assessors' records as reported in the *Iowa Yearbook of Agriculture* for 1940 to represent the pre-war period. The land use recommendations of the county land use planning committees provide a basis for comparing the wartime estimates to a long time or permanent land use plan. To facilitate the comparison the three sets of figures are summarized for each county: (1) The 1940 land use (representing the pre-war acreages), (2) the land use recommended by the planning committees in 1937, and (3) the estimated war production acreages with (a) present practices and (b) simple conservation practices.

The county figures are presented in tables 10 to 14 and brought together by type-of-farming area for the state in table 2. The county and state tables give the following acreages: Land area, land in farms, woodland (pastured and not pastured), agricultural land, permanent pasture, all hay and pasture (permanent pasture plus soil conserving crops), rotated land, intertilled crops, small grains and soil conserving crops.

In order to indicate clearly the fact that the estimated war acreages are based upon the necessity of exploiting our non-erodible soils, the differences between the estimated war acreages (with present practices) and the acreages recommended by the county planning committees were calculated. These figures give the approximate changes in crop acreages that may take place in the post-war period as we return to a permanent non-exploitive agriculture. This assumes that the acreage of intertilled crops will reach the estimated maximum (with present practices) and that *the expansion will occur on the level productive soils*. To the extent that increases in intertilled crops occur on sloping land without the necessary conservation practices, soil erosion will be increased with the result that post-war adjustments will be more drastic.

Any estimate of this nature applied to the future can only be tentative because changes in the techniques of soil management may increase the acreage of row crops that can be permanently maintained. Similarly, the widespread application of terracing and other conservation practices together with the draining of wet lands might expand the acreage of row crops beyond what is considered possible at present.

LAND USE IN THE STATE AS A WHOLE

The state summary figures given in table 2 reveal that of the 35½ million acres of land in Iowa approximately 32½

million acres are in farms. Of this land in farms about 30 million acres are agricultural land (i.e. permanent pasture and rotation land), the rest is in woodland, farmsteads and roads. The fact that the 1940 acreage, the county planning recommendations and our estimates are all very close indicates that these figures can probably not be varied greatly during the war period.

Because the figures for permanent pasture show considerable variation, the acreages of all hay and pasture land are more significant in revealing the change in land use for the war period. In 1940 the acreage of hay and pasture was 13,388 thousand acres with the county planning committees recommending 13,084 thousand acres. In contrast to this, the minimum estimated acreage of these crops during the war period is 10,713 thousand acres with present practices and 8,014 thousand acres with contouring and strip cropping.

The three rotation land estimates show rather large differences, but the figures vary inversely with the permanent pasture figures, indicating that the differences are largely due to variations in classifying grass land as permanent pasture or plowable pasture. Our estimated acreage of rotation land is 25.3 million acres, the 1941 acreages of all crop land, according to the AAA records, was 25.5 million acres, and this indicates that the use of our estimate as a basis for applying the wartime rotations to obtain the acreage of intertilled and other crops is reasonable.

The maximum wartime acreage of intertilled crops with present practices is about 14½ million acres. This appears to be a large increase over the 10½ million acres grown in 1940 and the 10 million acres recommended by the county committees. An examination of the actual historical trend, however, as presented in table 3, shows that the acreage of intertilled crops has increased rapidly from 1941 and will probably reach between 13 and 13½ million acres for 1943. The estimated wartime maximum with present practices is only a million acres beyond this figure, and these estimates assume that the intertilled crops will be planted on the level productive soils.

With the adoption of needed conservation practices such as contour farming and strip cropping, the acreage of row crops could be pushed up to about 17 million acres, *but this estimate assumes that these practices would be applied to all the sloping land.* It is not likely that conservation practices will be rapidly applied on the wide scale needed during the next few years because of the slowness with which new methods are adopted. Today less than 10 percent of the land that should be farmed on the contour is handled in this way.

The expansion of intertilled crops occurs at the expense of

small grains and soil conserving crops. As indicated in table 3, small grains have already declined about half a million acres a year from 1941 to 1943. The estimated minimum for war production is again about half a million acres below the 1943 figure. The estimated wartime minimum of all hay and pasture is about 2½ million acres less than in 1940. This is a reduction of almost 20 percent in the total hay and pasture acreage.

THE DISTRIBUTION OF THE ESTIMATED WAR PRODUCTION ACREAGES BY SLOPE CLASSES

From these general figures we now turn to an analysis of the distribution of the estimated crop acres according to the slope classes for the state as a whole. Because slope is so closely related to erosion in Iowa, any expansion of intertilled crops should occur only on the level fertile soils unless conservation practices are adopted. Table 4 shows that if the crop land in Iowa were farmed according to the rotations used to obtain the estimates

- 47 percent (6,790,000 acres) of the 14,567,000 acres of intertilled crops would be on level land,
- 36 percent (5,214,000 acres) would be on undulating land (3 percent to 7 percent slope),
- 15 percent (2,189,000 acres) would be on rolling land (7 percent to 13 percent slope),
- Only 2 percent (357,000 acres) would be on hilly land (13 percent to 18 percent slope)

If conservation practices were employed, the estimate for intertilled crops would be increased to 17,168,000 acres distributed as follows

- 40 percent (6,815,000 acres) would be on level land
- 40 percent (6,841,000 acres) would be on undulating land
- 18 percent (3,066,000 acres) would be on rolling land
- 2 percent (429,000 acres) would be on hilly land

The largest increase would occur on the undulating land where simple practices such as contouring and strip cropping are effective in controlling erosion.

If we classify the estimated crop acreages for war production by the percentage of the land in each slope class that is used for various crops the distribution shown at the top of the next page is obtained ⁴

These percentages clearly reveal the relationship of the acreages of various crops to slope. As the slope increases the percent of the land in intertilled crops declines, the percent in soil con-

⁴ Calculated from table 4

Slope class (Percent)		Acres of rotation land (thousand acres)	Present practices percent in			Conservation practices percent in		
			Inter- tilled	Small grains	Soil con- serving	Inter- tilled	Small grains	Soil con- serving
Level	0-3	8 235	82	16	2	82	16	2
Undulating	3-7	9 157	57	21	22	75	20	5
Rolling	7-13	6 194	35	22	43	50	23	27
Hilly	13-18	1 585	23	22	55	27	26	47
Steep	18-up	107	16	15	69	16	15	69

servicing crops increases, while small grains change very little. The application of conservation practices makes no change in the use of level land and steep land, but it makes a considerable difference on the undulating and rolling lands. *Essentially these figures represent the most desirable distribution of our land resources to various crops if intertilled crops are to be maximized during the war period and erosion kept to a minimum.*

SHOULD INTERTILLED CROPS BE INCREASED?

As was pointed out in the introduction the estimated upper limits of intertilled crops do not represent the most desirable pattern of land use for war production. They simply indicate how far we can go and where increases should go in relationship to the physical land resources.

Table 3 indicates that, according to the 1943 intentions, we have reached the maximum wartime acreage of intertilled crops, with present practices, in the Western Livestock Area. Further expansion in this area should take place only as we apply more and more conservation practices. Actually much of the land now in row crops should be farmed on the contour if serious erosion is to be avoided. Further expansion, except as it occurs on the level, productive soils, may not only cause a more serious erosion problem but *may actually cut down our war production over the next 5 years unless the necessary conservation practices are adopted.*

In the Eastern Livestock Area intertilled crops have not quite reached the limit with present practices, and an additional 200,000 acres would be planted if the suggested rotations were applied in this area. This is less than an 8 percent increase over 1943. If simple conservation practices were applied where needed an additional 500,000 acres could be planted to intertilled crops. In this area, therefore, any considerable increase in row crops should only be encouraged as conservation practices are adopted.

In the North Central Cash Grain Area, row crops can be expanded about 420,000 acres under present practices provided that these crops are grown on the least erosive soils and slopes. If simple conservation practices such as contouring and strip cropping were adopted an additional 470,000 acres of row crops could be grown in this area. The reason why this large increase is possible is shown in table 4. Out of 5,851,000 acres of rotation land, 4,810,000 acres are level or undulating (under 7 percent slopes). Only 120,000 acres are hilly (13 percent to 18 percent slopes) and none is steep. The limiting factors retarding an expansion of row crops in this area are (1) the need to maintain a small acreage of hay and grass land for the livestock kept on the farms, (2) the shortage of labor to meet the peak seasonal loads, and (3) a wide corn-hog ratio which might make it more profitable for farmers to use their labor and resources to feed hogs even when this may reduce the acres of corn they can grow. From the point of view of attaining the maximum production of row crops, however, these crops should be pushed to the limit even at the expense of reducing the livestock numbers. The surplus feed could then be shipped out and made available in other areas where labor is available and the land is not adapted to the production of row crops. Where soybeans are to be produced and shipped out the acreage should be concentrated in this surplus feed area.

In the Southern Pasture Area there is a much smaller acreage of rotation land and a large acreage of permanent pasture. Table 3 shows that if the land were used correctly for producing the maximum of intertilled crops with present practices about 272,000 additional acres could be grown, with conservation practices an additional 351,000 could be produced. Further expansion over the 1943 acreage should be limited to the level lands unless conservation practices are adopted on a wide scale. Because all hay and pasture amount to 2½ million acres, while row crops are less than 2 million acres, large production increases may be obtained by increasing the yields of hay and grass as well as by the expansion of row crops on the level lands. This means a widespread application of such practices as liming, fertilizing, reseeding to high yielding legumes, weed control and rotation grazing. Because the area is a deficit feed area, *soybeans grown for oil might be reduced* and the acreage of corn increased as far as possible on the soils not subject to erosion.

In the Northeast Dairy Area row crops could be expanded about 340,000 acres under present practices and by an additional 430,000 acres if conservation practices were adopted. In this area, however, making full use of dairy herds and dairy equipment may mean that very little expansion of intertilled crops

should occur because this might curtail the production of hay and grass to the point where other resources would not be fully utilized. Under these circumstances no general rule can be made because the final answer lies in the urgency of the national need for milk compared to hogs or other products. We can say, however, that an expansion of row crops that would curtail the production of milk should not occur in this area until the maximum expansion of these crops has taken place in the Cash Grain Area.

In conclusion we must again point out the fact that each farmer must consider all his resources of land, labor supply, livestock and equipment in deciding how he may best maximize his production. The estimates presented here provide only a guide to where intertilled crops can be increased during the emergency period. In order to make the most of our resources we need government programs which will assist the individual farmer to make the necessary changes in his practices. Such programs range all the way from payments for contouring or liming and seeding legumes to arrangements for making feed available in deficit areas through non-recourse loans. The outlines of such a unified production and conservation program have been published previously and need not be repeated here.⁵

PROBABLE POST-WAR ADJUSTMENTS

The probable post-war adjustments will depend upon how far we go in applying exploitive rotations during the war period. The rotations applied to the less erosive lands are definitely exploitive in nature *and cannot be maintained permanently* after the emergency. In order to provide a rough estimate of the probable adjustments, the land use planning committees' recommended acreages, and the estimated wartime acreages (with present practices) are compared and the differences recorded as indicating the approximate size of the adjustments.

Table 2 shows that for the state as a whole the acreage of intertilled crops may have to be reduced about 4 million acres, small grains increased about 2 million acres, and all hay and pasture increased about 2 million acres. This assumes that the acreage of intertilled crops will expand until it reaches the estimated war maximum (with present practices) and that the expansion will occur on the level lands. Where this increase does not take place, as is probably the case in the Eastern Dairy Area, these figures will be reduced. To the extent that

⁵ See Arthur C. Bunce *Using Our Soils for War Production*, Pamphlet No. 7 in the Wartime Farm and Food Policy Series. Iowa State College Press, Ames, Iowa, April, 1943.

increases in row crops occur on sloping lands without the necessary conservation practices, these estimates of post-war changes will be increased

In percentages these figures indicate a reduction of about 35 percent in intertilled crops, an increase of about 40 percent in small grains and an increase of about 25 percent in all hay and pasture. These changes will have repercussion upon the livestock system and will mean adjustments in the numbers of hogs and cattle. To the extent that we can estimate the necessary changes in advance we can plan our farm operations to meet them and avoid serious damage to our soil resources.

Because we are faced with the necessity of exploiting our level soils now we should recognize that part of the increased output of soybeans, or corn and hogs, represents a disinvestment of our capital resources and not current income that can be maintained. Part of the income from war production, therefore, should be saved for the postwar period when income will decline as we build up the fertility we have exploited. To the extent that this is done, the danger of inflated land values reflecting temporary high net incomes is reduced. The necessity for this post-war investment is the same whether we replace the fertility by large applications of fertilizer or by reducing the acreage of row crops which usually yield the highest net returns. In one case we will pay out more cash in order to maintain yields and income, in the other cash outlays remain the same but income is reduced. Which of those two alternatives will be preferable will depend upon the availability and price of fertilizer, the condition of the soil, the post-war food requirements and the prices of farm products. Adjustments will be inevitable as we return to permanent production plans, and the figures presented here indicate the relative seriousness of the adjustments in various areas.

INTERPRETING THE COUNTY FIGURES

Any estimates of the nature of those presented in this analysis are subject to error because of the lack of detailed information regarding small units. If, for example, the county acreages are used as a guide and applied to individual farms serious errors may be made. Any one farm in a county may have a large area of level fertile land or a large area of rough rolling land. In planning individual farms, therefore, the specific rotations for various soil types and slope classes listed in table 1 should be used. The county figures simply represent a standard against which present acreages may be checked. Where the estimated

maximum acreage of intertilled crops has already been reached or exceeded, then the danger of erosion must be seriously considered and every effort made to apply conservation practices on the sloping lands

It will be noted that the acreages of soil types by slope classes is presented by type of farming region in tables 5 to 9 but these figures are not broken down for the individual counties. This is because conditions vary within type-of-farming areas and the application of average figures for the distribution of soils by slopes may be inaccurate when broken down by counties. As more detailed surveys become available, the estimated figures presented here can be corrected. For the immediate emergency, however, it is essential that we make use of the information now available if we are to use our soil resources most wisely to increase intertilled crops and at the same time avoid serious erosion.

At all times we must remember that production is a product of both acreage and yields. Simply increasing the acreage of intertilled crops will not maximize production unless the increases occur only on those soils and areas where yields will not rapidly decline as rotations are shortened and small grains and legumes are reduced. In addition to soil fertility, damage from diseases and insect pests must be considered as it affects yields and desirable rotations. The rotations used in this study will act as a guide, but we must remember that soil types may vary in productiveness because of past treatments. The knowledge and judgment of the individual farmer always provides the best guide to the sound use of his land, labor and other resources. Each farm should be planned as a unit, and all resources have to be considered if we are to maximize our war production. While the primary resource of agriculture is the land, and its most effective use provides the basis of all production planning, we cannot neglect the modifications that occur due to variations in other factors.

ARRANGEMENT OF TABLES

TABLE 1 presents the basic material on which this study is based and lists

- (1) The groups of major soil types in the state
- (2) The acreages in each slope class in rotation or crop land
- (3) The suggested rotations for the various soil type groups and slope classes
- (4) The percentage of the land which will be in various crops if these rotations are followed

The rotations listed in this table may be used as a guide in planning individual farms where it is desirable to maximize the production of intertilled crops. The classification on which the soil type groups are based is given in the appendix.

TABLE 2 presents a summary of land use patterns for each type of farming area and the state, together with the approximate post war adjustments that may be necessary as we move from war production to less exploitive rotations. The land use patterns tabulated are

- (1) The 1940 acreages of crops and pasture
- (2) The acreages of crops and pasture that would result if the County Planning Board recommendations were put into practice
- (3) The acreages of crops and pasture that would result if the war rotations listed in table 1 were applied to the land with present practices and with simple conservation practices. The approximate post-war adjustment figures are the differences between the estimated war production acreages and the acreages recommended by the County Planning Boards.

TABLE 3 gives the historical trend of the acreages of intertilled crops and small grains by type of farming regions and the state and shows the relationship of the war estimates to these acreages.

TABLE 4 shows the distribution on various slopes of the war acreages of crops that would result from applying the suggested rotations with present practices and with conservation practices. The table also lists the estimated acreage of land in each slope class for type of farming regions and the state.

TABLES 5 TO 9 give the distribution of the estimated war acreages of crops with present practices and with conservation practices on the major soil groups and slope classes for each type of farming area.

TABLES 10 TO 14 present the same material as that in table 2 for each county in the five types of farming areas. The counties are listed by erosion class (see fig 1, page 110) and alphabetically within each class.

APPENDIX The appendix gives the classification of soils used in this study and lists the soil types and their group numbers. This classification was taken from *The Handbook of Agronomy* prepared by the Agronomy Department, Iowa State College. Mimeographed, May, 1942. Ames, Iowa.

ABBREVIATIONS USED IN THE TABLES

In the following tables it was found necessary to use several abbreviations in order to save space. The same symbols have been used throughout.

1 Slope classes

L=level (0.3 percent slope)
 U=undulating (3.7 percent slope)
 R=rolling (7.13 percent slope)
 H=hilly (13.18 percent slope)
 St=steep (over 18 percent slope)

2 Rotations

IT=intertilled crops
 SG=small grains
 SC=soil conserving (hay and pasture on rotation land)
 C=corn
 SB=soybeans
 (Scl)=Sweet clover seeded with small grain for green manure

3 Estimates

Est Max =estimated maximum
 Est Min =estimated minimum
 (Pres prac) =present practices This assumes no widespread change from present soil management or conservation practices
 (Cons prac) =conservation practices This assumes that simple conservation practices, such as contouring and strip cropping, are used where needed

4 Type of Farming Areas

I or NED=Northeast Dairy Area
 II or CG=North Central Cash Grain Area
 III or WL=Western Livestock Area
 IV or SP=Southern Pasture Area
 V or EL=Eastern Livestock Area

TABLE 1 ACREAGES OF SOIL TYPES BY SLOPE CLASSES FOR IOWA AND ROTATIONS USED TO ESTIMATE THE UPPER LIMITS OF INTERTILLED CROPS

Group No	Soil types ¹		Slope class percent	Rotation land (1000 acres)	Type rotation:	Percentage with present practices		
	Name					IT	SG	SC
A1	Knox silt loam	R 7-13	7	C-SG-SC-SC-SC	20	20	60	
		H 13-18	27	C-SG-SC-SC-SC-SC	17	17	66	
		St 18-up	12	SG-SC-SC-SC-SC	0	20	80	
A2	Marshall & Tama silt loams	L 0-3	568	C-C-SB-C-SG(S cl)	80	20	0	
		U 3-7	3100	C-C-C-SG-SC	60	20	20	
		R 7-13	2781	C-C-SG-SC-SC	40	20	40	
		H 13-18	614	C-SG-SC-SC	25	25	50	
		St 18-up	51	C-SG-SC-SC-SC-SC	17	17	66	
A3	Shelby & Haig soils	U 3-7	114	C-SG-SC	33- $\frac{1}{2}$	33- $\frac{1}{2}$	33- $\frac{1}{2}$	
		R 7-13	706	C-SG-SC-SC	25	25	50	
		H 13-18	200	C-SG-SC-SC-SC-SC	17	17	66	
		St 18-up	2	C-SG-SC-SC-SC-SC-SC	15	15	70	
A3	Marshall & Tama silt loam (shallow phase)	R 7-13	76	C-C-SG-SC-SC-SC	33	17	50	
		H 13-18	96	C-SG-SC-SC	25	25	50	
A4	Carrington & Clarion loam & silt loam	L 0-3	775	C-C-SB-C-SG (S cl)	80	20	0	
		U 3-7	3399	C-C-C-SG-SC	60	20	20	
		R 7-13	1446	C-C-SG-SC-SC	40	20	40	
		H 13-18	166	C-SG-SC-SC	25	25	50	
		St 18-up	1	C-SG-SC-SC-SC	20	20	60	
A5	Dickinson and Pierce sandy soils	U 3-7	119	C-SG-SC-SC	25	25	50	
		R 7-13	126	C-SG-SC-SC-SC	20	20	60	
		H 13-18	40	C-SG-SC-SC-SC	20	20	60	
A6	Carrington & Clarion sandy soils	L 0-3	3	C-C-C-SG-SC	60	20	20	
		U 3-7	47	C-C-SG-SC-SC	40	20	40	
		R 7-13	87	C-SG-SC-SC	25	25	50	
		H 13-18	4	C-SG-SC-SC-SC-SC	17	17	66	
A7	Dodgeville and Millsdale soils	L 0-3	1	C-C-SG-SC	50	25	25	
		U 3-7	11	C-SG-SC	33- $\frac{1}{2}$	33- $\frac{1}{2}$	33- $\frac{1}{2}$	
		R 7-13	28	C-SG-SC-SC	25	25	50	
		H 13-18	7	SC	0	0	100	
B8	Downs silt loam	U 3-7	11	C-C-SG-SC-SC	40	20	40	
		R 7-13	45	C-SG-SC-SC	25	25	50	
		H 13-18	36	C-SG-SC-SC-SC	20	20	60	
		St 18-up	3	C-SG-SC-SC-SC-SC	15	15	70	
B9	Fayette silt loam	U 3-7	139	C-C-SG-SC-SC	40	20	40	
		R 7-13	174	C-SG-SC-SC	25	25	50	
		H 13-18	129	C-SG-SC-SC-SC	20	20	60	
		St 18-up	7	C-SG-SC-SC-SC-SC	15	15	70	
C10	Clinton and Weller silt loam	U 3-7	424	C-SG-SC	33- $\frac{1}{2}$	33- $\frac{1}{2}$	33- $\frac{1}{2}$	
		R 7-13	620	C-SG-SC-SC	25	25	50	
		H 13-18	207	C-SG-SC-SC-SC	20	20	60	
		St 18-up	5	C-SG-SC-SC-SC	20	20	60	
C11	Clinton & Fayette sandy soils	H 13-18	1	C-SG-SC-SC-SC-SC	17	17	66	
C12	Clinton & Fayette silt loams (shallow phase)	R 7-13	10	C-SG-SC-SC-SC	20	20	60	

TABLE 1 ACREAGES OF SOIL TYPES BY SLOPE CLASSES FOR IOWA AND ROTATIONS USED TO ESTIMATE THE UPPER LIMITS OF INTERTILLED CROPS—Continued

Soil types ¹		Slope class percent	Rotation land (1000 acres)	Type rotation ²	Percentage with present practices		
Group No	Name				IT	SG	SC
D13	Muscataine and Webster soils	L 0-3	3417	C-C-SB-C-SG (S cl)	80	20	0
D14	Floyd & Garwin soils						
D15	Clyde soils						
D13	Grundy silt loam and silty clay loam	L 0-3 U 3-7	961 635	C-C-SB-C-SG (S cl) C-C-SG-SC	80 50	20 25	0 25
E16	Edina silt loam	L 0-3	13	C-C-C-SG-SC	60	20	20
E17	Marion and Putnam silt loams	L 0-3 U 3-7	158 5	C-C-SG-SC-SC C-SG-SC	40 33- $\frac{1}{2}$	20 33- $\frac{1}{2}$	40 33- $\frac{1}{2}$
F18	Buckner Sparta	L 0-3	188	C-C-C-SG-SC	60	20	20
F19	Plainfield sands	U 3-7	33	C-C-SG-SC	50	25	25
G20	Lindley and Gosport soils	U 3-7 R 7-13 H 13-18 St 18-up	5 28 65 19	C-SG-SC-SC C-SG-SC-SC-SC-SC C-SG-SC-SC-SC-SC-SC SG-SC-SC-SC-SC	25 17 15 0	25 17 15 20	50 66 70 80
G21	Cass Sarpy and similar sandy bottomland soils	L 0-3	154	C-C-C-SG-SC	60	20	20
G22							
G23							
G24	Wabash & similar bottomland soils	L 0-3	1644	Continuous corn	100	0	0
G25	Lamoure, Genesee and similar bottomland soils	L 0-3	199	C-C-SB-C-SG (S cl)	80	20	0
G26							
G27	Peat and Muck	L 0-3	89	Continuous corn	100	0	0
A2	Terrace soils-	L 0-3	66	Continuous corn	100	0	0
D14-15	heavy tex-	U 3-7	1114	C-C-C-SG-SC	60	20	20
E16-17	tures						

Note For abbreviations see page 121

¹ Not all soil types are listed by name in this table but a complete list together with the classification from which the group numbers were taken is given in the appendix. For soils not listed look up the group number and apply the rotation suggested above for that number. Where two or more rotations for one group are given above the one listed first has the most general application. Because in an emergency heavy textured terrace soils may be cropped more intensively than other soils in their groups, they were treated separately in this study.

² These are suggested rotations. Corn soybeans for grain and other row crops may be substituted for each other but it is assumed that when a high percentage of intertilled crops is specified part of it will be in soybeans.

Where soil conserving crops are not included in the rotation it is assumed that a sweet clover catch crop will be seeded wherever possible.

Except on peat and muck soils sweet clover should be seeded at least every three years where corn is grown continuously.

TABLE 2 1940 ACREAGES COUNTY PLANNING BOARD RECOMMENDATIONS,
WAR ESTIMATES AND APPROXIMATE POST-WAR ADJUSTMENTS
BY TYPE-OF-FARMING AREA FOR IOWA

(Thousands of acres)

	State total	NED-I	CG-II	WL-III	SP-IV	EL-V
1 Land area	35 642	6 409	7 238	8 251	6 411	7 333
2 Land in farms	32 535	5 823	6 606	7 595	5 852	6 659
3 Woodland P & NP	2 337	566	243	288	702	538
4 AGRICULTURAL LAND						
5 1940	30 086	5 254	6 326	7 253	5 123	6 130
6 County Planning	30 264	5 302	6 353	7 341	5 152	6 116
7 Estimate	30 203	5 259	6 363	7 310	5 148	6 123
8 PERMANENT PASTURE						
9 1940	3 912	866	467	604	1 074	901
10 County Planning	5 739	1 022	565	1 087	1 702	1 263
11 Estimate	4 925	885	512	974	1 512	1,042
12 ALL HAY AND PASTURE						
13 1940	13 388	2 422	1 948	2 741	3 195	3 082
14 County Planning	13 084	2 476	2 022	2 748	2 932	2 906
15 Est Min (Pres prac)	10 713	1 981	1 355	2 583	2 481	2 313
16 Est Min (Cons prac)	8 014	1 498	843	1 718	2 193	1 762
17 ROTATION LAND						
18 1940	26 174	4 388	5 859	6 649	4 049	5 229
19 County Planning	24 525	4 280	5 688	6 254	3 450	4 853
20 Estimate	25 278	4 374	5 851	6 336	3 636	5 081
21 INTERTILLED CROPS						
22 1940	10 652	1 727	2 648	2 869	1 337	2 071
23 County Planning	10 272	1 641	2 558	2 801	1 292	1 980
24 Est Max (Pres prac)	14 562	2 410	3 890	3 548	1 917	2 797
25 Est Max. (Cons prac)	17 168	2 843	4 360	4 356	2 268	3 341
26 SMALL GRAINS						
27 1940	6 046	1 105	1 730	1 643	591	977
28 County Planning	6 908	1 185	1 773	1 792	928	1 230
29 Est Min (Pres prac)	4 927	866	1 118	1 179	750	1 013
30 Est Min (Cons prac)	5 021	918	1 160	1 236	687	1 020
31 SOIL CONSERVING CROPS						
32 1940	0 476	1 556	1 481	2 137	2 121	2 181
33 County Planning	7 345	1 454	1 357	1 661	1 230	1 843
34 Est Min (Pres prac)	5 788	1 096	843	1 609	969	1 271
35 Est Min (Cons prac)	3 089	613	331	744	681	720
36 APPROX POST-WAR ADJUSTMENT						
37 Intertilled crops	-4 290	-769	-1 332	-747	-625	-817
38 Small grains	1 981	318	655	613	178	217
39 All hay and pasture	2 371	495	667	165	451	593

Note For abbreviations see page 121

TABLE 3 ACREAGES OF INTERTILLED CROPS AND SMALL GRAINS 1940 TO 1943 AND WAR ESTIMATES BY TYPE-OF-FARMING AREA FOR IOWA

(Thousands of acres)

	State total	NED-I	CG-II	WL-III	SP-IV	EL-V
INTERTILLED CROPS						
1940	10 652	1 727	2 648	2 869	1,337	2 071
1941	10 650	1,711	2 612	2 857	1 317	2,154
1942	12 207	1 949	3,124	3 233	1 474	2,427
1943 (March estimates)	13 325	2,070	3 470	3 539	1,645	2,601
Est Max (Pres prac)	14 562	2 410	3 890	3 548	1 917	2 797
Est Max (Cons prac)	17,168	2 843	4 360	4 356	2 268	3 341
SMALL GRAINS						
1940	6 046	1 105	1 730	1 643	591	977
1941	6 596	1,157	1 904	1 774	650	1,009
1942	6 031	1 062	1 588	1 732	651	997
1943 (March estimates)	5 663	1,024	1,436	1 615	639	948
Est Min (Pres prac)	4 927	866	1 118	1,179	750	1 013
Est Min (Cons prac)	5,021	918	1 160	1,236	687	1,020

Note For abbreviations see page 121

TABLE 4 ESTIMATED ACREAGES OF CROPS FOR WAR PRODUCTION BY SLOPE CLASSES AND TYPE-OF-FARMING AREA FOR IOWA

(Thousands of acres)

Area	Slope classes percent	Rotation land acres	With present practices			With conservation practices		
			IT	SG	SC	IT	SG	SC
I Northeast Dairy	L 0-3	1 211	968	208	35	968	208	35
	U 3-7	1 874	1 052	383	439	1 370	387	117
	R 7-13	1 032	339	225	468	448	267	317
	H 13-18	248	52	51	140	56	56	136
	St 18-up	9	*	*	9	*	*	9
	All	4 374	2 411	867	1 096	2 842	918	614
II Cash Grain	L 0-3	2 384	2 362	514	8	2 363	514	7
	U 3-7	1 926	1 144	387	395	1 521	387	18
	R 7-13	921	306	187	378	446	227	248
	H 13-18	120	30	30	60	30	30	60
	All	5 851	3 892	1 118	841	4 360	1 158	333
	III Western Livestock	L 0-3	1 689	1 436	212	41	1 445	212
U 3-7		1 986	1 188	399	399	1 583	397	6
R 7-13		1 870	733	382	755	1 081	384	405
H 13-18		725	178	178	369	237	232	256
St 18-up		66	11	11	44	11	11	44
All		6 336	3 546	1 182	1 608	4 357	1 236	743
IV Southern Pasture	L 0-3	1 156	914	187	55	927	190	39
	U 3-7	1 219	651	284	284	839	246	134
	R 7-13	690	307	228	457	449	206	335
	H 13-18	255	47	45	163	50	43	162
	St 18-up	16	3	2	11	3	2	11
	All	3 636	1 920	746	970	2 268	687	681
V Eastern Livestock	L 0-3	1 295	1 110	177	8	1 112	178	5
	U 3-7	2 152	1 179	484	489	1 528	433	191
	R 7-13	1 381	456	303	622	642	350	389
	H 13-18	237	50	45	142	6	56	125
	St 18-up	16	3	3	10	3	3	10
	All	5 081	2 798	1 012	1 271	3 341	1 020	720
STATE	L 0-3	8 235	6 790	1 208	147	6 815	1 302	118
	U 3-7	9 157	5 214	1 937	2 006	6 841	1 850	466
	R 7-13	6 194	2 189	1 325	2 680	3 066	1 434	1 694
	H 13-18	1 585	357	349	879	420	417	739
	St 18-up	107	17	16	74	17	16	74
	All	25 278	14 567	4 925	5 786	17 168	5 019	3 091

*Under 500 acres

Note For abbreviations see page 121

TABLE 5 ESTIMATED ACREAGES OF CROPS FOR WAR PRODUCTION BY SOIL TYPE AND SLOPE CLASS FOR NORTHEAST DAIRY AREA

(Thousands of acres)

Group No	Soil type Name	Slope class percent	Rotation land acres	With present practices			With conservation practices		
				IT	SG	SC	IT	SG	SC
A2	Tama silt loam	U 3-7	250	155	52	52	206	52	1
		R 7-13	250	100	50	100	150	50	50
		H 13-18	7	2	1	4	2	2	3
A3	Shelby loam & silt loam	U 3-7	3	1	1	1	1	1	1
		R 7-13	4	1	1	2	1	1	2
A4	Carrington & Clarion loam & silt loam	L 0-3	505	404	101	0	404	101	0
		U 3-7	1120	672	224	224	884	224	12
		R 7-13	321	128	64	129	161	80	80
		H 13-18	37	9	9	19	9	9	19
A5	Dickinson & Thurston sandy soils	U 3-7	109	27	27	55	27	27	55
		R 7-13	65	13	13	39	13	13	39
		H 13-18	6	1	1	4	1	1	4
A6	Carrington & Clarion sandy soils	U 3-7	12	6	2	4	7	3	2
		R 7-13	39	10	10	19	10	10	19
		H 13-18	1	*	*	1	*	*	1
A7	Dodgeville & Millsdale soils	L 0-3	*	*	*	*	*	*	*
		U 3-7	12	4	4	4	4	4	4
		R 7-13	25	6	6	13	6	6	13
		St 18-up	10	*	*	10	*	*	10
B8	Downs silt loam	U 3-7	18	7	4	7	10	4	4
		R 7-13	21	5	5	11	7	7	7
B9	Fayette silt loam	U 3-7	114	46	22	46	56	29	29
		R 7-13	162	41	41	80	54	54	54
		H 13-18	114	23	23	68	23	23	68
C10	Clinton silt loam	U 3-7	24	8	8	8	10	5	9
		R 7-13	131	33	33	65	44	44	43
		H 13-18	79	16	16	47	20	20	39
C11	Fayette sands	H 13-18	1	*	*	1	*	*	1
D13	Webster soils	L 0-3	92	74	18	0	74	18	0
D15	Clyde soils	L 0-3	292	229	58	5	229	58	5
F18	Buckner-Plainfield sands	L 0-3	151	91	30	30	91	30	30
G20	Lindley-Gosport soils	U 3-7	4	1	1	2	1	1	2
		R 7-13	13	2	2	9	2	2	9
		H 13-18	2	*	*	2	*	*	2
G24	Wabash soils	L 0-3	148	148	0	0	148	0	0
G27	Peat and Muck	L 0-3	23	23	0	0	23	0	0
A2 B14-15	Terrace soils- heavy textures	U 3-7	200	125	37	38	163	37	0
AREA TOTAL			4374	2411	864	1099	2841	916	617

*Under 500 acres

Note For abbreviations see page 121

TABLE 6 ESTIMATED ACREAGES OF CROPS FOR WAR PRODUCTION BY SOIL TYPE AND SLOPE CLASS FOR NORTH CENTRAL CASH GRAIN AREA

(Thousands of acres)

Group No	Soil type Name	Slope class percent	Rotation land acres	With present practices			With conservation practices		
				IT	SG	SC	IT	SG	SC
A2	Tama silt loam Marshall silt loam	L 0-3	71	57	14	0	57	14	0
		U 3-7	86	51	18	17	69	17	0
		R 7-13	51	21	10	20	31	10	10
		H 13-18	1	*	*	1	*	*	1
A3	Shelby silt loam	R 7-13	5	1	1	3	2	1	2
A4	Carrington and Clarion loam and silt loam	L 0-3	126	101	25	0	101	25	0
		U 3-7	1569	941	314	314	1255	314	0
		R 7-13	794	318	159	317	397	199	198
		H 13-18	115	29	29	57	29	29	57
A5	Dickinson and Pierce sandy soils	U 3-7	2	1	*	1	1	*	1
		R 7-13	22	4	4	14	4	4	14
A6	Carrington and Clarion sandy soils	L 0-3	3	1	1	1	1	1	1
		U 3-7	34	13	7	14	16	9	9
		R 7-13	41	10	10	21	10	10	21
		H 13-18	3	*	1	2	1	1	1
A7	Dodgeville silt loam	R 7-13	1	*	*	1	*	*	1
B9	Fayette silt loam	U 3-7	2	1	*	1	1	*	1
		R 7-13	1	*	*	1	*	*	1
C10	Ames silt loam Clinton silt loam	L 0-3	3	1	1	1	1	1	1
		U 3-7	5	2	1	2	3	1	1
		R 7-13	5	1	1	3	2	2	1
D13	Webster soils	L 0-3	2319	1855	464	0	1855	464	0
D15	Clyde silt loam	L 0-3	16	13	3	0	13	3	0
F18	Terraces-sandy texture	L 0-3	28	16	6	6	18	5	5
		U 3-7	27	13	7	7	17	5	5
G20	Lundley and Sogn	H 13-18	1	*	*	1	*	*	1
G21 G22 G23	Cass Sarpy and similar bottomland soils	L 0-3	1	1	*	*	1	*	*
G24	Wabash soils	L 0-3	239	239	0	0	239	0	0
G27	Peat and Muck	L 0-3	64	64	0	0	64	0	0
A2 D14	Terrace soils-heavy textures	L 0-3	14	14	0	0	14	0	0
		U 3-7	202	122	40	40	161	40	1
AREA TOTAL			5851	3890	1116	845	4363	1155	333

*Under 500 acres

Note For abbreviations see page 121

TABLE 7 ESTIMATED ACREAGES OF CROPS FOR WAR PRODUCTION BY SOIL TYPE AND SLOPE CLASS FOR WESTERN LIVESTOCK AREA

(Thousands of acres)

Group No	Soil type Name	Slope class percent	Rotation land acres	With present practices			With conservation practices		
				IT	SG	SC	IT	SG	SC
A1	Knox silt loam	H 13-18	27	6	5	16	9	5	13
		St 18-up	12	2	2	8	2	2	8
A2	Marshall silt loam	L 0-3	449	359	90	0	359	90	0
		U 3-7	1410	846	282	282	1128	282	0
		R 7-13	1621	649	324	648	973	326	323
		H 13-18	579	145	145	280	193	193	193
		St 18-up	51	9	8	34	9	8	34
A3	Shelby loam and silt loam	U 3-7	15	5	5	5	6	4	5
		R 7-13	44	11	11	22	18	9	17
		H 13-18	13	2	2	9	2	2	9
A3	Marshall silt loam (shallow phase)	R 7-13	20	7	7	6	8	4	8
		H 13-18	55	14	14	27	10	18	18
A4	Carrington and Clarion loam and silt loam	L 0-3	47	37	10	0	37	10	0
		U 3-7	355	213	71	71	284	71	0
		R 7-13	134	54	27	53	67	34	33
		H 13-18	12	3	3	6	3	3	6
A5	Dickinson and Pierce sandy soils	U 3-7	3	1	1	1	1	1	1
		R 7-13	1	*	*	1	*	*	1
A6	Carrington and Clarion sandy soils	R 7-13	5	1	1	3	1	1	3
B8	Marshall silt loam (light colored phase)	R 7-13	36	10	10	16	13	10	13
		H 13-18	35	8	8	19	11	10	14
		St 18-up	3	1	*	2	1	*	2
D13	Webster soils	L 0-3	164	131	33	0	131	33	0
F18	Buckner and O'Neill sandy soils	L 0-3	10	6	2	2	6	2	2
		U 3-7	*	*	*	*	*	*	*
G20	Lindley loam	R 7-13	8	2	1	5	2	1	5
		H 13-18	2	*	*	2	*	*	2
G21 G22 G23	Cass Sarpy and similar sandy bottomland soils	L 0-3	153	92	31	30	92	31	30
G24	Wabash soils	L 0-3	614	614	0	0	614	0	0
G26	Lamoure and similar soils	L 0-3	199	159	40	0	159	40	0
G27	Peat and Muck	L 0-3	2	2	0	0	2	0	0
A2 A3 D14	Terrace soils-heavy textures	L 0-3	53	37	8	8	45	8	0
		U 3-7	204	124	40	40	164	40	0
AREA TOTAL			6336	3550	1181	1605	4369	1237	740

*Under 500 acres

Note For abbreviations see page 121

TABLE 8 ESTIMATED ACREAGES OF CROPS FOR WAR PRODUCTION BY SOIL TYPE AND SLOPE CLASS FOR SOUTHERN PASTURE AREA

(Thousands of acres)

Group No	Soil type Name	Slope class percent	Rotation land acres	With present practices			With conservation practices		
				IT	SG	SC	IT	SG	SC
A2	Tama silt loam	L 0-3	12	10	2	0	10	2	0
		U 3-7	406	244	81	81	325	81	0
		R 7-13	275	110	55	110	165	55	55
A3	Shelby loam and silt loam	U 3-7	41	14	14	13	21	10	10
		R 7-13	640	173	156	311	256	128	256
		H 13-18	220	42	39	139	45	37	138
		St 18-up	2	*	*	2	*	*	2
A4	Carrington and Clarion loam and silt loam	U 3-7	38	23	8	7	30	8	0
		R 7-13	24	10	5	9	12	6	6
		St 18-up	1	*	*	1	*	*	1
A5	Shelby sandy loam	R 7-13	1	*	*	1	*	*	1
A6	Carrington and Clarion sandy soils	R 7-13	1	*	*	1	*	*	1
C10	Clinton and Weller silt loams	U 3-7	113	38	38	37	45	23	45
		R 7-13	49	12	12	25	16	16	17
		H 13-18	2	*	*	2	*	*	2
D13	Muscatine silt loam	L 0-3	36	29	7	0	29	7	0
		U 3-7	84	50	17	17	67	17	0
D13	Grundy silt loam	L 0-3	726	581	145	0	581	145	0
		U 3-7	388	194	97	97	233	78	77
D14 D15 D16 D17	Terrace soils heavy textures	U 3-7	147	88	30	29	118	29	0
E16 E17	Edina silt loam Marion silt loam	L 0-3	13	8	3	2	8	3	2
		L 0-3	134	53	29	52	65	33	36
G20	Lindley loam	U 3-7	1	*	*	1	*	*	1
		R 7-13	1	*	*	1	*	*	1
		H 13-18	33	5	5	23	5	5	23
		St 18-up	13	2	2	9	2	2	9
G24	Wabash soils	L 0-3	235	235	0	0	235	0	0
AREA TOTAL			3636	1921	745	970	2268	685	683

*Under 500 acres

Note For abbreviations see page 121

TABLE 9 ESTIMATED ACREAGES OF CROPS FOR WAR PRODUCTION BY SOIL TYPE AND SLOPE CLASS FOR EASTERN LIVESTOCK AREA

(Thousands of acres)

Group No	Soil type Name	Slope class percent	Rotation land acres	With present practices			With conservation practices		
				IT	SG	SC	IT	SG	SC
A1	Knox silt loam	R 7-13	7	2	2	3	2	1	4
A2	Tama silt loam	L 0-3	72	57	15	0	57	15	0
		U 3-7	752	452	150	150	588	150	14
		R 7-13	584	233	117	234	350	117	117
		H 13-18	26	9	4	13	9	9	8
A3	Shelby loam and silt loam	U 3-7	17	6	6	5	9	4	4
		R 7-13	67	17	17	33	27	13	27
		H 13-18	7	1	1	5	1	1	5
A4	Carrington and Clarion loam and silt loam	L 0-3	98	78	20	0	78	20	0
		U 3-7	317	191	63	63	254	63	0
		R 7-13	172	69	34	69	86	43	43
		H 13-18	3	1	1	1	1	1	1
A5	Shelby sandy soils	U 3-7	5	1	1	3	1	1	3
		R 7-13	35	7	7	21	7	7	21
		H 13-18	34	7	7	20	7	7	20
A6	Carrington and Clarion sandy soils	U 3-7	3	1	1	1	1	1	1
		R 7-13	*	*	*	*	*	*	*
B9	Fayette silt loam	U 3-7	17	7	3	7	8	5	4
		H 13-18	16	3	3	10	3	3	10
		St 18-up	7	1	1	5	1	1	5
C10	Clinton silt loam	U 3-7	288	96	96	96	115	58	115
		R 7-13	495	123	123	249	164	163	168
		H 13-18	126	25	25	76	32	31	63
		St 18-up	4	1	1	2	1	1	2
C12	Clinton silt loam (shallow phase)	R 7-13	10	2	2	6	3	2	5
D13	Muscatine silt loam	L 0-3	422	338	84	0	338	84	0
		U 3-7	140	84	28	28	112	28	0
		R 7-13	5	2	1	2	3	1	1
D13	Grundy silt loam	L 0-3	235	188	47	0	188	47	0
		U 3-7	247	123	62	62	148	50	49
D15	Clyde soils	L 0-3	39	31	8	0	31	8	0
E17	Marion silt loam	L 0-3	21	9	4	8	11	5	5
F18	Buckner sands	U 3-7	6	3	2	1	4	1	1
G20	Lundley loam	R 7-13	6	1	1	4	1	1	4
		H 13-18	26	4	4	18	4	4	18
		St 18-up	4	1	1	2	1	1	2
G24	Wabash soils	L 0-3	408	408	0	0	408	0	0
A2 C9 C11 D15	Terrace soils heavy textures	U 3-7	360	216	72	72	288	72	0
AREA TOTAL			5081	2798	1014	1269	3342	1019	720

*Under 500 acres

Note For abbreviations see page 121

TABLE 10 1940 ACREAGES, COUNTY PLANNING BOARD RECOMMENDATIONS WAR ESTIMATES AND APPROXIMATE POST-WAR ADJUSTMENTS—NORTHEAST DAIRY AREA (THOUSANDS OF ACRES)

County	All counties	Black Hawk	Bremer	Buchanan	Butler	Carro Gordo	Cluckasaw	Floyd	Howard	Mitchell	Winnabago	Worth	Delaware	Fayette	Jones	Allamakee	Clayton	Dubuque	Winnebuck	
		A	A	A	A	A	A	A	A	A	A	A	B	B	B	C	C	C	C	
Erosion class																				
1	Land area	6 409	362	278	363	372	363	318	317	300	299	255	255	365	463	364	409	502	395	439
2	Land in farms	5 823	319	254	336	334	328	295	290	277	272	233	233	335	427	333	359	444	347	407
3	Woodland P & NP	566	18	15	18	15	6	15	11	9	13	4	6	25	29	36	128	108	56	54
4	AGRICULTURAL LAND																			
5	1940	5 254	303	240	318	322	317	280	274	270	256	228	228	307	382	295	238	339	307	350
6	County Planning	5 302	301	240	320	321	321	280	279	276	257	229	227	310	396	304	244	348	295	354
7	Estimate	5 259	301	239	318	319	322	280	279	269	259	229	227	310	398	297	231	336	292	353
8	PERMANENT PASTURE																			
9	1940	866	46	62	69	54	39	64	26	50	20	27	31	78	27	51	49	62	60	
10	County Planning	1 022	40	49	83	62	52	73	38	62	25	29	34	69	94	71	54	66	71	50
11	Estimate	885	31	45	52	50	53	55	41	55	27	29	25	60	100	45	50	50	50	67
12	ALL HAY AND PASTURE																			
13	1940	2 422	125	103	143	124	108	128	91	130	90	84	83	150	186	170	145	190	186	186
14	County Planning	2 476	122	106	158	141	123	136	109	146	96	82	86	160	201	163	149	173	153	172
15	Est min (Pres prac)	1 981	91	81	105	99	100	102	81	97	65	68	71	125	171	128	118	155	158	166
16	Est min (Cons prac)	1 498	53	58	81	77	78	85	58	75	36	43	60	92	137	96	99	113	130	127
17	ROTATION LAND																			
18	1940	4 388	257	178	249	268	278	216	248	220	236	201	197	256	304	268	187	290	245	290
19	County Planning	4 280	261	191	237	259	269	207	241	214	232	200	193	241	302	233	190	282	224	304
20	Estimate	4 374	270	194	266	269	269	225	238	214	232	200	202	250	298	252	181	286	242	286
21	INTERTILLED CROPS																			
22	1940	1,727	122	84	118	132	135	93	120	81	97	82	86	97	120	81	49	77	66	87
23	County Planning	1 641	109	86	99	105	116	85	100	67	96	84	82	86	111	86	58	98	76	97
24	Est max (Pres prac)	2 410	157	120	162	171	170	135	151	129	147	123	117	134	166	115	79	124	82	128
25	Est max (Cons prac)	2,843	195	142	185	191	191	150	172	150	175	146	126	164	199	141	93	159	102	162
26	SMALL GRAINS																			
27	1940	1,105	56	53	57	66	74	59	63	59	69	62	59	60	76	44	44	72	55	77
28	County Planning	1,185	70	48	63	75	82	59	70	63	65	63	59	64	84	55	37	77	66	85
29	Est min (Pres prac)	866	53	38	51	49	52	43	47	41	47	38	39	51	61	54	34	57	52	59
30	Est min (Cons prac)	918	53	39	52	51	53	45	49	44	48	40	41	54	62	60	39	64	60	64
31	SOIL CONSERVING CROPS																			
32	1940	1 556	79	41	74	70	69	64	65	80	70	57	52	99	108	143	94	141	124	126
33	County Planning	1 454	82	57	75	79	71	63	71	84	71	53	52	91	107	92	95	107	82	122
34	Est min (Pres prac)	1 096	60	36	53	49	47	47	40	42	38	39	46	65	71	83	68	105	108	99
35	Est min (Cons prac)	613	22	13	29	27	25	30	17	20	9	14	35	32	37	51	49	63	80	60
36	APPROX POST-WAR ADJUSTMENT																			
37	Intertilled crops	-769	-48	-34	-63	-66	-54	-50	-51	-62	-51	-39	-35	-48	-55	-29	-21	-26	-6	-31
38	Small grains	318	17	10	12	26	30	16	23	21	18	25	20	13	23	1	3	20	14	26
39	All hay and pasture	495	31	25	53	42	23	34	28	49	31	14	15	35	30	35	31	18	-5	6

Note For abbreviations see page 121

TABLE 11 1940 ACREAGES, COUNTY PLANNING BOARD RECOMMENDATIONS, WAR ESTIMATES, AND APPROXIMATE POST-WAR ADJUSTMENTS—NORTH CENTRAL CASH GRAIN AREA (THOUSANDS OF ACRES)

County	All counties	Boone	Calhoun	Clay	Dickinson	Emmet	Franklin	Greene	Hamilton	Hancock	Humboldt	Kosuth	Osceola	Palo Alto	Pocahontas	Story	Webster	Wright	Dallas	Hardin	Polk
		A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	B	B
1 Land area	7 238	364	364	360	241	252	370	367	365	365	278	629	253	359	369	363	457	368	378	364	372
2 Land in farms	6 606	327	337	325	222	231	343	338	343	331	259	567	238	333	340	332	414	337	345	332	312
3 Woodland P & NP	243	30	2	7	3	4	6	16	11	3	5	8	2	5	1	19	30	7	33	18	33
4 AGRICULTURAL LAND																					
5 1940	6 326	296	328	327	217	226	335	319	327	331	243	558	235	326	337	316	386	331	312	310	266
6 County Planning	6 353	298	334	322	218	226	336	326	333	314	249	565	235	320	343	317	383	330	308	315	281
7 Estimate	6 363	297	334	318	219	227	337	322	333	328	254	560	236	328	339	313	384	330	311	314	279
8 PERMANENT PASTURE																					
9 1940	467	24	14	39	20	18	31	16	21	25	10	28	19	27	9	22	16	18	40	30	31
10 County Planning	665	30	17	44	34	25	35	42	33	32	13	51	36	34	22	25	25	30	43	55	39
11 Estimate	512	30	18	25	33	16	30	20	26	25	14	36	26	28	8	20	15	15	40	43	44
12 ALL HAY AND PASTURE																					
13 1940	1 948	89	92	111	73	87	119	91	99	106	67	156	62	96	93	101	108	97	112	111	98
14 County Planning	2 022	79	83	118	91	75	119	110	82	112	65	161	83	115	101	90	94	85	115	135	109
15 Est min (Pres prac)	1 355	79	48	74	68	62	89	75	48	73	41	83	47	62	50	67	38	50	99	117	85
16 Est min (Cons prac)	843	50	26	46	49	35	58	38	33	50	24	48	34	39	23	41	23	28	62	81	55
17 ROTATION LAND																					
18 1940	5 859	272	314	288	188	208	304	303	306	306	233	530	216	299	328	294	370	313	272	280	235
19 County Planning	5 688	268	317	278	184	201	301	284	300	282	236	514	199	286	321	292	358	300	265	260	242
20 Estimate	5 851	267	316	293	186	211	307	302	307	303	240	524	210	300	331	293	369	315	271	271	235
21 INTERTILLED CROPS																					
22 1940	2 648	134	145	125	75	87	140	151	138	132	104	224	81	130	143	142	166	141	142	129	119
23 County Planning	2 558	124	154	123	76	89	130	133	144	119	108	229	83	120	148	142	168	136	120	112	100
24 Est max (Pres prac)	3 890	165	224	191	110	124	189	187	224	196	167	376	152	218	226	189	273	218	159	144	149
25 Est max (Cons prac)	4 300	191	244	218	137	149	219	221	238	217	182	408	165	240	251	213	287	238	192	173	177
26 SMALL GRAINS																					
27 1940	1 730	73	91	91	69	72	76	77	90	93	72	178	92	100	101	73	112	93	58	70	49
28 County Planning	1 773	95	97	81	51	62	87	83	107	83	76	175	69	85	94	85	121	109	73	68	72
29 Est min (Pres prac)	1 118	53	62	53	32	41	59	60	61	59	46	101	37	48	63	57	73	62	53	53	45
30 Est min (Cons prac)	1,160	56	64	54	33	43	60	63	62	61	48	104	37	49	65	59	74	64	57	60	47
31 SOIL CONSERVING CROPS																					
32 1940	1 481	65	78	72	44	49	88	75	78	81	57	128	43	69	84	79	92	79	72	81	67
33 County Planning	1 357	49	66	74	57	50	84	68	49	80	52	110	47	81	79	65	69	55	72	80	70
34 Est min (Pres prac)	843	49	30	49	35	46	59	55	22	48	27	47	21	34	42	47	23	35	56	74	41
35 Est min (Cons prac)	331	20	8	21	16	19	28	18	7	25	10	12	8	11	15	21	8	13	22	38	11
36 APPROX POST-WAR ADJUSTMENT																					
37 Intertilled crops	-1 332	-41	-70	-68	-43	-35	-59	-54	-80	-77	-59	-147	-69	-98	-78	-47	-105	-82	-39	-32	-49
38 Small grains	655	42	35	28	19	21	28	23	46	24	30	74	32	37	31	28	48	47	20	15	27
39 All hay and pasture	667	0	35	44	23	13	30	35	34	39	24	78	36	53	51	23	56	35	16	18	24

Note For abbreviations see page 121

TABLE 12 1940 ACREAGES COUNTY PLANNING BOARD RECOMMENDATIONS WAR ESTIMATES AND APPROXIMATE POST-WAR ADJUSTMENTS—WESTERN LIVESTOCK AREA (THOUSANDS OF ACRES)

County	All counties	Buena Vista	O'Brien	Carroll	Cherokee	Ida	Lyon	Sac	Sioux	Audubon	Cass	Crawford	Fremont	Harrison	Mills	Monona	Montgomery	Page	Plymouth	Pott-awatomie	Shelby	Woodbury
		A	A	B	B	B	B	B	B	C	C	C	C	C	C	C	C	C	C	C	C	C
1 Land area	8 251	365	364	367	367	275	369	367	490	284	358	458	328	442	273	452	271	340	550	612	378	541
2 Land in farms	7 590	340	336	336	342	259	346	339	455	267	333	423	292	308	247	392	251	322	511	554	350	502
3 Woodland P & NP	288	6	3	7	8	2	6	5	4	5	11	15	16	41	16	42	11	10	7	31	7	35
4 AGRICULTURAL LAND																						
5 1940	7 253	333	335	329	334	255	342	335	444	258	320	404	266	350	226	360	241	298	503	509	343	468
6 County Planning	7 341	336	333	332	337	258	344	337	454	263	320	410	275	354	235	360	242	300	503	525	343	480
7 Estimate	7 310	334	333	329	334	257	340	335	451	263	322	408	276	357	231	349	240	312	505	522	344	468
8 PERMANENT PASTURE																						
9 1940	604	25	40	22	60	24	41	26	43	20	29	33	8	15	15	29	27	28	60	24	15	20
10 County Planning	1 087	35	37	43	60	42	39	32	58	65	41	87	36	42	32	53	48	60	73	61	55	83
11 Estimate	074	20	25	39	58	27	34	30	51	50	55	70	50	61	24	49	28	65	75	48	46	69
12 ALL HAY AND PASTURE																						
13 1940	2 741	105	101	125	121	93	99	114	125	123	145	169	103	130	90	135	111	145	169	207	156	175
14 County Planning	2 748	113	115	119	140	102	124	122	140	134	121	180	106	102	97	125	112	131	171	175	120	199
15 Est min (Pres prac)	2 583	60	98	89	108	91	88	87	142	112	121	177	101	149	78	143	76	131	221	194	131	177
16 Est min (Cons prac)	1 718	30	44	50	69	65	48	47	80	85	88	128	76	115	50	120	46	96	149	125	91	126
17 ROTATION LAND																						
18 1940	6 649	308	295	307	274	231	301	309	401	238	201	371	258	335	211	331	214	270	443	485	328	448
19 County Planning	6 254	301	296	289	272	216	305	305	396	198	279	323	239	312	203	307	194	240	430	464	288	397
20 Estimate	6 336	314	308	290	276	230	306	305	400	213	267	338	226	296	207	300	212	247	430	474	298	399
21 INTERTILLED CROPS																						
22 1940	2 869	136	128	128	131	102	122	140	174	85	117	147	131	152	101	145	88	106	198	218	120	202
23 County Planning	2 801	141	128	133	124	100	131	136	170	78	120	132	128	150	91	136	73	97	200	236	130	167
24 Est max (Pres prac)	3 548	204	176	182	171	119	103	187	228	114	152	168	139	154	118	158	129	137	198	244	161	216
25 Est max (Cons prac)	4 356	241	229	220	209	153	233	226	288	140	185	210	163	181	144	175	158	171	267	305	197	261
26 SMALL GRAINS																						
27 1940	1 643	92	108	76	82	60	121	81	145	50	58	88	32	68	35	80	42	47	136	84	67	91
28 County Planning	1 792	82	90	80	73	56	89	79	144	51	79	98	41	102	47	99	57	72	132	114	93	114
29 Est min (Pres prac)	1 179	61	59	58	55	47	59	61	81	37	49	63	36	54	35	48	35	44	86	84	52	75
30 Est min (Cons prac)	1 236	63	60	59	56	49	59	62	83	38	49	70	36	61	37	54	36	45	89	92	56	81
31 SOIL CONSERVING CROPS																						
32 1940	2 137	80	61	103	61	69	58	88	82	103	116	136	95	115	75	106	84	117	109	183	141	155
33 County Planning	1 661	78	78	76	75	60	85	90	82	89	80	93	70	60	65	72	64	71	98	114	65	116
34 Est min (Pres prac)	1 609	49	73	50	64	54	57	91	62	66	107	51	88	54	94	48	66	146	146	85	108	
35 Est min (Cons prac)	744	10	19	11	28	14	17	29	35	33	58	26	54	26	71	18	31	74	77	45	57	
36 APPROX POST-WAR ADJUSTMENT																						
37 Intertilled crops	-747	-63	-48	-49	-47	-19	-62	-51	-58	-36	-32	-36	-11	-4	-27	-22	-56	-40	2	-8	-31	-49
38 Small grains	613	21	31	22	18	9	30	18	63	14	30	35	5	48	12	51	22	28	46	30	41	39
39 All hay and pasture	165	44	17	30	32	11	36	35	-2	22	0	3	5	-47	19	-18	36	0	-50	-19	-11	22

Note For abbreviations see page 121

TABLE 13 1940 ACREAGES COUNTY PLANNING BOARD RECOMMENDATIONS WAR ESTIMATES AND APPROXIMATE POST-WAR ADJUSTMENTS—SOUTHERN PASTURE AREA (THOUSANDS OF ACRES)

County	All counties	Guthrie	Jefferson	Lee	Wapello	Adair	Adams	Appanoose	Clarke	Davis	Decatur	Lucas	Madison	Marion	Monroe	Ringgold	Taylor	Union	Van Buren	Warren	Wayne
	Erosion class	B	B	B	B	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
1 Land area	6 411	381	276	327	274	367	283	328	274	321	341	278	360	360	276	346	338	273	308	365	335
2 Land in farms	5 852	350	252	281	246	341	248	306	252	295	314	251	328	326	252	314	320	250	283	331	312
3 Woodland P & NP	702	33	32	74	36	10	13	46	28	42	44	45	37	38	40	22	20	19	74	25	24
4 AGRICULTURAL LAND																					
5 1940	5 123	304	223	244	205	329	240	248	223	256	255	206	297	279	200	295	294	229	212	297	287
6 County Planning	5 152	318	219	207	208	331	236	262	223	245	253	208	296	292	208	292	310	231	223	300	290
7 Estimate	5 148	317	220	207	209	330	235	260	224	253	270	206	292	289	212	292	300	230	209	305	288
8 PERMANENT PASTURE																					
9 1940	1 074	50	64	72	48	69	55	42	56	50	40	35	88	56	42	39	41	84	56	72	35
10 County Planning	1 702	71	73	47	64	101	74	101	82	104	136	64	105	74	79	101	103	87	65	76	95
11 Estimate	1 512	68	68	49	65	90	70	70	75	90	95	62	100	75	80	75	65	70	70	90	85
12 ALL HAY AND PASTURE																					
13 1940	3 195	135	135	146	120	177	137	188	149	189	181	139	171	152	138	200	172	147	144	173	202
14 County Planning	2 932	153	121	103	114	180	124	165	132	161	184	119	161	144	130	182	170	136	127	146	180
15 Est min (Pres prac)	2 481	143	94	92	90	180	112	125	92	138	148	101	157	127	115	135	126	114	102	146	135
16 Est min (Cons prac)	2 193	114	90	85	93	150	91	115	95	129	140	88	126	105	110	125	100	94	97	121	125
17 ROTATION LAND																					
18 1940	4 049	254	159	172	157	260	185	206	167	206	215	171	209	223	158	256	253	165	156	225	252
19 County Planning	3 450	247	146	160	144	230	162	161	141	141	117	144	191	218	129	191	207	144	158	224	195
20 Estimate	3 636	249	152	158	144	240	165	190	149	163	175	144	192	214	132	217	235	160	139	215	203
21 INTERTILLED CROPS																					
22 1940	1 337	114	61	65	60	104	71	43	50	49	51	48	93	87	45	62	82	59	48	91	54
23 County Planning	1 202	97	61	63	52	91	69	54	52	49	39	49	78	86	43	67	84	56	55	84	63
24 Est max (Pres prac)	1 917	123	92	80	80	103	90	97	101	82	87	77	97	121	68	112	127	82	77	116	105
25 Est max (Cons prac)	2 268	154	100	90	89	136	113	110	101	94	99	92	128	145	77	128	156	105	85	143	123
26 SMALL GRAINS																					
27 1940	501	55	27	33	25	48	32	17	24	18	23	19	33	40	17	33	40	23	20	33	31
28 County Planning	928	68	37	41	43	59	43	43	39	35	30	40	57	62	35	43	56	39	41	70	47
29 Est min (Pres prac)	750	51	34	35	30	47	33	38	31	33	35	28	38	41	29	45	47	34	30	43	48
30 Est min (Cons prac)	687	49	30	32	27	44	31	35	28	30	31	26	38	39	25	39	44	31	27	41	40
31 SOIL CONSERVING CROPS																					
32 1940	2 121	85	71	74	72	108	82	146	93	139	141	104	83	96	96	161	131	83	88	101	167
33 County Planning	1 230	82	48	56	50	79	50	64	50	57	48	55	56	70	51	81	67	49	62	70	85
34 Est min (Pres prac)	969	75	26	43	34	90	42	55	17	48	53	39	57	52	35	60	61	44	32	56	50
35 Est min (Cons prac)	681	46	22	36	28	60	21	45	20	39	45	26	26	30	30	50	35	24	27	31	40
36 APPROX POST-WAR ADJUSTMENT																					
37 Intertilled crops	-625	-26	-31	-17	-28	-12	-21	-43	-49	-33	-48	-28	-19	-35	-25	-45	-43	-26	-22	-32	-42
38 Small grains	178	17	3	6	13	12	10	5	8	2	-5	12	19	21	6	-2	9	5	11	27	-1
39 All hay and pasture	451	10	27	11	15	0	12	40	40	23	36	18	4	17	15	47	44	22	25	0	45

Note For abbreviations see page 121

TABLE 14 1940 ACREAGES, COUNTY PLANNING BOARD RECOMMENDATIONS, WAR ESTIMATES, AND APPROXIMATE POST-WAR ADJUSTMENTS—EASTERN LIVESTOCK AREA (THOUSANDS OF ACRES)

County	All counties	Grundy	Benton	Cedar	Clinton	Des Moines	Henry	Iowa	Jasper	Linn	Louis	Mahaska	Marshall	Muscatine	Poweshiek	Scott	Tama	Washington	Jackson	Johnson	Keokuk
		A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	C	C
1 Land area	7 333	321	456	365	442	262	273	374	467	454	253	364	366	276	373	291	459	362	414	390	371
2 Land in farms	6 659	300	422	334	399	234	250	348	429	401	222	335	338	230	345	263	421	326	363	351	339
3 Woodland P & NP	538	2	21	23	21	36	30	33	23	39	31	27	18	25	11	15	25	30	64	35	29
4 AGRICULTURAL LAND																					
5 1940	6 130	298	403	317	372	196	228	317	404	361	194	317	317	215	329	241	301	302	308	327	293
6 County Planning	6 116	300	402	311	378	201	224	319	399	366	100	309	325	214	340	248	308	298	267	320	307
7 Estimate	6 123	298	402	311	378	199	220	315	406	362	191	308	320	214	334	248	306	297	209	316	309
8 PERMANENT PASTURE																					
9 1940	901	36	44	28	30	40	60	28	83	60	33	77	40	26	33	30	43	61	72	38	39
10 County Planning	1 263	42	55	41	67	45	70	87	88	84	32	94	59	26	90	40	88	68	47	50	90
11 Estimate	1,042	36	40	35	45	43	60	45	85	71	30	75	47	30	45	40	60	66	75	35	79
12 ALL HAY AND PASTURE																					
13 1940	3 082	115	174	154	191	94	127	181	205	165	88	169	138	97	178	109	193	161	211	177	155
14 County Planning	2 906	131	174	140	180	95	118	172	184	170	76	161	146	89	175	105	188	145	143	155	159
15 Est min (Pres prac)	2 313	85	117	100	124	77	82	141	176	133	62	128	130	64	117	78	134	122	165	128	150
16 Est min (Cons prac)	1 762	46	73	67	86	68	78	112	134	96	48	110	98	46	78	50	94	106	148	94	121
17 ROTATION LAND																					
18 1940	5 229	262	359	289	342	156	168	289	321	301	161	240	277	189	296	211	348	241	236	289	254
19 County Planning	4 853	258	347	270	311	156	154	232	311	282	158	215	266	188	260	208	310	230	220	270	217
20 Estimate	5 081	262	362	276	333	156	160	270	321	291	161	233	273	184	289	208	336	231	224	281	230
21 INTERTILLED CROPS																					
22 1940	2 071	127	147	107	123	73	76	88	133	137	78	101	122	87	102	82	130	100	58	103	97
23 County Planning	1 980	112	139	107	119	63	65	87	134	121	68	88	113	83	97	86	127	99	80	102	90
24 Est max (Pres prac)	2 797	166	218	155	187	92	102	114	172	171	100	130	138	114	164	131	200	123	83	128	111
25 Est max (Cons prac)	3 341	205	258	185	221	102	109	142	212	204	115	154	167	133	204	151	238	146	99	160	136
26 SMALL GRAINS																					
27 1940	977	56	82	56	58	29	25	48	66	59	28	47	57	31	49	50	68	41	39	47	41
28 County Planning	1 230	57	89	64	79	43	41	60	81	75	46	60	66	42	68	57	83	54	44	63	58
29 Est min (Pres prac)	1 013	47	69	56	67	30	36	60	58	58	29	50	52	36	53	39	62	52	51	60	48
30 Est min (Cons prac)	1,020	47	71	59	71	29	33	61	60	62	28	44	55	35	52	38	64	45	52	62	52
31 SOIL CONSERVING CROPS																					
32 1940	2 181	79	130	126	161	54	67	153	122	105	55	92	98	71	145	79	150	100	139	139	116
33 County Planning	1 643	89	119	99	113	50	48	85	96	86	44	67	87	63	85	65	100	77	96	105	69
34 Est min (Pres prac)	1 271	49	77	65	79	34	22	96	91	62	32	53	83	34	72	38	74	56	90	93	71
35 Est min (Cons prac)	720	10	33	32	41	25	18	67	49	25	18	35	51	16	33	19	34	40	73	59	42
36 APPROX POST-WAR ADJUSTMENT																					
37 Intertilled crops	-817	-54	-77	-48	-68	-29	-37	-27	-38	-50	-32	-42	-25	-31	-67	-45	-73	-24	-3	-26	-21
38 Small grains	217	10	20	8	12	13	5	0	23	17	17	10	14	6	15	18	21	2	-7	3	10
39 All hay and pasture	593	46	57	40	56	18	36	31	8	37	14	33	16	25	58	27	54	23	-22	27	9

Note For abbreviations see page 121

APPENDIX

CLASSIFICATION OF SOILS OF IOWA

A PRAIRIE SOILS AND CLOSELY RELATED KINDS

- Group 1 Prairie soils formed from coarse loess
(Marshall Knox area)
- Group 2 Prairie soils formed from medium textured loess and alluvium
(Marshall Knox, Tama Shelby, Tama, Tama Muscatine areas)
- Group 3 Prairie soils formed from fine-textured materials
(Grundy Shelby, Tama Shelby areas)
- Group 4 Prairie soils formed from medium textured till
(Carrington Clyde, Clarion Webster, Tama Shelby areas)
- Group 5 Sandy Prairie soils with low water holding capacity
(All regions, especially Clarion Webster, Carrington Clyde areas)
- Group 6 Sandy Prairie soils with fair water holding capacity
(All regions of Prairie and Prairie-like soils)
- Group 7 Prairie soils that are shallow over bedrock
(Tama, Carrington Clyde, Grundy Shelby areas)

B SOILS OF THE PRAIRIE-FOREST TRANSITION BELTS

- Group 8 Prairie-forest transition soils formed from medium textured loess
(Fayette, Tama and Tama-Muscatine areas)

C GRAY-BROWN PODZOLIC SOILS AND CLOSELY RELATED KINDS
(FORESTED AREAS)

- Group 9 Gray Brown Podzolic soils formed from medium textured parent material
(Fayette, Clinton Lindley Weller, Tama areas)
- Group 10 Gray Brown Podzolic soils formed from fine textured parent materials
(Clinton Lindley Weller, Grundy-Shelby areas)
- Group 11 Sandy Gray Brown Podzolic soils with fair water holding capacity
(Fayette, Clinton Lindley Weller areas)
- Group 12 Gray Brown Podzolic soils that are shallow over bedrock
(Fayette, Clinton Lindley Weller areas)

D DARK-COLORED SOILS WITH RESTRICTED TO POOR DRAINAGE
(WIESENBOEDEN, CHIEFLY)

- Group 13 Level to gently sloping, dark colored soils with slow to fair drainage
(Clarion Webster, Grundy Shelby, Marshall Knox, Tama Muscatine areas)

- Group 14 Level, dark colored soils with restricted drainage
(Carrington Clyde, Clarion-Webster, Tama, Marshall Knox areas)
- Group 15 Level to depressed, dark colored soils with poor drainage
(All regions of Prairie and Prairie-like soils)

E CLAYPAN SOILS (PIANOSOILS) OF UPLANDS AND TERRACES

- Group 16 Level to gently sloping, light colored to medium colored soils with slow drainage
(Regions in eastern half of Iowa, especially)
- Group 17 Level, light colored soils with poor internal drainage
(Clinton-Lindley-Weller, Grundy Shelby areas)

F DRY SANDS SOILS CONSISTING ALMOST WHOLLY OF SAND

- Group 18 Dark colored sands with extremely low water holding capacity
(Areas of Prairie and Prairie-like soils in all parts of Iowa)
- Group 19 Light colored sands with extremely low water holding capacity
(Areas of Gray Brown Podzolic soils, chiefly in eastern third of Iowa)

G LITHOSOLS SHALLOW OR STONY SOILS

- Group 20 Shallow or stony soils
(Scattered through all regions but occurring especially near large streams)

H ALLUVIAL SOILS SOILS OF THE BOTTOMLANDS

- Group 21 Sandy soils with extremely low water-holding capacity
(All regions, especially in the valleys of large rivers)
- Group 22 Dark colored sandy soils with fair water-holding capacity
(All regions, especially along large rivers)
- Group 23 Light colored sandy loams with fair water holding capacity
(All regions of Gray Brown Podzolic soils)
- Group 24 Dark colored soils with adequate water holding capacity and drainage
(All regions in Iowa)
- Group 25 Light colored loams with generally adequate drainage
(All regions, especially in those of Gray Brown Podzolic soils)
- Group 26 Dark colored clay loams and clays with slow drainage
(All regions, especially in valleys of large rivers)
- Group 27 Organic soils

ALPHABETICAL LIST OF SOIL TYPES WITH SOIL
GROUP NUMBERS

Afton silty clay loam.....	14	Dickinson loamy sand.....	18
Ames fine sandy loam.....	16	Dickinson sand.....	18
Benoit loam.....	14	Dickinson sandy loam.....	5
Benoit silt loam.....	14	Dodgeville fine sandy loam.....	7
Benoit silty clay loam.....	15	Dodgeville loam.....	7
Bertrand loam.....	11	Dodgeville sandy loam.....	7
Bertrand sandy loam.....	11	Dodgeville silt loam.....	7
Bertrand silt loam.....	9	Shallow phase.....	20
Boone fine sandy loam.....	5	Dow silt loam*.....	1
Bremer loam.....	14	Downs silt loam.....	8
Bremer silt loam.....	14	Dubuque silt loam.....	12
Bremer silty clay loam.....	15	Ddina silt loam.....	16
Buckner coarse sand.....	18	Fargo silt loam.....	14
Buckner coarse sandy loam.....	18	Fargo silty clay loam.....	15
Buckner fine sand.....	18	Fayette fine sand.....	19
Buckner fine sandy loam.....	5	Fayette sand.....	19
Buckner gravelly sandy loam.....	5	Fayette silt loam.....	9
Buckner loam.....	5	Shallow phase.....	12
Buckner loamy fine sand.....	18	Fayette very fine sandy loam.....	11
Buckner loamy sand.....	18	Floyd silt loam.....	14
Buckner sand.....	18	Garwin silty clay loam.....	14
Buckner sandy loam.....	5	Gasconade loam.....	20
Buckner silt loam.....	2	Gosport fine sandy loam.....	20
Buckner very fine sandy loam.....	5	Gosport silt loam.....	20
Burchard loam*.....	4	Genesee fine sandy loam.....	23
Calhoun silt loam.....	17	Genesee silt loam.....	25
Carrington fine sand.....	18	Genesee silty clay loam.....	25
Carrington fine sandy loam.....	6	Genesee very fine sandy loam.....	23
Carrington gravelly loam.....	6	Grundy clay loam.....	13
Carrington loam.....	4	Grundy silt loam.....	13
Carrington loamy fine sand.....	18	Grundy silty clay loam.....	13
Carrington sand.....	18	Hagerstown silt loam.....	20
Carrington sandy loam.....	6	Haig silt loam.....	3
Carrington silt loam.....	4	Hamburg very fine sandy loam.....	1
Carrington very fine sandy loam.....	6	Hancock loam.....	6
Cass fine sandy loam.....	21	Hancock silt loam.....	6
Cass loam.....	22	Hancock very fine sandy loam.....	5
Cass sand.....	21	Haynie loamy fine sand*.....	21
Cass sandy loam.....	21	Haynie silt loam*.....	23
Cass silt loam.....	24	Haynie very fine sandy loam*.....	23
Cass silty clay loam.....	24	Humeston silt loam.....	24
Cass very fine sandy loam.....	22	Jackson fine sandy loam.....	11
Chariton silt loam.....	16	Jackson silt loam.....	16
Chaseburg silt loam.....	25	Judson fine sandy loam.....	6
Chelsea loamy fine sand.....	19	Judson loam.....	24
Clarinda silty clay loam*.....	3	Judson loamy sand.....	18
Clarion fine sand.....	18	Judson silt loam.....	24
Clarion fine sandy loam.....	6	Knox fine sand.....	19
Clarion loam.....	4	Knox fine sandy loam.....	19
Clarion sandy loam.....	6	Knox silt loam.....	1
Clarion silt loam.....	4	LaCrosse fine sandy loam.....	5
Clinton fine sand.....	19	LaCrosse sandy loam.....	5
Clinton fine sandy loam.....	11	Lakeville sandy loam.....	5
Clinton loamy fine sand.....	19	Lamoure clay.....	26
Clinton sand.....	19	Lamoure clay loam.....	24
Clinton silt loam.....	9-10	Lamoure loam.....	24
Shallow phase.....	12	Lamoure silt loam.....	24
Clinton very fine sandy loam.....	11	Lamoure silty clay.....	26
Clyde silt loam.....	15	Lamoure silty clay loam.....	24
Clyde silty clay loam.....	15	Lindley fine sand.....	19
Conover silt loam.....	10	Lindley fine sandy loam.....	11
Crawford loam.....	20	Rough phase.....	20
Crawford silt loam.....	20	Dickinson fine sandy loam.....	5
Dickinson fine sandy loam.....	5	Dickinson loam.....	5
Dickinson loam.....	5	Dickinson loamy fine sand.....	18

Lindley loam	20	Sarpy silty clay	26
Shallow phase	20	Sarpy silty clay loam	23
Steep phase	20	Sarpy very fine sand	21
Lindley sand	19	Sarpy very fine sandy loam	23
Lindley sandy loam	11	Sawmill silty clay loam	26
Lindley silt loam	10	Sharon fine sandy loam	23
Lindley very fine sandy loam	19	Sharon silt loam	25
Marcus silt loam	13	Shelby fine sandy loam	5
Marcus silty clay loam	13	Shelby gravelly sandy loam	5
Marion silt loam	17	Shelby loam	3
Marshall silt loam	2	Shelby loamy fine sand	18
McPaul silt loam*	25	Shelby sandy loam	5
Memphis silt loam	10	Shelby silt loam	3
Memphis very fine sandy loam	11	Sioux fine sandy loam	5
Miami loam	10	Sioux loam	5
Miami silt loam	10	Sioux sandy loam	5
Millsdale fine sandy loam	7	Sioux silt loam	6
Millsdale loam	7	Sogn clay loam	7
Millsdale silt loam	7	Sogn silt loam (poorly drained phase)	20
Muck	27	Sogn loam	7
Muscatine silt loam	13	Sogn stony silt loam	20
Muscatine silty clay loam	13	Sparta fine sand	18
Napier silt loam	25	Sparta sand	18
Olmitz loam	24	Steinauer loam*	4
Olmitz silt loam	24	Tama fine sandy loam	6
O'Neill coarse sandy loam	18	Tama loamy fine sand	18
O'Neill fine sand	18	Tama silt loam	2
O'Neill fine sandy loam	5	Light colored phase	8
O'Neill loam	5	Thurston loam	5
O'Neill loamy fine sand	18	Thurston loamy sand	18
O'Neill loamy sand	18	Thurston sandy loam	18
O'Neill sand	18	Thurman loamy fine sand	18
O'Neill sandy loam	5	Traer silt loam	16
O'Neill silt loam	6	Union silt loam	20
Peat	27	Union silty clay loam	20
Pershing silt loam	10	Union stony loam	20
Pierce fine sandy loam	5	Wabash clay	26
Pierce loam	5	Wabash clay loam	24
Pierce sandy loam	5	Wabash fine sandy loam	22
Plainfield fine sandy loam	11	Wabash loam	24
Plainfield loamy fine sand	19	Wabash sandy loam	22
Plainfield loam	11	Wabash silt loam	24
Plainfield sand	19	Wabash silty clay	26
Plainfield sandy loam	11	Wabash silty clay loam	24-26
Putnam silt loam	17	Wabash very fine sandy loam	22
Ray silt loam	25	Waukesha fine sandy loam	6
Rockton silt loam*	7	Waukesha loam	2
Rough broken land	20	Waukesha sandy loam	6
Sarpy fine sand	21	Waukesha silt loam	2
Sarpy fine sandy loam	21	Webster clay loam	14
Sarpy loam	23	Webster loam	13
Sarpy loamy sand	21	Webster silt loam	13
Sarpy sand	21	Webster silty clay loam	14
Sarpy sandy loam	21	Weller silt loam	10
Sarpy silt loam	23		

*Tentative name