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THE NEBRASKA AGRICULTURAL CLIMATE SITUATION COMMITTEE

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ABSTRACT

The Nebraska Agricultural Climate Situation Committee consisting of an interdisciplinary group of extension specialists provides up-to-date information and advice on seasonal changes in crop/weather conditions. The committee meets each Monday during the growing season to review:

1. Maps and tabular data developed by a computer program CIS /Crop Weather Information System/ that is linked to a network of weather stations and computer terminals in county agent offices.
2. Insect, plant disease and weed surveys.
3. Weekly weather and crop reports from the State/Federal System.
4. Weather outlooks from the National Weather Service.
5. Climate probabilities.

Situation reports and advisories are released to newspapers, radio and T.V. stations and to county agents via electronic mail.

THE NEBRASKA AGRICULTURAL CLIMATE SITUATION COMMITTEE

The Agricultural Climate Situation Committee was established in the spring of 1981 to provide up-to-date information and advice on current seasonal changes in climate as related to Nebraska's agricultural industry. The discussion to follow will show you why the

committee was established, how it was formed and operates and examples of what type of information and advice it provides.

WHY THE COMMITTEE WAS FORMED

Nebraska produces 1,000,000,000 bushel of grain, 7,000,000 tons of hay and 11,000,000 head of livestock annually with a total value of $6,000,000,000 /Table 1/. Agriculture is the largest industry in Nebraska.

TABLE 1.
Nebraska Agriculture

	Production	Value
Grain	1,000,000,000 Bushel	$2,500,000,000
Hay		
Cattle and Pigs	11,000,000 Head	$3,500,000,000
		$6,000,000,000

The importance of weather to agricultural production and the economic well being of the state can readily be seen by comparing two adjacent years; 1973, a year with ample rainfall and 1974, a year of drought /Table 2/. In 1973 Nebraska received 29.2 inches of precipitation. The corn yield averaged 94 bushel per acre and 554,600,000 bushel were produced. Only 15.8 inches of precipitation fell in 1974. The corn yield dropped to 68 bu. per acre and only 380,800,000 bu. were grown.

TABLE 2.
Production related to weather

Average Precipitation	29.2 In.	15.8 In.
Corn Yield	94 Bu.	68 Bu.
Corn Production	554,600,000 Bu.	380,800,000 Bu.

The following are some important considerations concerning weather and agriculture in Nebraska:

1. Precipitation and temperature decrease from east and west.

2. These patterns shift eastward or westward from season to season.
3. Eighty per cent of the precipitation occurs during the growing season as scattered and variable thunderstorms.
4. Cropping patterns are complex.
5. Cropping systems are complex in their effect on soil moisture supplies.

The effect of shifting precipitation patterns across the state can be seen in Table 3. Shown are the precipitation and yield of dryland and irrigated corn at different crop reporting districts in 1973 and 1974. In 1973, 39 inches of precipitation occurred in the east, 30.7 inches in central Nebraska and 20.5 inches in the west. Yield of dryland corn in these districts were 87, 61 and 31 bushel per acre, respectively. The dry weather shifted eastward in 1974 so that the eastern district received and amount only equal to that obtained in the west the previous year. Dryland corn yield in the east dropped 26 bushels per acre. As may be seen, irrigated corn yield are more stable.

TABLE 3.
Corn production 1973 and 1974

	1973			1974		
	Precip. Inches	Corn Yield /Bu./ Dryland	Irrigated	Precip. Inches	Corn Dryland	Yield /Bu./ Irrigated
East	39.0	87	116	20.5	26	101
Central	30.7	61	100	16.5	26	106
West	20.5	31	93	11.9	30	88

The complex cropping patterns in Nebraska are shown in Figures 1-6. The darkened areas are the counties where 80% of the acreage of various crops are concentrated. For example, dryland corn and soybeans are primarily grown in the northeast while most irrigated corn is along the Platte River in central Nebraska and at the edge of the Sandhills. The wheat crop is produced along the southern part of Nebraska and at the edge of the Sandhills. The wheat crop is produced along the southern part of Nebraska next to Kansas and in the dry western part of the state. Wild hay comes from the

State of Nebraska

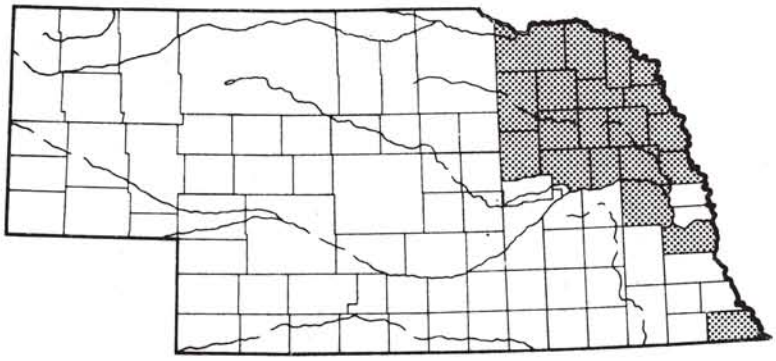

Fig. 1. Dryland Corn

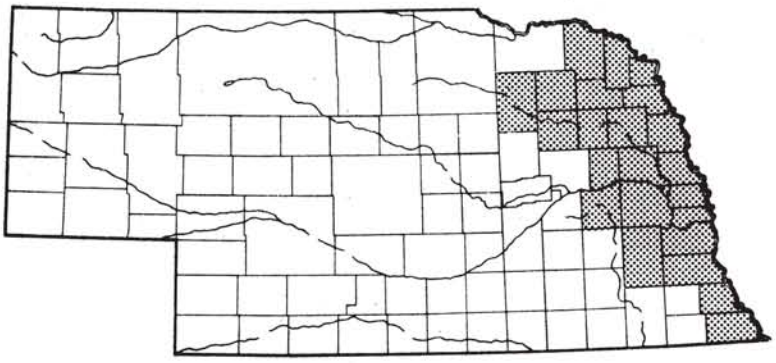

Fig. 2. Soybeans

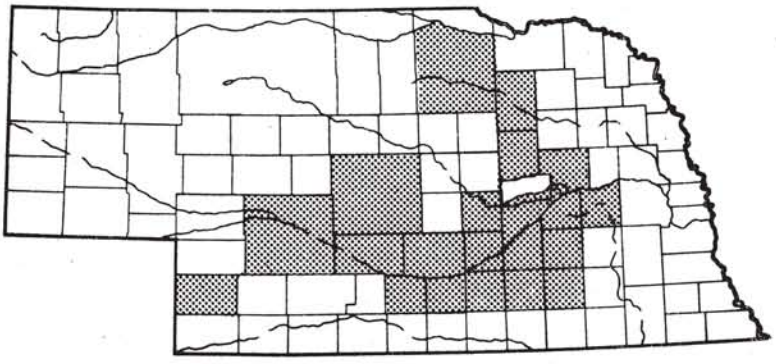

Fig. 3. Irrigated Corn

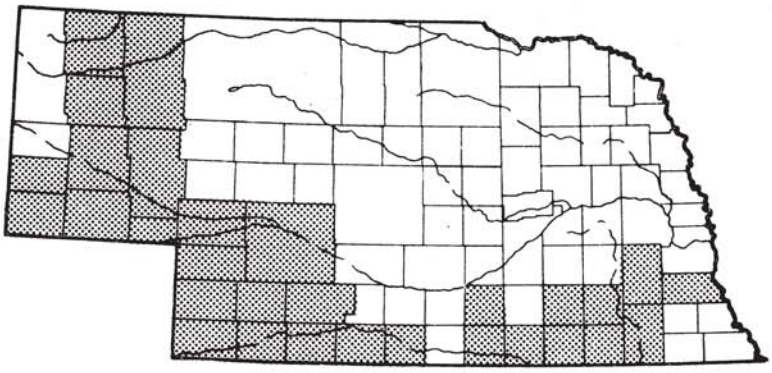

Fig. 4. Winter Wheat

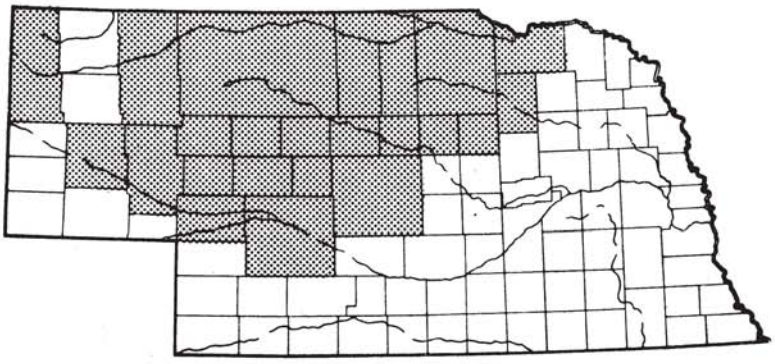

Fig. 5. Wild Hay

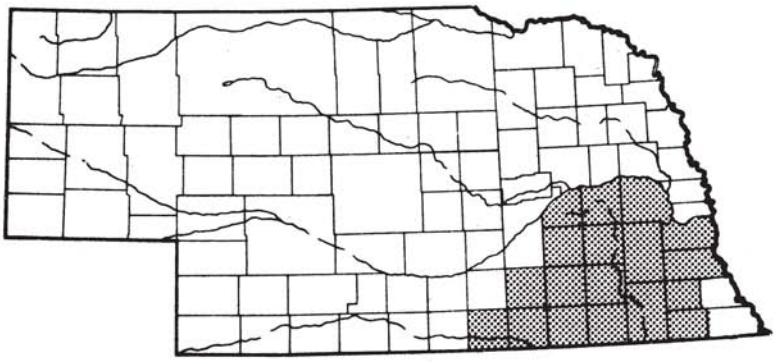

Fig. 6. Sorghum

Sandhills in north central Nebraska and sorghum is grown in the southeast where high temperature stress is more frequent than in other areas.

The effect of cropping system on moisture availability can be seen in Figure 7 and 8. These bar graphs show the amount of precipitation for a recharge period when no crop is grown and during the growing season. Under a continuous cropping system for wheat,

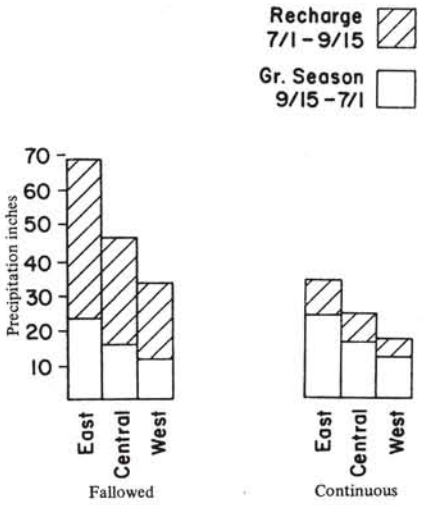

Fig. 7.
Precipitation Available for Winter Wheat in Different Cropping Systems

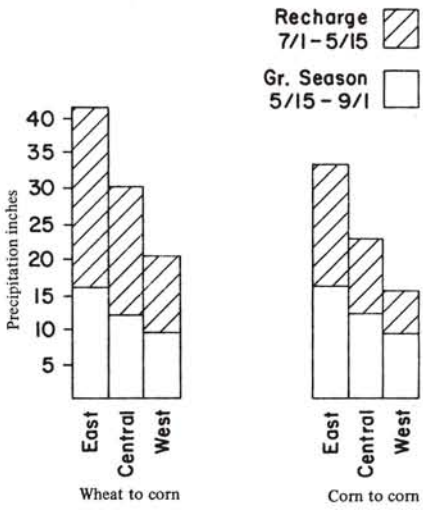

Fig. 8.
Precipitation Available for Corn in Different Cropping Systems

eastern Nebraska receives twice as much precipitation as does the west, 30 vs. 15 inches. If the field is fallowed one year as is the case in the west, the wheat crop there receives as mush precipitation as in the east.

These tables and figures illustrate the importance of weather data for Nebraska's agriculture. Unfortunately, the state climate office which managed the network of cooperative volunteer observers that served agriculture so long was closed in 1973. In contrast with the synoptic stations at airports in larger cities, the cooperative stations in small rural communities were more representative of agriculture.

Following are some of the agencies that began to receive requests and attempted to answer requests for agricultural weather information after the state climate office was closed.

1. National Weather Service Forecast Office
2. State/Federal Crop-Livestock Reporting Service
3. Soil Conservation Service
4. Private commercial companies
5. Institute of Agriculture and National Resources of University of Nebraska where calls were directed to:
   a. Conservation and Survey Division
   b. Agronomy Department
   c. Agricultural Engineering Department
   d. Horticulture Department
   e. District Research/Extension Stations
   f. Geography Department

None of these groups was sufficiently staffed and/or trained to provide the information needed and there was no well defined responsibility as to what or how information should be provided.

However, certain resources were available from which improved agricultural weather information could be provided. The following are some of the resources available in Nebraska and in other states as well:

1. Current weather data networks
   a. Cooperative climate stations
   b. Synoptic forecast stations
   c. Automated micrometeorology
2. Historic climatic data to develop daily weather normals probabilities
3. Centralized state computer with terminals in county offices - AGNET /see chapter by D. Wilhite, this volume/
4. Agroclimatic parameters and models for computer software
5. Agricultural Extension Specialists
6. Information Dissemination System

HOW THE SYSTEM OPERATES

Two systems, Irrigation Scheduling and the Agricultural Climate Situation Committee were formed to provide for the need for improved weather information for agriculture in Nebraska. The following discussion concerns the Agricultural Climate Situation Committee of the Agricultural Extension Service /of the State of Nebraska/. It is composed of the following specialists:

Agronomists	Journalists
Animal Scientist	Plant Pathologist
Climatologists-Meteorologists	Rangeland Specialist
Entomologists	Soil Scientist
Forester	Weed Control Specialist
Horticulturalist	State-Federal Agricultural Statistician

The committee meets 1:00 P.M. each Monday during the growing season and reviews information showing crop-weather changes the previous week along with probabilities and future outlooks. Following are some of the information that is reviewed:

1. Current computer maps and tables from the computer program CIS-Crop Weather Information System
2. Weekly weather and crop reports
3. Insect plant disease and weed surveys
4. Comments from district and county agents via electronic mail
5. Monthly and seasonal weather outlooks
6. Climate probabilities

The committee prepares a release of conditions and advisories to the press, radio tape, T.V. and back to county agents via electronic mail.

INFORMATION AND ADVICE PROVIDED

Following are excerpts from releases made during the 1982 season:

May 19, 1982

Because of wet weather and inability to plant, seven to ten percent of the seasons temperature has been lost and unavailable to

corn. Thus, producers should begin to consider planting earlier-maturing /2450 GDD or 100-day/ hybrids.

These hybrids could be a good risk if they are in the ground by May 30 for areas south of a line running from Blair to Columbus, through Grand Island to Trenton.

Wet weather has cultured tan spot and septoria leaf disease on wheat.

Some growers may want to consider fungicide application. Chemicals registered for this use are manzate 200 or dithane M-45.

It is recommended the fungicide be sprayed from aircraft at two pounds per acre in a minimum of 3 gallons of water. Applications should be seven days apart with the first going on in the early boot stage. It cost $9 to $10 per acre to apply the fungicide once.

June 7, 1982

Because of below-normal temperatures in May, crop progress has been delayed three to six days.

Because of the shortened growing season and shorter period for weed growth, rates of the grass herbicides, lasso and dual, can be cut back by 25 percent under most conditions.

July 6, 1982

Continued high moisture favors infestations of stable flies in feed lots and dairies.

Producers should consider harrowing or discing potential breeding areas to dry them out. Wet feed, hay, straw and strawy manure are all potential breeding areas for flies.

Reports of cattle deaths Saturday prompted the committee to remind cattlemen not to handle or treat cattle in any way when the temperature-humidity index is likely to be in the danger zone.

Cattle should be kept spread out, but shouldn't be handled in any other manner including dipping. Some reported deaths Saturday occurred after dipping.

July 26, 1982

Farmers who lost corn or soybeans to hail may choose to grow forage crops in the remaining season.

Corn ground treated with atrazine can be used to grow forage sorghum, sudan, or sorghum-sudan hybrids.

Soybean ground treated with treflan can be planted again to soybeans and harvested for hay or silage, or sunflowers could be grown for silage. Soybean land treated with sencor can not be safely planted to sunflowers.

Another alternative for farmers who have already signed up for the reduced acreage program for corn or soybeans is to comply with the August 15 participation deadline.

September 13, 1982

Seed wheat needs a resting period after harvest to break dormancy. Normally this is not a problem, but much of the seed wheat harvested was late this year. Growers who already have planted may be anxious about germination. Because of the wheat scab scare in eastern Nebraska earlier this summer, farmers are looking for other sources of wheat seed.

Farmers in eastern Nebraska who buy non-certified bin run seed from the western part of the state may be buying a long-term headache. Such seed is likely to contain jointed goat grass and wild buckwheat, two troublesome weeds, rarely found in eastern Nebraska.

In most of eastern Nebraska, moisture is favorable and there is no reason to plant before the recommended dates in the last week of September. There will be reduced incidence of insects, disease and weeds and the possible dormancy problem by delaying planting until the recommended time.

Conclusions

The Nebraska Agricultural Climate Situation Committee is a single source of coordinated information concerning seasonal changes in crop-weather conditions. Information releases are carried in daily and weekly newspapers in agricultural magazines, on radio stations and television on certain occasions. Following the weekly meetings, situation reports are entered into the AGNET system for immediate availability for county agricultural agents and other user who have computer terminals linked into the sytem.