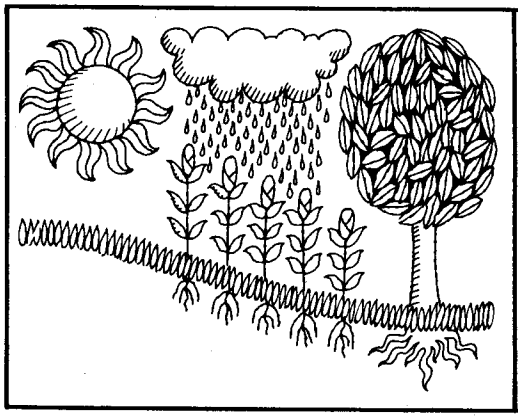
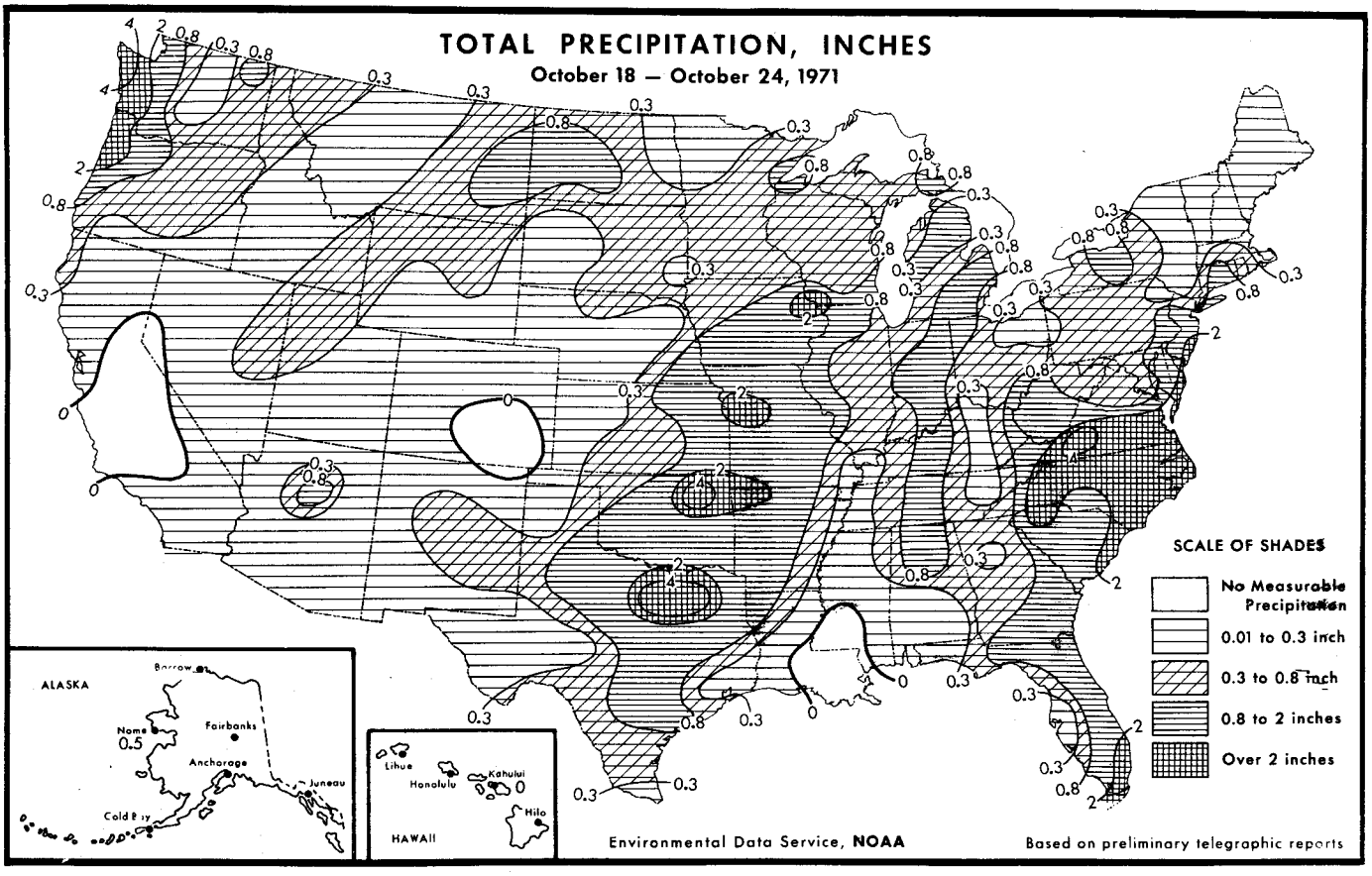


Weekly Weather & Crop Bulletin

U. S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
Environmental Data Service

U. S. DEPARTMENT OF AGRICULTURE
Statistical Reporting Service

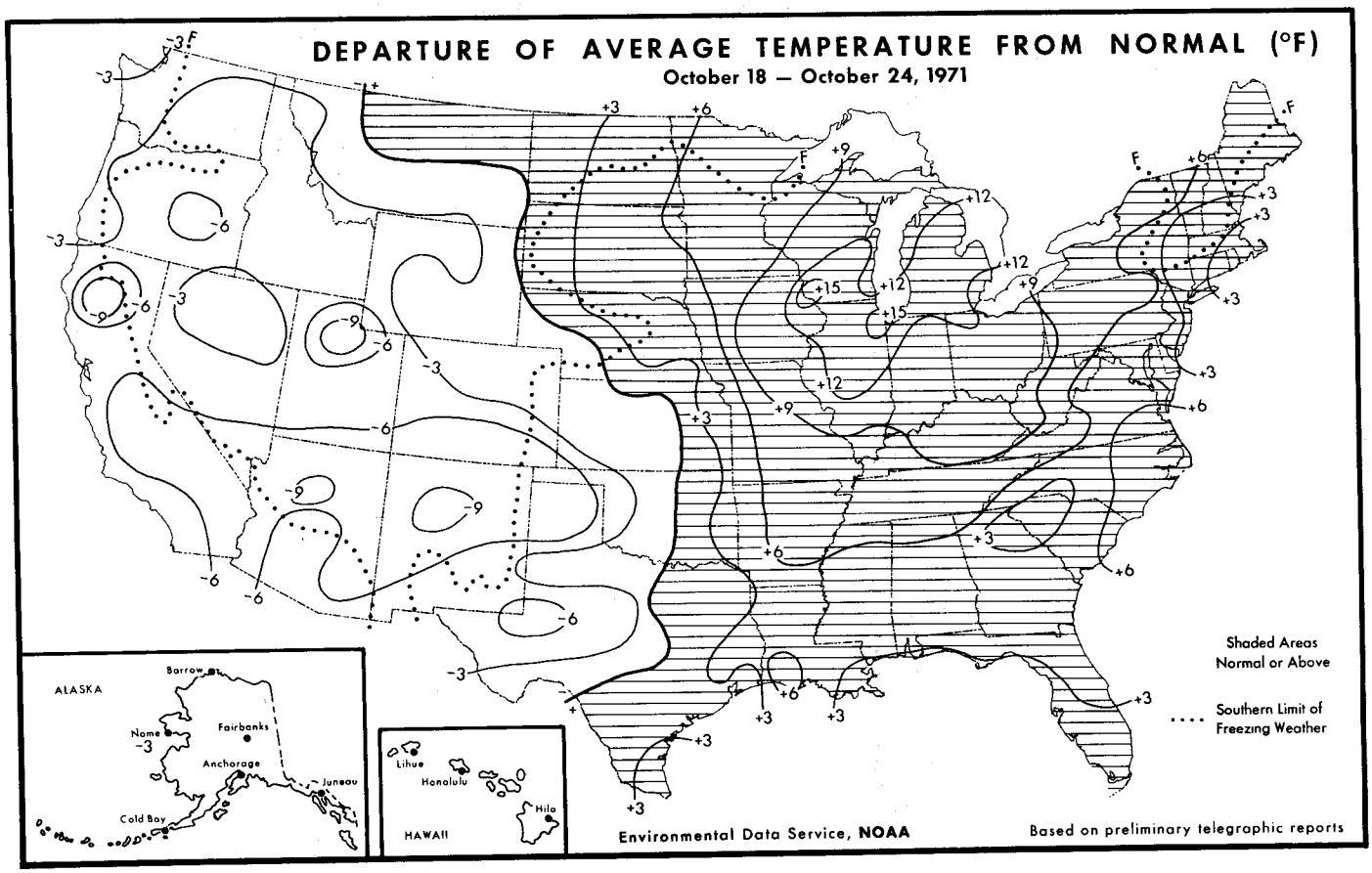
Volume 58, No. 43 Edited by Lucius W. Dye October 25, 1971 Washington, D. C.



HIGHLIGHTS: The West continued cool and warm weather prevailed over the East. Some heavy rains fell in northeastern Texas, in southwestern Virginia and over much of North Carolina.

PRECIPITATION: Snow fell in the Rocky Mountains and cold rain over the western Great Plains in connection with a Low pressure area centered over northeastern Colorado Monday, October 18. Two inches of snow fell at Flagstaff, Ariz., Monday morning bringing their total snow depth to 11 inches. Rainfall amounts ranged widely from less than 0.25 inch to more than 3.00 inches. Some of the larger amounts were: Bismarck, N. Dak., 1.62 inches; Russell, Kans., 1.66 inches; and Victoria, Texas, 3.82 inches. Rain also fell in the warm humid air along the Gulf. About midweek, rain began spreading inland along the north Pacific Coast in connection with an approaching offshore disturbance.

Heavy rains fell from Missouri to Texas at midweek. Daily totals at numerous stations in northeastern Texas exceeded 3.00 inches. Fort Worth received 2.64 inches Tuesday. Dallas received 2.55 in 24 hours; 1.32 inches in 1 hour. The heavy rains caused important rises along the rivers and some flooding. Lighter rains also fell at midweek in Wisconsin, Iowa, Illinois, and over the Atlantic coastal States from Virginia to Florida. Light rains fell almost daily in the Pacific Northwest with weekly totals ranging from 0.25 inch or less over inland sections to over 4.00 inches near Puget Sound. Snow fell in the mountains above about 5,000 or 6,000 feet. Mod-



erate to heavy rains fell over the eastern half of the Nation late in the week and over the weekend.

Weekly rainfall totals along the Atlantic Coast ranged from 1.00 to more than 3.00 inches being heaviest in Virginia and North Carolina.

TEMPERATURE: Early in the week, a Low pressure center moved from northeastern Colorado to Manitoba. Cold air whistled southward west of the system and warm, humid, but pleasant weather prevailed over the eastern half of the Country. On Monday, maximum temperatures over the West ranged from the 40's over the Great Basin to the 60's in the Southwestern Deserts. The mercury climbed to 65° at Phoenix, Ariz., and to only 31° at Flagstaff. On Tuesday morning, Flagstaff, with a temperature of 6°, was one of the coldest spots in the Nation. This is the coldest temperature of record for Flagstaff so early in the autumn. East of the system, afternoon temperatures reached the 70's as far north as the Dakotas, 77° at Aberdeen, S. Dak., Monday afternoon. The high 70's and 80's were common from the central Great Plains to the Gulf of Mexico. New England, near the center of a High pressure area, warmed to the 60's Monday. The temperature contrast between the cold West continued through most of the week. Chicago, Ill., warmed to 84° Tuesday afternoon and subfreezing weather pushed far southward into New Mexico where Roswell registered 32° Wednesday morning. The Southwest warmed at midweek. Thermal, Calif., and Phoenix, Ariz., registered 85° Thursday afternoon. The eastern third of the Nation continued unseasonally mild with minimum temperatures only slightly lower than the normal maximums. Weekly average temperatures were below normal from the Pacific Coast to the western edge of the Great Plains and above normal from the Great Plains to the Atlantic Ocean. Much of the area from Minnesota to New York and southward to Tennessee averaged 6° to 14° warmer than normal.

L. W. Dye

NATIONAL AGRICULTURAL SUMMARY

AGRICULTURAL HIGHLIGHTS: Damp weather slowed corn and soybean harvesting in the Corn Belt. * Harvest still well ahead of normal.* Rains continue to plague Texas farmers.* Wheat off to great start. * Cotton picking widespread, except Texas.

SMALL GRAINS: Moderate to heavy rains and warm fall temperatures were beneficial to wheat growth in the eastern areas of Kansas and Nebraska. General rains also gave the Oklahoma crop a boost. Only a few fields remain to be seeded in Kansas and Oklahoma. Stands are good in both States. Rains again slowed wheat and oat planting in Texas, but some headway was made. Growth of emerged acreage was excellent. Wheat prospects remain good in the Northern Great Plains, with good ground cover established in South Dakota. Colorado and Wyoming farmers also report a bright wheat outlook. Seeding is completed in the Pacific Northwest. Grains have been responding well to the wet weather. California farmers are busy seeding their fall acreage.

Planting of the 1972 wheat crop in the Corn Belt is well along. Only 10 percent of the acreage remains to be seeded. Planting is somewhat slower in the South as the growing season is longer. Moisture is sufficient east of the Mississippi River and emerged fields are off to a fast start.

CORN: Light rain, drizzle, and fog were the key words used on Corn Belt farms during the week. After 2 weeks of good harvesting weather, farmers had to be content to wait out the wet weather. Early week dampness in the western Corn Belt moved slowly eastward, and by the weekend covered the eastern Corn Belt. Harvesting made good headway early in the week in Ohio and Indiana, but ground to a halt by the weekend. Conditions were just the opposite in Nebraska and Iowa, as farmers returned to the fields after midweek. Corn pickers were parked an average of 2 to 3 days on most Corn Belt farms. Harvest progress continues well ahead of normal, but is behind last season's pace in the eastern Corn Belt. It is about equal to 1970 in the western section. Growers in Illinois, Ohio, Missouri and Kansas have about 60 percent of their crop in the crib. Many elevators in central and eastern Illinois are nearly full, while a large amount of this year's huge corn crop remains to be harvested. Iowa and Nebraska growers have about half their crop picked. South Dakota farmers have 3/4 of their crop under cover and one week of good weather will allow growers to wrap up the season.

Corn harvesting made good early week progress through the South, but was interrupted by weekend rains. Harvest progress is behind last fall due to wet fields and growers concentrating on picking cotton. Saturated fields are causing damage in the Coastal Plain area of North Carolina as downed corn is starting to rot.

SOYBEANS: Poor drying conditions made soybean combining difficult for the first time this fall in the North Central States. Farmers had to stop combining beans for a few days due to the damp weather. However, soybean combining is still from 1 week to 1 month ahead of normal and well ahead of the 1970 rate. Over 90 percent of the crop is cut in Illinois, Iowa, Nebraska and South Dakota. Combining in Minnesota and Wisconsin is late and was at a standstill a large portion of the week. Harvesting was rather slow throughout the South as farmers were waiting for beans to mature. Alabama growers are showing increased concern over the dock strike at Mobile. Many beans are molding and sprouting in North Carolina as growers are unable to enter the soggy fields.

COTTON: Cotton picking made only scant headway in Texas and continues to fall farther behind schedule. Heavy rains made fields inaccessible. Less than 1/4 of the crop is ginned, compared to 1/3 last year. Showers and high humidity halted early week picking in Louisiana, but picking resumed by the weekend. Mississippi growers took full advantage of the fine harvesting weather. Many gins were operating around the clock in Alabama and Tennessee in hopes of reducing their stockpiles. Amount of cotton picked is approaching the halfway mark in many Southern States. Picking is active in Arizona and New Mexico, and all gins are operating in the San Joaquin Valley of California.

OTHER CROPS: Heavy rains continue to keep sorghum farmers in Texas out of their fields. Combining made only limited headway. Despite wet fields good harvest progress was made in Kansas and Nebraska -- combining is well advanced in both States. Arkansas growers have most of their crop in storage. Muddy fields are slowing peanut digging in Texas, Oklahoma, North Carolina and Virginia. Amount threshed is behind last fall in all States -- field losses are heavy. Maine potato growers have completed another fall of harvesting. Digging was restricted in Idaho by rains. Potato digging is nearly complete in all other States. Sugar beet pulling was in full swing in California's Sacramento Valley, but wet fields delayed pulling from Idaho to Minnesota. Most States report about half their crop dug. Sweetpotato harvesters were in action from California to New Jersey.

Fruits and Nuts: Picking late apple varieties continued across the Nation. Picking should be completed by early November. Most apples are going into storage without being touched by frost. Pecan harvest is widespread in Louisiana. Picking got underway in southern Alabama and Georgia. Gathering of this year's grape crop continued in California and New York. Citrus growers in Florida, Texas and Arizona are finding more fruit to pick and shipments are increasing.

Vegetables: Fall vegetable harvesting continued at a steady rate. New York cabbage cutting was active with supplies going into storage or to kraut plants. Planting is resuming in the Lower Valley of Texas as fields began to dry -- after 6 weeks of rain. Yields will be reduced on acreage seeded before the rains. Supplies are seasonal from California -- Florida shipments are on the rise.

PASTURES AND LIVESTOCK: Pastures in the eastern half of the Nation are excellent for this late in the season. Western pastures are starting to show signs of fall deterioration. Many herds are starting to graze crop residue fields. Farmers are starting to turn livestock into fall-seeded wheat fields. Fall marketing of livestock was very heavy during the week.

Steve J. Pscodna
Agricultural Statistician

Temperature and Precipitation Data for the Week Ending Midnight, l.s.t., October 24, 1971

States and Stations	Temperature °F Average	Temperature °F Departure*	Precipitation Inches Total	Precipitation Inches Departure*
ALA.Birmingham. . .	67	+ 3	1.0	+ .3
Mobile.	71	+ 3	T	- .6
Montgomery. . . .	70	+ 5	.2	- .3
ALASKA.Anchorage. .	--	----	---	----
Barrow.	--	----	---	----
Fairbanks	--	----	---	----
Juneau.	--	----	---	----
Nome.	25	- 3	.5	+ .1
ARIZ.Flagstaff. . .	34	- 11	1.0	+ .7
Phoenix	66	- 3	T	- .1
Tucson.	62	- 6	.1	0
Winslow	49	- 6	T	- .2
Yuma.	65	- 7	T	- .1
ARK.Fort Smith. . .	67	+ 5	.9	+ .1
Little Rock . . .	70	+ 9	.8	+ .1
CALIF.Bakersfield .	59	- 6	T	- .1
Eureka.	50	- 4	.6	- .3
Fresno.	56	- 7	0	- .1
Los Angeles . . .	65	- 2	T	- .1
Red Bluff	55	- 9	.5	+ .1
San Diego	63	- 3	T	- .1
San Francisco . .	55	- 5	T	- .2
Stockton.	57	- 6	T	- .2
COLO.Denver	48	- 1	T	- .2
Grand Junction. .	49	- 4	T	- .2
Pueblo.	46	- 6	0	- .2
CONN.Bridgeport . .	57	+ 3	1.1	+ .4
Hartford.	55	+ 3	1.0	+ .4
D.C.Washington. . .	62	+ 4	.4	- .3
FLA.Apalachicola. .	73	+ 3	---	----
Ft. Myers	78	+ 3	2.1	+1.4
Jacksonville. . .	73	+ 3	.9	- .1
Key West.	80	+ 1	2.0	+ .6
Lakeland.	76	+ 2	.6	0
Miami	77	0	2.1	+ .7
Orlando	78	+ 5	.9	+ .2
Tallahassee . . .	72	+ 4	.8	+ .4
Tampa	76	+ 2	.2	- .3
GA.Atlanta.	64	+ 3	.3	- .3
Augusta	67	+ 3	1.7	+1.3
Macon	69	+ 4	.3	- .1
Savannah.	70	+ 4	1.8	+1.3
HAWAII.Hilo	--	----	---	----
Honolulu.	--	----	---	----
Kahului	77	0	.1	- .2
Lihue	--	----	---	----
IDAHO.Boise	45	- 5	.2	0
Lewiston.	47	- 3	.5	+ .2
Pocatello	43	- 4	.6	+ .4
ILL.Cairo	68	+ 8	.2	- .4
Chicago	68	+ 15	.4	- .2
Moline.	66	+ 13	.9	+ .4
Peoria.	66	+ 13	.5	- .1
Rockford.	65	+ 14	1.1	+ .5
Springfield . . .	68	+ 13	.7	+ .1
IND.Evansville. . .	66	+ 9	.6	+ .1
Fort Wayne. . . .	62	+ 11	1.3	+ .7
Indianapolis. . .	65	+ 11	1.0	+ .5
South Bend. . . .	64	+ 12	.6	- .1
IOWA.Burlington . .	64	+ 10	1.1	+ .5
Des Moines. . . .	62	+ 10	1.5	+1.0
Dubuque	64	+ 15	2.1	+1.5
Sioux City. . . .	57	+ 5	.4	+ .1
KANS.Concordia. . .	56	0	.8	+ .5
Dodge City. . . .	55	- 1	.6	+ .3
Goodland.	50	- 1	T	- .2
Topeka.	61	+ 5	1.2	+ .7
Wichita	58	- 1	.7	+ .2
KY.Lexington. . . .	67	+ 11	.2	- .3
Louisville. . . .	67	+ 11	1.5	+1.0
LA.Baton Rouge. . .	72	+ 4	0	-1.0
Lake Charles. . .	76	+ 7	T	- .6
New Orleans . . .	71	+ 2	0	- .6
Shreveport. . . .	70	- 3	1.5	+ .9
MAINE.Caribou . . .	44	- 3	T	- .8
Portland.	50	+ 3	.1	- .6
MD.Baltimore. . . .	60	+ 4	1.0	+ .3
MASS.Boston	57	+ 4	.1	- .7
Nantucket	55	----	.2	----
MICH.Alpena	58	+ 13	.1	- .4
Detroit	61	+ 9	.8	+ .2
Flint	61	+ 13	1.2	+ .7
Grand Rapids. . .	62	+ 12	.4	- .2
Houghton Lake . .	59	+ 14	T	- .7
Lansing	62	+ 13	1.4	+ .8
Marquette	57	+ 11	.4	0
Muskegon.	63	+ 12	.1	- .4
S.Ste.Marie . . .	55	+ 10	1.2	+ .7
MINN.Duluth	50	+ 7	.9	+ .4
Internatl Falls .	48	+ 8	.1	- .3
Minneapolis . . .	54	+ 7	.8	+ .5
Rochester	57	+ 9	.5	+ .1
St. Cloud	53	+ 8	.4	0
MISS.Jackson. . . .	70	+ 5	T	- .5
Meridian.	69	+ 5	.2	- .3
MO.Columbia	66	+ 9	1.1	+ .5
Kansas City . . .	63	+ 5	2.8	+2.2
St. Louis	67	+ 10	1.2	+ .5
Springfield . . .	64	+ 6	1.7	+ .8
MONT.Billings . . .	46	- 2	.7	+ .5
Glasgow	46	+ 2	.7	+ .6
Great Falls . . .	47	+ 1	T	- .1
Havre	44	0	T	- .2
Helena.	42	- 2	.2	0
Kalispell	38	- 4	.4	+ .1
Miles City. . . .	46	- 1	1.9	+1.7
Missoula.	40	- 2	.1	- .1
NEBR.Grand Island .	55	+ 4	.2	0
Lincoln	57	+ 2	1.3	+1.0
Norfolk	55	+ 4	.1	- .1
North Platte. . .	49	0	.3	+ .1
Omaha	56	+ 3	1.1	+ .8
Valentine	52	+ 5	.5	+ .3
NEV.Ely	41	- 3	.4	+ .2
Las Vegas	58	- 7	T	0
Reno.	44	- 4	T	- .1
Winnemucca. . . .	45	- 1	T	- .2
N.H.Concord	49	+ 2	T	- .6
N.J.Atlantic City .	58	+ 2	2.1	+1.4
Trenton	59	+ 4	1.8	+1.2
N.MEX.Albuquerque .	47	- 9	.5	+ .3
Roswell	54	- 3	.6	+ .4
N.Y.Albany.	51	+ 2	.2	- .4
Binghamton. . . .	53	+ 5	.4	- .3
Buffalo	58	+ 9	.5	- .2
New York.	59	+ 2	.6	- .1
Rochester	58	+ 8	1.0	+ .4
Syracuse.	55	+ 5	.5	- .2
N.C.Asheville . . .	61	+ 5	3.0	+2.4
Charlotte	63	+ 2	1.1	+ .4
Greensboro. . . .	61	+ 4	2.8	+2.2
Hatteras.	72	+ 8	2.7	+1.8
Raleigh	65	+ 6	2.2	+1.7
Wilmington. . . .	72	+ 8	3.2	+2.5
N.DAK.Bismarck. . .	50	+ 5	.8	- .6
Fargo	51	+ 7	.2	- .1
Williston	45	+ 1	.9	+ .8
OHIO.Akron-Canton .	61	+ 10	.2	- .3
Cincinnati. . . .	65	+ 9	.2	- .2
Cleveland	63	+ 11	.1	- .4
Columbus.	63	+ 11	.4	0
Dayton.	65	+ 11	.6	+ .1
Toledo.	65	+ 14	.8	+ .3
Youngstown. . . .	59	+ 9	.1	- .5
OKLA.Okla. City . .	60	- 1	1.3	+ .8
Tulsa	63	+ 2	6.8	+ 6.1
OREG.Astoria. . . .	50	- 2	2.9	+ .9
Burns	39	- 8	.3	+ .1
Medford	48	- 3	.3	- .2
Pendleton	49	- 2	.4	+ .1
Portland.	50	- 3	1.5	+ .6
Salem	49	- 4	2.3	+ 1.3
PA.Allentown. . . .	57	+ 5	1.0	+ .4
Erie	59	+ 8	.5	- .2
Harrisburg. . . .	58	+ 4	.5	- .2
Philadelphia. . .	61	+ 7	1.2	+ .6
Pittsburgh. . . .	61	+ 9	.5	- .1
Scranton.	56	+ 7	.2	- .6
R.I.Providence. . .	57	+ 5	.7	0
S.C.Charleston. . .	71	+ 6	2.9	+ 2.4
Columbia.	68	+ 5	1.6	+ 1.1
Greenville. . . .	63	+ 2	3.1	+ 2.3
S.DAK.Aberdeen. . .	52	+ 6	.4	+ .2
Huron	52	+ 5	.3	0
Rapid City. . . .	50	+ 2	T	- .2
Sioux Falls . . .	53	+ 4	.2	0
TENN.Chattanooga. .	67	+ 7	1.8	+ 1.1
Knoxville	66	+ 7	.2	- .4
Memphis	69	+ 7	.1	- .6
Nashville	68	+ 8	1.0	+ .5
TEX.Abilene	61	- 4	1.4	+ .8
Amarillo.	52	- 7	.3	- .1
Austin.	70	0	1.1	+ .5
Beaumont.	72	+ 2	.1	- .6
Brownsville . . .	79	+ 4	.1	- .6
Corpus Christi. .	76	+ 3	.7	+ .2
Dallas	67	+ 1	4.4	+ 3.8
Del Rio	70	0	.7	+ .3
El Paso	58	- 5	.1	- .1
Fort Worth. . . .	67	+ 1	4.1	+ 3.5
Galveston	74	+ 2	.4	- .2
Houston	72	+ 3	.3	- .5
Lubbock	57	- 2	.9	+ .5
Midland	58	- 6	.3	0
San Angelo. . . .	62	- 5	.3	- .1
San Antonio . . .	71	+ 2	1.7	+ 1.2
Victoria.	73	+ 1	1.0	+ .2
Waco.	68	0	1.9	+ 1.4
Wichita Falls . .	64	- 1	1.5	+ .9
UTAH.Blanding . . .	44	- 6	.5	+ .2
Salt Lake City. .	41	- 9	.4	+ .1
VT.Burlington . . .	52	+ 6	.1	- .6
VA.Lynchburg. . . .	60	+ 3	2.9	+ 2.3
Norfolk	66	+ 6	2.5	+ .9
Richmond.	63	+ 6	3.4	+ 2.7
Roanoke	64	+ 8	6.4	+ 5.7
WASH.Colville . . .	42	- 3	.9	+ .5
Omak.	43	- 3	.3	+ .1
Quillayute. . . .	46	- 4	4.2	+ 1.7
Seattle-Tacoma. .	49	- 2	1.9	+ .9
Spokane	43	- 4	.5	+ .1
Walla Walla . . .	50	- 3	.7	+ .3
Yakima.	44	- 5	.2	+ .1
W.VA.Beckley. . . .	58	+ 6	1.1	+ .5
Charleston. . . .	65	+ 9	.8	+ .2
Huntington. . . .	65	+ 9	1.2	+ .8
Parkersburg . . .	64	+ 9	.9	+ .5
WIS.Green Bay . . .	59	+ 12	.8	+ .4
La Crosse	60	+ 11	.3	+ .2
Madison	61	+ 13	.6	+ .2
Milwaukee	59	+ 11	1.0	+ .5
WYO.Casper.	44	- 3	.4	+ .2
Cheyenne.	45	- 1	.2	0
Lander.	43	- 2	T	- .3
Sheridan.	43	- 4	.6	+ .3
P.R. San Juan . . .	81	+ 2	.6	- .6

* Departures are from 30-year means (1931-60). **Based on preliminary reports**

CONDENSED STATE SUMMARIES

These summaries provide brief descriptions of condition and activities important on a national scale. Detailed reports of crop and weather conditions during the growing season are contained in State issues of Weekly Weather and Crop Bulletins published by field offices of the Statistical Reporting Service, U.S.D.A. in cooperation with NOAA Climatologists

ALABAMA: Fair with warm days and cool nights early in period. Mostly cloudy and warm with occasional rain Wednesday through Sunday. Rainfall light to moderate north and central and little or none elsewhere. Unseasonably warm with minimums 60's. Harvest made good progress, but slowed by showers north and central Alabama latter part week. Cotton harvest full swing. Many gins operating around the clock northern Alabama about 37% harvested, compared 55% year ago. Corn harvest active south and central, 42% harvested, 60% year ago. Harvest soybeans slow, farmers waiting further maturity. About 60% matured, but only 16% combined. Settlement of dock strike Port of Mobile major concern soybean growers. Seeding small grains about 1/2 complete, 68% year ago. Crops need moisture. Light harvest pecans underway south. Pastures supplying adequate grazing, but need rain south.

ALASKA: (For week ending October 17.) Rain continued to hamper harvest. Above-normal rain, about 1.00 inch total, occurred Matanuska Valley early in week. Maximum temperatures slightly below normal; minimums about normal. Kenai Peninsula received light rain, below normal, through week. Temperatures near normal. Tanana Valley received light rain early in week. Maximum temperatures 7° to 10° below normal. Minimums near normal. Topsoil and subsoil moisture supplies adequate throughout Railbelt. Harvest barley for grain continues both Tanana and Matanuska Valleys. Frequent precipitation and high moisture content hampered harvest. Some potatoes remain to be dug Matanuska Valley with wet ground causing main problem. Livestock generally good. Supply local hay and straw short throughout Railbelt.

ARIZONA: Temperatures below normal most of week. Precipitation fell early in week and on weekend with snow above about 5,000 feet. Some weekly water totals of nearly 2.00 inches in White Mountains. Showers in irrigated valleys in south were light and widely scattered. Cotton harvest active all areas, about 18% expected crop picked and ginned. Yuma area approximately 1/4 crop picked. Pink bollworm infestations many areas. Sorghum harvest active Yuma County and harvesting central areas increasing. Spring-planted sugar beet harvest continues Willcox. Fall lettuce harvest expected this week Pima and Pinal County areas. Lettuce and chili harvest continued Cochise County. Chili, mixed vegetables, melons, and pumpkins harvested Graham County local market. Planting, thinning, and cultivation lettuce, mixed vegetables continued Yuma. Cantaloupe harvest full swing. Lemon picking active Salt River Valley. Navel and early Tangerine picking expected 10 days. Ranges remained fair to good. Rains may help remaining dry spots. Stock water sufficient. Most ranges supplying adequate feed. Calf weights below normal.

ARKANSAS: Mean temperatures generally 6° to 9° above normal except small area along west-central border which had near normal temperatures. Some cooling most of State over weekend. Highest temperature 86° at Eudora 18th, Texarkana 19th. Lowest 42° at Fayetteville 25th. Rainfall 2.00 to 3.00 inches or more west-central border sections to portions of northwest and north-central sections with Clarksville reporting heaviest fall of 3.47 inches. Little or no rain east-central and northeast. Elsewhere amounts ranging up to 1.00 inch. Harvest mostly good progress, although showers caused some slowdown. Cotton picking active, nearly 1/2 crop out. Last year only 30%. Picking most advanced northeast. Rice harvest virtually completed. About 1/3 soybeans combined, compared little over 10% last year. Early fields mostly good yields. Dry weather, weeds and grass reduced prospects late acreage. Most grain sorghum and corn harvested. Haying completed. Feed supplies expected to be adequate except northwest and some north-central counties. Showers favored growth new seedings wheat and oats. More moisture needed. Pastures remain short northern and most central areas. Livestock good. Feeding hay driest areas.

CALIFORNIA: Moderate to heavy precipitation southern coastal section on 16th, 17th; snow above 5,000 feet. Light precipitation northern 1/3 Tuesday, Wednesday, and Saturday. Much below-normal temperatures, freezing minimums coastal valleys several days. Negative departures ranged 4° to 8° below normal most of State, 15° below normal Colorado River Valley. Seeding fall grain continues. Harvesting milo Sacramento, San Joaquin Valleys. Picking field corn nearing completion Sacramento Valley; still active San Joaquin. Combining rice slowed Sacramento Valley due high moisture. Sugar beet digging full swing Sacramento; San Joaquin Valley picking up momentum. Dry bean harvest nearing completion. Cotton picking desert, disking cotton as November 1 deadline approaches. Picking increasing San Joaquin Valley, all gins operating. Deciduous fruit harvest virtually complete. Wine grape harvest declining, fruit good condition, but sugar content low. Almond harvest nearing completion. Walnut harvest full swing. Valencia orange harvest continues. Large percentage diverted by products. Picking lemons and grapefruit continues desert. Summer avocados being packed, fall varieties just beginning. Range grasses along northern coast beginning growth. Other range land grasses dormant. Most cattle off summer ranges. Irrigated pasture growth slow due cooler weather. Supplemental feeding hay, concentrates increasing. Turkeys being moved processors holiday market. Broccoli-cauliflower shipments light, Santa Maria, Salinas. Cantaloupes Imperial past peak. Central coast carrot harvest seasonally normal. Lettuce Salinas near completion, Brentwood past peak. Westside-Bakersfield lettuce active. Potatoes San Joaquin and Salinas slow. Tule Lake shipments expect increase. Sweetpotato harvest active Merced. Strawberries central coast very light. Market tomato harvest moderate. Greens from northern San Joaquin, King City.

COLORADO: Temperatures near normal east, below normal west. Generally dry except for light showers over weekend west and along southern border. Harvest interrupted by rain early week. Field activities resumed midweek. Surface and subsoil moisture improved most areas. Condition winter wheat good to excellent. Volunteer wheat providing excellent pasturing. Corn harvest 21%

complete, high moisture content slowing harvest. Sorghum grain 46% harvested. Sugar beet harvest 49% complete. Potato harvest nearing completion. Broomcorn harvest complete. Range and pastures improved slightly. Heavy livestock movement past week. Livestock good to excellent.

FLORIDA: Continuing summer weather prevails in Florida. Daytime temperatures in the high 80's and low 90's brought the weekly average to 2° to 4° above normal. A slight cooling trend on weekend. Scattered showers throughout of week brought slightly over 1.00 inch of rain most sections, except 0.75 inch in north and less than 0.20 inch in Panhandle. Some high rainfall totals for week were 2.70 inches at Sanford, 2.50 inches at Belle Glade, and 2.14 inch at Usher Tower. Rainfall slowed harvest of some crops. Small grain fields showing good growth. Pastures good, but reflecting seasonal decline. Livestock good. Most herds trimmed to basic size for fall and winter. Citrus groves excellent condition, moisture adequate, local irrigation, harvest increasing. Fall fertilization underway. Rain scattered across major vegetable producing areas. Overall field conditions good, although excessive moisture some locations. Supplies fall vegetables increasing with fair to good volume snap beans, sweet corn, cucumbers, eggplant, radishes, squash available. First light picking tomatoes expected this week. Planting potatoes and strawberries active.

GEORGIA: Rainfall heavy eastern 1/3 of State decreasing to mostly light to moderate central and west. Totals exceeded 3.00 inches parts of East but were less than 0.50 inch much of West. Unusually warm for late October. Lows were mostly in 50's and 60's and highs varied from the high 60's to the low 80's. Averages ranged from 4° to 9° above normal. Harvest active early week, but interrupted by rain and wet fields later part--especially eastern half. Some dry areas still exist west. Crop harvest progressed as weather permitted. Cotton 47% harvested, corn 61%, and soybeans 8%. Pecan harvest underway. Rain improved small grains and winter pastures. Small grains 55% seeded. Cattle good.

HAWAII: Light scattered showers most areas of State. Increased shower activity in higher elevation and mountain areas replenished water supplies. Sugar harvest continues with grinding at some mills completed. New plantings pineapple active. Sorghum harvesting and planting continue. Papayas approaching seasonal peak. Banana production increasing. Vegetable supplies adequate. Pastures improving with recent rain. Cattle good.

IDAHO: Temperatures averaged 2° to 6° below normal with lowest temperatures first half. Precipitation locally heavy north and east; elsewhere near normal. Heaviest totals for the week 1.40 inches Moscow and 1.13 inches at Pocatello. 5 to 10 inches snow above about 6,000 feet central and southwestern mountains. Harvesting potatoes and sugar beets very slow due rains. Harvest potatoes well advanced. Sugar beet harvest full swing. Cool temperatures helping stockpiles, about 35% dug. Winter grains responding well to wet weather north and east. Farmers entering into late fall and winter cycle feeding livestock.

ILLINOIS: Precipitation occurred several days. Slow-moving fronts through State introduced fog, drizzle, light rain. Temperatures averaged above normal as State remained in southerly windflow. Fog, overcast skies maintained high daily minimum temperatures. Weekend cold front ushered in cloudy skies, northerly winds. Temperatures in 70's or low 80's occurred early in week. Soil moisture 41% short, 58% adequate, 1% surplus. Corn harvest 60% complete, same as last year, week ahead normal. Yields, quality continue good to excellent most areas. Lodging problems some areas. Wet weather, drizzle have slowed harvest, caused grain to add moisture. Central and east district elevators nearly full. Farmers have storage space problem. Soybean harvest 95% complete, about 75% last year. Harvest 1 week ahead normal. Quality good to excellent. Winter wheat 95% seeded. Last year 75%. Young winter wheat stands mostly good condition. Some southern Illinois stands uneven and in stress due moisture shortage. Intended corn and soybean acreage 25% plowed. Last year 20%. Pastures mostly fair to good. Five suitable workdays. Main activities corn and soybean harvesting plowing, and sowing wheat.

INDIANA: Very warm week. Last half cloudy with considerable fog, light rain, or drizzle. Temperatures averaged 11° above normal from high 40's to low 80's. No sharp changes. Precipitation from 0.50 to 1.50 inches. Soil temperatures and humidity high. Solar radiation and evaporation low. No frost yet in 2/3 of State. Five days suitable. Good progress made fall seeding and harvesting. Corn harvest 40% complete, 20% average, behind 45% last year. Soybean combining 70% finished, 55% last year, on par with average. Seeding winter wheat 85% complete, ahead 80% last year, and usual. Seeded wheat 65% emerged. Stands rated mostly good to excellent. Rye seeding 85% complete, barley 95% seeded. Grain sorghum 40% harvested, behing 50% last year and usual. Apples 75% picked. Topsoil and subsoil moisture adequate. Pastures mostly fair to good.

IOWA: Warm, cloudy, wet week with frequent fog. Temperatures averaged 5° to 13° Fahrenheit above normal from northwest to east central. Rains slowed fieldwork. Damp weather slowed field drying. Corn and soybean harvest still ahead average. Corn over 50% harvested, about same as last year, but well ahead 5-year average of less than 20%. Soybean harvest 90% complete, last year and 5-year average less than 75%. Grain sorghum 90% complete. Statewide rains partially alleviated prevailing dry conditions. Topsoil moisture 47% short, 50% adequate and 3% surplus. This compares with last weeks 75% short and 25% adequate. About 4 1/2 days suitable fieldwork.

KANSAS: Moderate to heavy rains east, no significant moisture west. Locally over 4.00 inches extreme southeast. Weekly mean temperatures averaged above normal north, east, and east-central, near seasonal elsewhere. Local freezing weather west several days near midweek. Most areas no hard freeze yet. Harvest row crops considerable progress despite some wet fields. Sorthum grain 65% harvested, 44% last year, 1960-69 average 43%. Corn 66% harvested, average 42%. Soybean harvest 65% complete, 39% last year, average 63%. Sugar beet digging continued. Seeding wheat 97% complete, 92% last year, average 97%. Most wheat fields good stands or filling in since rains and good growth. Barley fields 93% seeded, 86% last year. Cattle grazed fall crop residues and some wheat. Movement from summer pasture continued.

KENTUCKY: Mild to warm and humid, temperatures averaging 8° to 12° above normal. Morning fog and some sunshine early in week. Rainy last 4

days. Totals 0.15 to 2.00 inches. Soil moisture 68% adequate, 25% short, and 7% surplus. Corn 55% harvested, last year 69% and 71% in 1969. Yield and quality good. Soybeans 39% harvested, last year 35% and 61% in 1969. Burley 7% stripped, another 34% ready for stripping. Last year 12% stripped. House burn rather serious some barns and more prevalent than expected. Otherwise leaf quality good on early stripped burley. Wheat 61% seeded. Pastures excellent.

LOUISIANA: Temperatures averaged 4° to 8° above seasonal normals. Highs mostly in 80's, lows near 70° early in week dropping to 50's by weekend. Extremes: 90° Lake Charles October 18 and 49° Monroe October 25. Skies mostly fair but a few scattered showers south early in week and in north weekend. Precipitation totals none most areas to locally more than 1.00 inch. Greatest 1-day total 1.41 inches measured at Shreveport. Fieldwork slowed by excessive moisture and high humidity first part of week, especially northwest and south. Harvest generally active late week. Cotton defoliation and diapause weevil control continued. Cotton 80% open, about 25% picked. Soybeans 45% harvested, sugarcane 10%, sweetpotatoes 25%, sorghum grain 80%, corn 98%. Rice harvest nearly completed. Pecan harvest becoming general. Seeding winter pastures continued. Pasture feed above average. Livestock good.

MARYLAND AND DELAWARE. Warm weather with temperatures averaging mostly 4° above normal. Extremes: 70's, mid-30's to mid-40's west and mid-40's to mid-50's east. Little or no rain until Veteran's Day weekend when most totals ranged from 2.00 to 4.00 inches. Harvest pushed until weekend rains saturated fields. Harvest progress; corn 68% and soybeans 15% 2 weeks behind normal. Small grains seeding pushed with wheat and barley each 85%. Remaining acreage awaits rowcrop harvest. Apple picking active, but about week later than usual. Pasture growth usually rank for this time year.

MICHIGAN: Unseasonably mild intermittent showers north, rain southeast after midweek. Highest daily temperature 80°, record at Muskegon and Traverse City. Temperature averages 10° to 12° above normal Upper Peninsula, 10° to 15° above normal Lower Peninsula. Precipitation totals: 0.25 inch west to 1.25 inch east Upper Peninsula; 0.50 to 1.30 inches Lower Peninsula except less than 0.10 inch along a line from Muskegon to Alpena. Heaviest amounts south-central to Saginaw Bay.

MINNESOTA: Warm, foggy, cloudy week with temperatures averaging 6° to 8° above normal. Southeast counties were 10° above normal. Extremes: 80°, 24°. Precipitation across State generally less than 0.50 inch except in area from south-central district northeastward through Twin Cities which received 0.50 to 0.75 inch. Harvest slowed by weather southern 1/3. Harvest virtually stopped by surplus topsoil moisture northern 2/3. Corn picked 33%, normal 27%; moisture 26%. Soybeans combined 69%, normal 72%, moisture content 14%. Potatoes dug 84%, normal 93%. Sugar beets 65% dug, normal 81%. Plowed; hay and grain stubble 82%, corn land 14%, and soybeans land 36%.

MISSISSIPPI: Nearly no rain in Delta and north-central, elsewhere most stations had rain on 1 or 2 days with average total less than 0.25 inch. Weekly temperature averages rose across State with range of 4° to 8° above normal. Extremes: 89°; 51°. Dense morning fog on 20th in central Mississippi on 21st in northern Mississippi. Over weekend dense morning fog in north and central. On Saturday, thundershowers in north and central with greatest amount of 2.10 inches at Carrollton. Cooler. Weather favorable for harvesting operations all parts State. Six days suitable for fieldwork and farmers took full advantage of this. Soybean acreage 1/3 harvested, and 37% cotton picked. Corn harvest passed halfway mark and 3/4 grain sorghum has been combined. Most crops continued fair to good.

MISSOURI: Cloudy wet week. A slow-moving cold front brought much needed rain to western half of State. Temperatures averaged 4° to 10° above normal. Rain fell middle of week with most of western half of State receiving over 2.00 inches and the eastern half 0.75 inch. Harvest advancing well. Corn 62%, soybeans 65%, grain sorghum 70%, and cotton 60% harvested. Corn harvest 2 weeks ahead last year, other crops month ahead last year. Fall seeding 64% completed. Fall plowing 2 weeks ahead last fall. Pastures 24% poor, 48% fair, 28% good. Soil moisture 33% short, 52% adequate, 15% surplus.

MONTANA: Near to slightly below normal temperatures prevailed except warm northeast. Freezing at least 1 morning all stations, coldest 18° at Butte 24th. Little or no precipitation north-central; moderate to heavy much of Yellowstone Valley. Wet fields held up sugar beet lifting southeast, harvest behind normal. Potato digging nears completion, good progress last week. Livestock good. Movement range cattle and sheep from summer ranges final stages. Marketing calves faster than normal. Hay supplies below last year, short many dryland areas.

NEBRASKA: Warm nights and seasonal daytime temperatures. Rain in far east Monday morning; otherwise little precipitation. Windy first half. Nighttime fog and drizzle eastern portion latter half of week. Harvesting operations slowed by wet conditions from previous weekend rains early week. However, about 50% corn, 88% sorghum, and 95% soybeans harvested. This compares to normally harvested percentage 26 for corn, 47 for sorghum, and 77 for soybeans. Sugar beet and potato harvest nearing completion west. Livestock good. Grazing stock fields increasing. Winter wheat condition improved as general rains of previous weekend soaked dry eastern top soils.

NEVADA: Temperatures from 3° below normal in north to 8° below normal in extreme south. Light precipitation. Snow trace at Virginia City to 10 inches Austin. Record alfalfa seed harvest complete all producing areas. Cutting corn for silage virtually complete. Cotton Pahrump Valley late. Picking will start within week. Planting winter grains over 3/4 complete. Livestock good, with movement to winter ranges continuing.

NEW ENGLAND: Very mild week, averaging mostly 4° to 8° above normal. Very little freezing during week. Many favored places, mostly in south have had no damaging freeze yet this fall. Very little rain until near end of week. Totals varied from trace to 0.30 inch in north and were mostly 0.50 to 1.00 inch in southern half, though Nantucket reported 2.00 inches. Fog very common, heavy some mornings. Potato harvest complete Aroostook County, Maine, and most other areas.

Quality Maine crop excellent. Picking late apples continues without any frost damage. Cranberry harvest about 90% complete. Many farmers putting excess silage in temporary silos. Fall vegetables moving from storage.

NEW JERSEY: Quite warm with temperatures averaging between 2° and 7° above normal. Readings ranged from the mid-30's to the mid-70's. Rainfall was heavy over weekend averaging 1.50 inches over North Jersey and 2.00 inches over remainder of State. Station totals varied from 1.00 inch at New Brunswick to 2.80 inches at Millville. Harvest fall vegetables, apples, cranberries, potatoes and sweetpotatoes active. Cloudy humid weather slowed harvest corn, soybeans, and late hay. Harvest peppers and cranberries well advanced and apple picking 80% complete. Movement spinach, cabbage, lettuce, and squash continued. Digging nursery stock and sod active. Planting small grains and cover crops progressed slowly earlier. Seeded acreage showing good stands. Heavy rains near end period delayed harvest field crops and potatoes and seeding grain.

NEW MEXICO: Showers mostly early and late in week with local totals to more than 1.00 inch. Nearly 10° cooler with below normal average temperatures. Freezing temperatures Wednesday except in south and east-central plains. Warmer second half week.

Cotton harvest increasing south, slow north. Sorghum grain harvest slow. Alfalfa harvest active southern areas. Miscellaneous crop harvest nearing completion. Ranges poor to good. Livestock fair to good. Rains weekend interrupted current field activities south.

NEW YORK: Pleasant fall weather. Maximums mid-60's to low 70's daily until some 10° cooler on 24th. Minimums 29° to 32° in normally cooler localities on 18th and 19th but freeze-free season continues much of western and southeastern Upstate. Little or no precipitation from 12th to 23d. Rain general on 24th with totals mostly 0.30 to 0.60 inch. Weather ideal for harvest and field activity. Corn silage nearly all cut. Grain corn harvest progressing rapidly. Pulling and combining dry beans continues. Some fall plowing being done. Potato harvest Upstate and Long Island nearing completion. Kraut cabbage continues move to processors. Most Danish cabbage growers beginning to move supplies to storage. Harvest to continue through November. Apple harvest continues, growers picking red Delicious and later varieties. McIntosh, Rhode Island Greening and Cortland about finished. Harvest grapes continues with Concord, Catawbas being harvested.

NORTH CAROLINA: Mild nights and cool days due to continuous heavy cloudiness. Daily highs mostly 60's and 70's, lows mostly 50's and 60's. Rain almost daily with totals variable 0.50 to 5.00 inches, mostly 2.00 to 3.00 inches. Some stations have already had heaviest October rainfall of record. Moderate flooding of river grounds several areas. Soil moisture adequate to surplus southern mountains, mostly surplus elsewhere. Major crops deteriorating, especially Coastal Plain. Harvest lag, caused by persistent rains, saturated fields. Corn harvest 50% complete, 70% last year. Cotton 25% picked, 60% last year. Peanuts 67% dug, 52% threshed, 95% and 88% year ago. Soybean harvest beginning where conditions permit; crop molding, sprouting in pods coastal plain. Some corn down, rotting, sprouting, mostly coastal plain. Hay damaged by rain. Limited grain sorghum harvest began. Apple harvest continues late varieties. Pastures mostly good.

NORTH DAKOTA: Temperatures averaged 5° to 7° above normal in west and 8° to 10° above normal elsewhere. Precipitation ranged from a trace to 0.10 inch in south, 0.60 to 0.80 inch northwest, and 0.20 to 0.40 inch elsewhere. Wet fields continue hamper late harvesting Red River Valley. Combining sunflowers and sugar beet lifting made limited progress. Stack moving to winter quarters in windup stage and farmers working calves for market. Cattle good condition.

OHIO: Mild with considerable sunshine through 21st. Warm but very cloudy remainder of week. Average temperature 8° to 11° above normal. Rain and drizzle 22d to 24th. Rainfall ranged from 0.10 inch at Cleveland to 1.40 at Marietta. Days favorable fieldwork 6. Soil moisture supply 20% short, 70% adequate, and 10% surplus. Completion harvest; corn harvested for grain 60%, last year 65%, 5-year average 25%. Soybean 75%, last year 75%, normal 70%. Apples 70% grapes 75% sugar beets 45%. Winter wheat acreage 90% planted, equal last year, normal 85%.

OKLAHOMA: General rains across State during week with amounts varying from 0.20 inch Panhandle to over 4.00 inches southeast. Temperatures averaged 4° to 6° above normal eastern 1/3 State and near 3° below normal elsewhere. Although rains, wet fields delayed harvest, progress about same as year ago. Only few fields small grain remain to be planted. Around 3/4 wheat and barley, 2/3 oats up to stand. Recent rains beneficial. Occasional fields being grazed. Sorghum grain 2/5, peanuts and soybeans 1/3 harvested. Corn 3/4 harvested statewide, but only 2/3 complete Panhandle. Cotton maturing slowly, only 2/3 bolls open compared with 9/10 year ago. Some acreage peanuts damaged by wet weather. Surface soil moisture adequate throughout State. Pastures and ranges furnishing fair to good grazing. Demand for stockers increasing several areas. Pecans nearing harvest stage.

OREGON: Cool wet week with milder days at close. Temperatures averaged 2° to 4° below normal most of westside, 5° to 10° below normal eastside and southwestern valleys. Minima 15° to 25° east, 26° to 34° west. Maxima 48° to 70° east, 58° to 66° west. Rains on 1 to 3 days east, 4 to 6 days west. Totals mostly 0.10 to 0.50 inch eastside and southwestern valleys, 1.30 to 3.80 inches elsewhere westside. Filbert harvest continues. Walnuts dropping, harvest expected to start soon. Apple and pear picking nearly complete Hood River. Potato harvest past peak. Sugar beet harvest underway Umatilla County and continues Ontario. Fall seeding wheat summer fallow counties completed with some fields up and and stands looking good.

PENNSYLVANIA: Warm week. Dry first half, wet over weekend. Fair mild weather during week, with maxima mostly in 60's and 70's; minima 30's and 40's. Cloudy by weekend with widespread rain and temperatures mostly in 50's and 60's. Rainfall total 1.00 to 1.25 inches parts of southeast and central, 0.50 to 0.75 inch west, 0.25 to 0.50 inch northeast. Temperatures 4° to 6° above normal central, 8° to 10° above normal elsewhere. No general killing frost to date. Corn harvest

for grain 50% completed. Harvest for ensileage nearly completed. Potato harvest good progress and is 90% completed. Apple picking full swing. Grape harvest Erie County continues. Pasture, fall seedings, and hay making good growth.

PUERTO RICO: Rainfall averaged 1.60 inches or 0.22 inch above normal. Heaviest rains in western Cordilleras with weekly totals up to 7.00 inches in daily thundershowers. Small areas north and south coasts need more rain to improve soil moisture. Temperatures averaged 79° on coast and 74° interior divisions with average departure about 1.0° below normal. Highest maximum 93°; lowest minimum 57°. Sugarcane developing well all zones. Harvesting operations coffee plantations delayed by rains. Pastures generally good to excellent. Minor crop zones report good development and good progress fieldwork.

SOUTH CAROLINA: Heavy rain at beginning of week, overcast conditions with drizzle and light rain the last 4 days. Rainfall amounts ranged from 0.61 inch at Columbia to 5.89 inches at Bears Bluff near Charleston. Divisional averages were from 1.20 to 3.00 inches. Temperatures averaged 4° above normal in Piedmont and 2° above Coastal Plain. Rain eliminated short moisture condition, result large area excessive. Farming activities curtailed most areas. Cotton condition fair to good. Bolls opening 93%, harvest 45% complete. Soybean condition good, 49% mature, harvest 1% complete. Peanut and sorghum harvest 44% complete. Corn harvest 70% done. Pecan condition fair to good. Apples still picked northwest Piedmont. Pastures mostly good. Fire ants problem southern upper Coastal Plain. Winter wheat 14% planted, 6% emerged. Winter oats 25% planted, 18% emerged. Hay crop harvest 92% complete. Fall vegetables fair to good.

SOUTH DAKOTA: Mild dry week most of State. Temperatures averaged up to 7° above normal. Extremes ranged from 28° at Shadehill Dam on 22d to 78° at Menno on 18th. Precipitation fell as light showers first of week with most areas about 0.15 inch although up to about 0.40 inch extreme southeast. Harvest row crops coming to end. Moisture at beginning of week and heavy early morning dews slowed harvest some, but generally good progress made. Some stalk breakage and ear droppage still occurring, but generally light. Topsoil moisture mostly adequate. Harvest all row crops well ahead of normal, with 78% corn, 92% sorghum and 95% soybeans harvested. Week to 10 days more good harvest weather should be sufficient to finish season. Fall wheat and rye generally good to excellent. Many areas report good ground cover established. Calves and some cull cows going to market. Stubble fields and corn stalks being grazed. Hay stacks being moved to winter feeding grounds.

TENNESSEE: Indian summer weather 18th to 20th followed by several days of dreary weather. Rainfall 0.75 to 1.25 inches common eastern half of State over weekend. Most western locations reported 0.10 to 0.25 inch rain on 22d. Considerable morning fog last 2 days. Temperatures averaged 6° to 8° above normal. Crop harvest making fair to good progress although light showers slowing harvest some areas. Most crops good prospects. Soybean combining 20% complete. Cotton picking 45% complete with backlog at gins commonplace. Corn harvest 55% done, versus 60% year earlier. Tobacco stripping 30% complete. Oats, barley 90% sowed. Wheat 65% planted. Pastures good condition. Calf marketing active. Days favorable fieldwork averaged 4.6. Soil moisture supplies 58% adequate, 32% short, and 10% surplus.

TEXAS: A cold front moved through Texas from west to east during first half of week. The front brought scattered light showers to west and southeast Texas but produced severe thunderstorms, heavy rain, and considerable flooding in central sections from the Red River southward to Rio Grande around Laredo. Heaviest rains were 7.00 to 12.00 inches in Greenville and Paris areas. General rains of 2.00 to 5.00 inches were common from Dallas through the Hill Country west of Austin to Laredo. Clear cool weather ruled the State during weekend, but scattered showers developed ahead of a new cold front in West Texas on Monday. Marfa recorded 1st freeze of season with 32° Wednesday morning. Inaccessible wet fields slowed planting, seeding and harvesting operations across State. Harvest cotton, corn, sorghum made little progress and continues to fall further behind schedule. Digging sugar beets, and peanuts slowed by wet field conditions. Oats and wheat seeding slowed by rainfall, but still made fair progress. Oats and wheat making good to excellent growth. Percent planted to date; wheat 84, 86 last year; oats 67, 83 last year. Percent harvested; cotton 23, 33 last year; corn 93, 98 last year; sorghum 62, 89 last year; soybeans 30, 39 last year; peanuts 47, 48 last year. High Plains vegetable harvest again interrupted by showers. Lettuce harvest past peak, carrot digging expected to increase November. Harvest other vegetables past peak High Plains, but light supplies potatoes, bell peppers, tomatoes still available. East Texas sweetpotato digging full swing. Winter Garden harvesting few peppers, cucumbers with early carrots, cabbage approaching maturity. Lower Valley fields beginning to dry from heavy rains September, early October. Fall vegetables recovering from excessive moisture, but yield prospects reduced. Only small acreage cabbage, carrots, other winter vegetables seeded before rains started early September with very little planting since then. Planting winter vegetables, spring onions resuming as fields dry. Citrus harvest gaining momentum with grapefruit, early oranges being picked. Pecan harvest 15% complete.

UTAH: Recurring periods of rain and snow throughout week. Accumulated amounts of moisture moderate to heavy. Many stations recording over 1.00 inch of moisture. Temperatures averaged 2° to 10° below normal. Soil temperatures at 4-inch depth now range from mid-40's Cache Valley to upper 40's Salt Lake, low 50's Richfield and upper 60's St. George. Winter wheat fields and winter range lands have good to excellent moisture supply. Sugar beet harvest again delayed by wet fields 60% dug. Potato and apple harvest 95% completed. Corn for grain 30% completed. Movement cattle down from high country to valley farms and range lands 85% complete.

VIRGINIA: Mostly cloudy with depressed maximum and high minimum temperature several days with mostly light rain becoming heavy over weekend. Rain on saturated fields hampered work south half State. Peanut crop 1/2 dug and 1/3 combined. Yields and quality very good. Field losses heavy. Winter barley and oats 3/4 sown. Wheat 1/2 in. Seeding last week mostly upper Tidewater, upper Piedmont and Shenandoah Valley. Marketing flue-

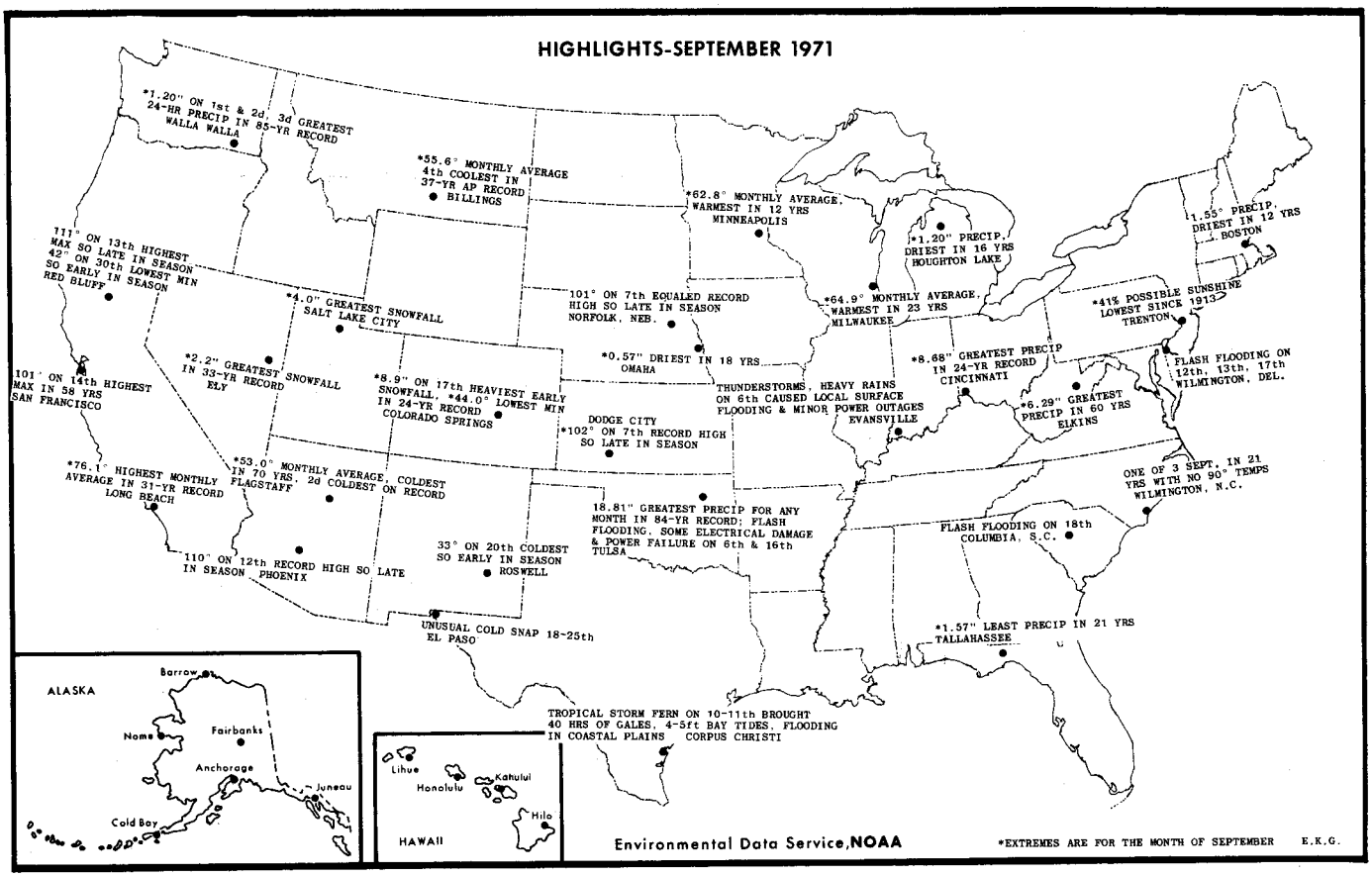
cured tobacco. Grading burley. Soybeans 10% harvested. Pastures outstanding. Dug sweetpotatoes, picked apples.

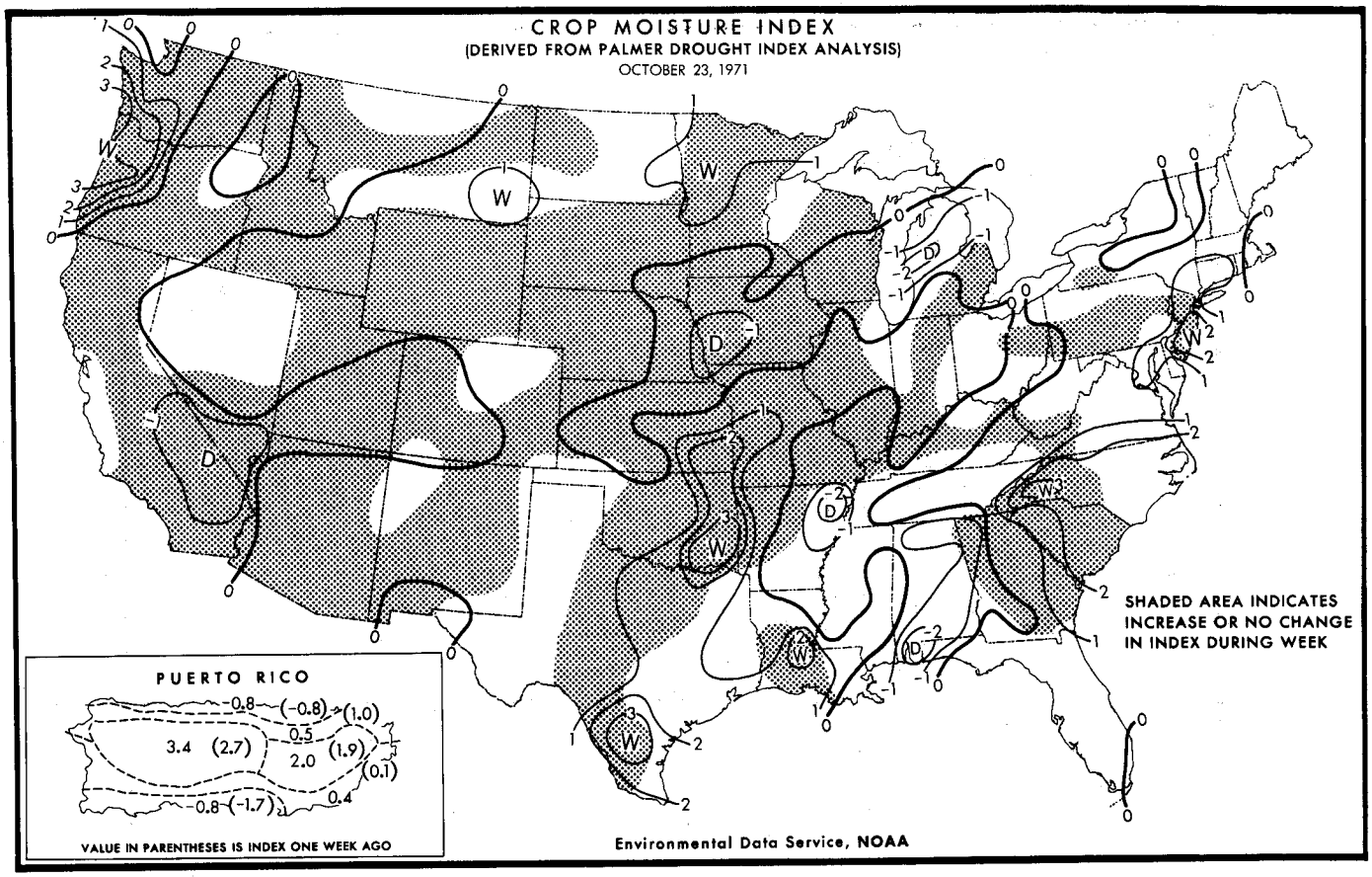
WASHINGTON: Western Washington: Cool and cloudy with occasional heavy showers. Local heavy frost early in period. This expected to help Christmas tree farmers. Some vegetables still being harvested including lettuce, celery, radishes, and cabbage. Pasture growth slowed by frost, but still adequate for beef and dairy herds. Cleaning and pruning berry fields continue. Eastern Washington: Cool nighttime temperatures warming by midweek as rain showers occurred. Apple picking nearing completion. Work underway to control rodents and green bugs. Vegetable and seed harvest continuing. Grape harvest well underway and spinach harvest full swing. Cattle and pastures good. Improved soil moisture would help some seeding operations.

WEST VIRGINIA: Warm pleasant Indian summer ended October 22 as rainy spell started. Rain totals heaviest in southeast and east but generally below 0.50 inch. Preparation for winter major activity most farms. Wet weather slows corn harvest. Apple harvest nearing completion, currently picking Stayman and Yorks. Pastures supplying some grazing.

WISCONSIN: Very warm and humid. Widespread fog, drizzle, and light rain. Also a few heavier rains earlier in week. Some 2.00 inch totals in southeast. Fieldwork at standstill latter part week. Corn 30% harvested, last year 60%. Yields generally very good to excellent, except lighter dry southwest and southeast areas. Soybeans 25% combined, last year 35%. Cranberry harvest about over. Apple and potato harvests also finishing up. Pasture conditions improving and above normal due warm weather and lack of frost. New seedings doing good. Fall plowing 1/3 done, last year 1/2. Soil moisture 20% short, 60% adequate, and 20% surplus.

WYOMING: Moderate to heavy snows most of State early week, Lost Cabin most moisture with 2.13 inches. After snow, fair weather moderated temperatures but they still averaged 1° to 8° below normal. Maxima were mostly 55° to 65° west of Divide and Upper Platte Drainage, 60's elsewhere. Minima mostly 15° to 25° west of Divide, 20's east. Temperature extremes: 70° at Guernsey Dam and 11° at Bondurant and Farson. Agricultural activities were harvesting sugar beets and moving and shipping livestock. Sugar beet harvest 60% complete, sugar content averaging over 16%. Both surface and subsoil moisture supplies generally adequate. Winter wheat continues good.





INDEX DECREASED DURING WEEK
(Unshaded Areas)

INDEX	
ABOVE	3.0 SOME DRYING, BUT STILL EXCESSIVELY WET.
2.0 to	3.0 MORE DRY WEATHER NEEDED, WORK DELAYED.
1.0 to	2.0 FAVORABLE, EXCEPT STILL TOO WET IN SPOTS.
0 to	1.0 FAVORABLE FOR NORMAL GROWTH AND FIELDWORK.
0 to	-1.0 TOPSOIL MOISTURE SHORT, GERMINATION SLOW.
-1.0 to	-2.0 ABNORMALLY DRY, PROSPECTS DETERIORATING.
-2.0 to	-3.0 TOO DRY, YIELD PROSPECTS REDUCED.
-3.0 to	-4.0 POTENTIAL YIELDS SEVERELY CUT BY DROUGHT.
BELOW	-4.0 EXCEPTIONALLY DRY, MOST CROPS ABOUT RUINED

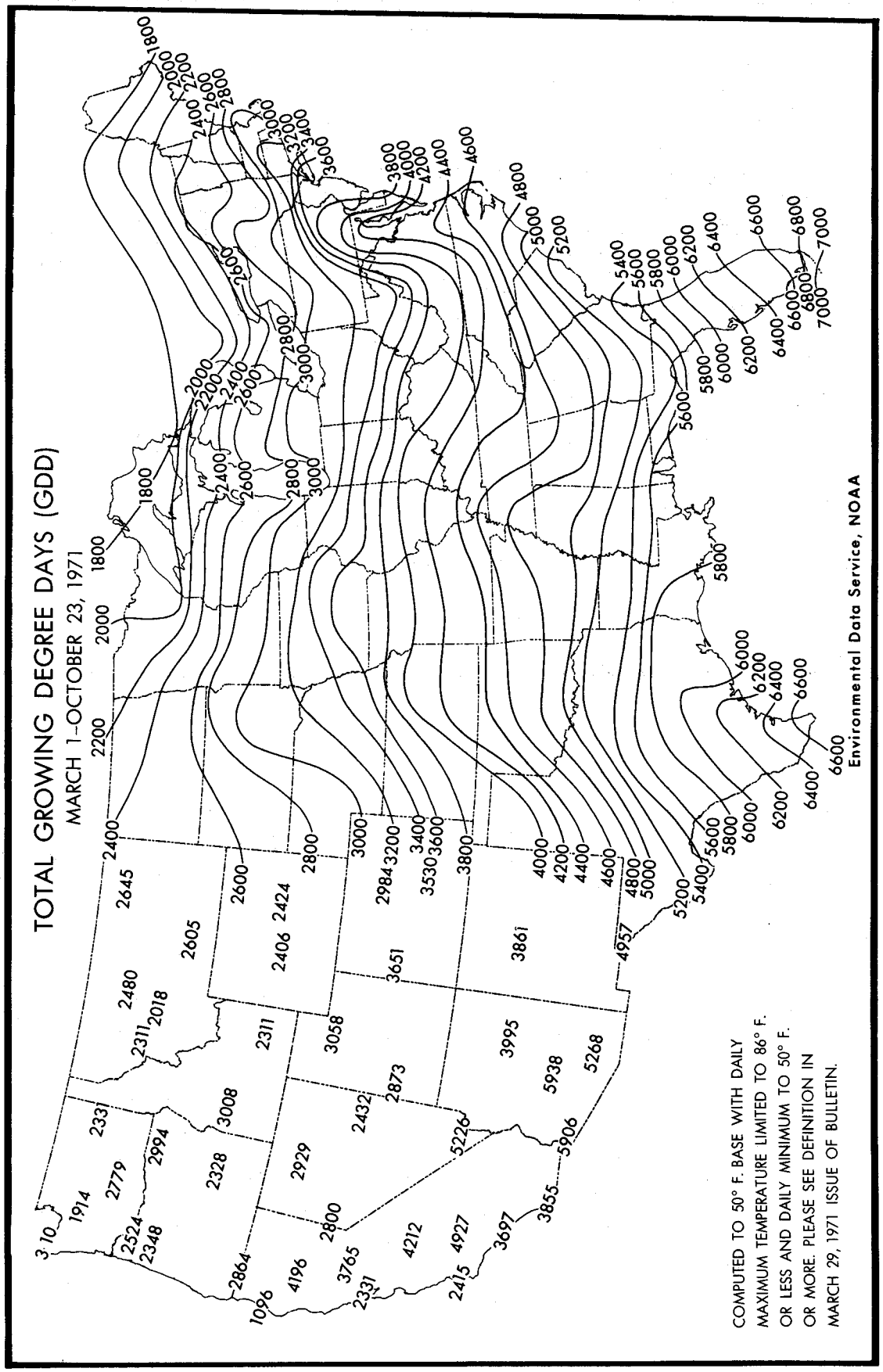
INDEX INCREASED OR DID NOT CHANGE DURING WEEK
(Shaded areas)

INDEX	
ABOVE	3.0 EXCESSIVELY WET, SOME FIELDS FLOODED.
2.0 to	3.0 TOO WET, SOME STANDING WATER.
1.0 to	2.0 PROSPECTS ABOVE NORMAL, SOME FIELDS TOO WET.
0 to	1.0 MOISTURE ADEQUATE FOR PRESENT NORMAL NEEDS.
0 to	-1.0 PROSPECTS IMPROVED, BUT RAIN STILL NEEDED.
-1.0 to	-2.0 SOME IMPROVEMENT, BUT STILL TOO DRY.
-2.0 to	-3.0 DROUGHT EASED, BUT STILL SERIOUS.
-3.0 to	-4.0 DROUGHT CONTINUES, RAIN URGENTLY NEEDED.
BELOW	-4.0 NOT ENOUGH RAIN, STILL EXCEPTIONALLY DRY.

The map above is based on weekly areal mean values of temperature and precipitation for 350 climatological divisions. Weather during previous weeks has been taken into account through successive weekly computations of both topsoil and subsoil moisture. The map shows recent crop moisture conditions; i.e., areas in which crops have been hindered by abnormal dryness or wetness, and areas where moisture conditions have been favorable.

This is a generalized picture; local variations caused by the occurrence or absence of heavy rain or by soil differences are not shown. Shallow rooted crops and crops in areas with poor soils are likely, on occasion, to suffer more than indicated. Conditions may be better than shown in areas having exceptionally good soils.

The legend applies primarily to growing rather than matured vegetation. Interpretation of the effects on crops and native vegetation must, therefore, take account of the stage of growth as well as the status and trend of moisture conditions. The trend is indicated by the shading which denotes areas where the index did not decrease below its value of a week previous; i.e., conditions did not become noticeably drier during the week. A trend toward drier occurred in the unshaded regions. The lines show the crop moisture situation according to the computed index values which may be interpreted using the legends above. One legend applies to the unshaded areas, the other to the shaded. Centers of relative maximum and minimum index values are marked for easier recognition - W for wet and D for dry. In irrigated regions the index values merely reflect departures from ordinary irrigation requirements.


TOTAL GROWING DEGREE DAYS (GDD)
MARCH 1-OCTOBER 23, 1971
COMPUTED TO 50° F. BASE WITH DAILY MAXIMUM TEMPERATURE LIMITED TO 86° F. OR LESS AND DAILY MINIMUM TO 50° F. OR MORE. PLEASE SEE DEFINITION IN MARCH 29, 1971 ISSUE OF BULLETIN.
Environmental Data Service, NOAA

EPIMAY AND SOUTHERN CORN LEAF BLIGHT

R. E. Felch and G. L. Barger

The 1971 growing season for corn is rapidly coming to an end, and with it, the end of the uncertainty over what the Southern Corn Leaf Blight (SCLB) disease would do the current corn crop. This article is one of the first of an increasingly detailed series of reports on what was done to study and combat the disease and how successful those efforts were. The later reports will be published by Purdue University and the Connecticut Agricultural Experiment Station, for example, and many others. From 1970 on, the anticipated problems with SCLB had generated considerable interest in the various types of procedures which could be used to follow the development of the organism. One of the methods proposed was the use of a computer simulation model known as EPIMAY. EPIMAY requires only meteorological information to simulate the growth and development of Helminthisporium maydis, the organism which causes SCLB. EPIMAY (Waggoner, 1971) had been developed by Dr. Paul Waggoner, of the Connecticut Agricultural Experiment Station, as an adaptation of an earlier program known as EPIDEM (Waggoner and Horsfell, 1969), which is a simulator program for early blight in tomatoes (Alternaria solani).

The purpose of this paper is to review and summarize the efforts of a large number of people during the past summer to refine and test the use of EPIMAY as a tool for following the development of H. maydis during the growing season. Without this cooperative effort, none of this would have been possible. Mr. L.A. Joos of the Kansas City Regional Office, National Weather Service (NWS), provided the necessary coordination for the collection of the required meteorological data and supervised analysis on the KC computer. Professor J. E. Newman of Purdue University headed an interdisciplinary group of Purdue scientists who worked on the testing and refining of the EPIMAY program. Agricultural Meteorologists and State Climatologists of NWS and University scientists in Minnesota, Nebraska, Iowa, Missouri, Arkansas, Wisconsin, Michigan, Illinois, Indiana, Kentucky, Ohio, Tennessee and Georgia, plus Ontario in Canada, all combined voluntarily to provide the dew and rainfall observations needed to supplement regular NWS measurements at nearby stations. We in the Environmental Data Service have supplied dew recorders, some coordination and a news outlet. It has been a privilege to work with all who have contributed to this initial experiment in relating week-to-week weather to a potential disease epidemic.

Helminthisporium maydis: Race T

Helminthisporium maydis, recently occurring as a mutant designated Race T, is most likely to develop during wet weather, when temperatures range from 65° to 85° F. Spores normally require 6 to 8 hours for germination and infection to take place. A film of free moisture on the leaves, whether from dew, rain, fog or mist, is required for penetration to occur. The combination of temperatures in the upper 70's and lower 80's and leaf wetness which remains for at least 12 hours is especially conducive to development of the disease. The Race T, so named because of its virulence on varieties containing the Texas

Table 1. A comparison of weekly mean temperatures and their departures from normal during the 1970 and 1971 growing seasons for the period July 12 to September 6.

1970

State	7/13-7/19		7/20-7/26		7/27-8/2		8/3-8/9		8/10-8/16		8/17-8/23		8/24-8/30		8/31-9/6	
	Ave	Dep.	Ave	Dep	Ave	Dep	Ave	Dep	Ave	Dep	Ave	Dep	Ave	Dep	Ave	Dep
Illinois	75.8	0	71.3	-6	81.2	+4	72.2	-4	75.7	0	72.7	-2	76.0	-3	72.2	+2
Indiana	75.5	0	69.5	-6	78.5	+3	71.0	-5	75.0	0	72.0	-2	74.2	+2	73.0	+2
Iowa	75.0	-1	71.8	-4	80.2	+4	71.0	-5	74.2	0	70.8	-3	75.5	+4	72.8	+4
Kentucky	76.5	-1	71.5	-6	80.5	+2	74.0	-3	75.0	-2	77.5	+2	73.0	-2	76.5	+4
Michigan	71.2	+1	67.6	-3	74.9	+4	66.9	-3	74.1	+5	66.4	-2	68.4	+2	64.9	0
Missouri	79.2	-1	72.2	-6	84.5	+5	80.0	0	76.8	-2	77.7	0	76.8	0	78.8	+4

1971

State	7/12-7/18		7/19-7/25		7/26-8/1		8/2-8/8		8/9-8/15		8/16-8/22		8/23-8/29		8/30-9/5	
	Ave	Dep	Ave	Dep	Ave	Dep	Ave	Dep	Ave	Dep	Ave	Dep	Ave	Dep	Ave	Dep
Illinois	74.7	-2	71.8	-6	65.2	-10	70.7	-6	74.6	-1	74.5	-1	70.3	-3	77.7	+7
Indiana	72.5	-2	71.3	-5	66.3	-9	69.8	-6	72.5	-3	74.5	0	69.2	-3	75.8	+5
Iowa	73.8	-2	72.0	-4	64.5	-12	69.0	-7	74.0	-1	74.2	+1	68.6	-3	75.5	+6
Kentucky	76.0	-2	72.5	-6	68.5	-9	73.0	-4	74.5	-1	76.5	+1	72.5	-2	77.5	+4
Michigan	65.0	-6	67.9	-2	67.9	-3	61.0	-9	67.9	-2	69.3	0	63.8	-3	71.6	+7
Missouri	79.8	0	74.2	-5	74.2	-4	67.8	-12	78.8	0	78.8	+1	75.2	-2	79.0	+5

*Mean temperatures and departures calculated from stations listed in Weekly Weather and Crop Bulletin for respective week.

male-sterile cytoplasm, is a rapid spore producer. Under ideal conditions, it has a generation cycle as short as 60 hours on the susceptible hybrids.

Primary infections occur on the lower leaves, and the fungus spreads upward to the younger leaves by being blown or by splashing rain. The fungus is capable of penetrating the husks to the ear in two weeks or less. It also may enter the ear at the open end of the ear near the silks. If a spore lands on a susceptible corn leaf and moisture is present, it germinates, producing a germ tube which subsequently forms special infections structures (appressorium and infection peg). Eighty-five percent of the infections take place through the stomata.

The EPIMAY program

EPIMAY is a computer simulation model of the life cycle of H. maydis, the SCLB causal organism. Moving at 3-hour intervals, it reads in the appropriate weather information and accordingly updates the continuous inventories of stalks, spores on stalks, spread spores, germinated spores, penetrations, incubating infections, and lesions. The rules of calculation follow the observed development of each stage in the laboratory and hence EPIMAY is an attempt to use laboratory observations to reason about events outdoors. Stalk and spore production require wetness, so they move along their courses according to the duration of wetness, as well as temperature and light. The spreading of spores by wind and rain follows the rules employed by Alternaria in EPIDEM. Germination and penetration proceed according to temperature and the duration of wetness along curves observed with H. maydis in laboratory studies. Incumbation is a constant period, but the ensuing enlargement of lesions advances according to temperature.

The purpose of most of the calculations made during 1971 was to get relative values with regard to the rates of increase in various areas of the Corn Belt on a week-by-week basis. Knowing when infections first occurred, and in what number, it would be possible to estimate the actual number of lesions at any time thereafter. However, the program is not able to give an indication of when infection would first occur in an area. The program assumes that there is a known concentration of lesions present in an area on the particular starting date. In the 1971 research effort, it was assumed that 100 lesions per hectare were present on the starting date.

Data Collection for EPIMAY

Other than the initial biological data regarding the H. maydis organism, only meteorological data are required to run the program. As previously mentioned, the program requires temperature, leaf wetness (dew or precipitation), darkness (vs. daylight) and wind information for each three hour period during the day. The inventories of the various growth stages are then updated eight times a day. For the 1971 growing season, the availability of dew sensor information was the limiting factor on the number of stations that could be run. Initially, dew data were collected from existing dew sensors which were already operating through cooperative NWS-State Agricultural Weather programs. In early August the Environmental Data Service added ten dew sensors (Davis and Hughes, 1970) in Minnesota, Nebraska, Iowa, Illinois and Ohio where Agricultural Weather programs have not been implemented. During the summer, data were processed from 23 different stations across the Corn Belt. The locations of these stations are given, along with the days of operation, in Figure 1. Where possible, rainfall data were collected at sites adjoining the dew sensors. This was necessary because the Kansas City data was incomplete and was recorded only once every six hours at best. All of the other information was collected from the nearest reporting aviation station of NWS. All of this information came from within 50 miles of the dew sensor site. Missing values cannot be tolerated with this program, so all missing values were estimated.

The 1971 Blight Season

In general, the SCLB covered more area during the 1971 growing season than in 1970. However, the severity of infection never attained the 1970 levels, except in local "hot" spots.

Operational Procedures

Because of the real time meteorological aspects of the EPIMAY program, NOAA was particularly interested in participating in this experiment. The Regional Office of NWS at Kansas City already was receiving most of the required meteorological input, and it had the necessary computer facilities for processing the data. The critical dew data and rainfall data which had to be added were summarized each Friday morning by the local observers for the previous seven days. These data were relayed to Kansas City by telephone. The data were then tabulated and placed on punch cards. The temperature, wind and sunshine data was recalled from the Service "A" history tapes by special programs provided by the Kansas City Office. The computations were run over the weekend and results were distributed on Monday morning. By the end of the season, one stations cards, 6 or 7 dozen, required about 1 minute of computer time to make the necessary calculations. Over the summer, approximately 1400 station days of data were processed and punched. Eight weekly runs were made, and weekly maps were prepared. Data for the 24 stations used were processed for periods ranging from 15 to 82 days each.

Output of the EPIMAY Program

The information released each week from Kansas City during July and August was published in the Weekly Weather and Crop Bulletin. The maps presented the increase in number of lesions during the previous 7-day period. This gave a relative measure of the rate of disease development during the week, but did not indicate the severity of infection in each area at the end of the week. An area may have a high rate of increase in number

Table 2. The number of periods of leaf wetness of varying duration during the period July 12 to August 15 at three locations in western Indiana.

Period Length (hrs)	No. periods with leaf wetness of specified duration		
	W. Lafayette	Wanatah	Vincennes
3	1	2	2
6	8	7	4
9	14	15	20
12	8	6	7
15	2	1	0
greater 15	2	3	2

of lesions during the week, but have a small total number of lesions because previous weeks had been unfavorable for disease development. Further work with the program may permit the information provided to be more quantitative in the future. A series of four of the maps provided by the Kansas City Office and reprinted in the Weekly Weather and Crop Bulletin is shown in Figure 2.

The 1971 Blight Season

In general, the SCLB covered more area during the 2971 growing season than in 2970. However, the severity of infection never attained the 1970 levels, except in local "hot" spots. On June 1, SCLB had been found in small and localized areas of nine States: Illinois, Kentucky, Iowa, Alabama, Florida, Nebraska, Tennessee, Texas and Mississippi. New infections appeared to be caused by spores which had overwintered on husks and stalks left above ground locally and from occasional shelling operations. By June 30, SCLB infection had been verified in about 422 counties in 26 States. However, overall infection was generally light, often occurring in only a few fields within a county.

The Federal-State Information Center on Corn Blight reported on July 28 that overall infection levels were moderate to light in the majority of Corn Belt and Southern States. Infection was appearing earlier in many areas than in 1970, but it was not severe. During the first two weeks of August, a general increase in infection level was noted in all of the corn growing areas. Locally severe areas of infection were being reported, particularly in lowland or valley areas, where moisture levels were higher and air circulation was restricted. Blight infection levels continued to increase through the remainder of the growing season, but never reached the severe levels of infection found in 1970. Overall effects on yield are considered to be small.

Evaluation of EPIMAY

Although the EPIMAY program output had been checked against 1970 disease experience in Tennessee and Georgia, the ground truth information collected this past summer is providing greater opportunity for verification. The Corn Blight Watch Experiment in which USDA, NASA, the Laboratory for Application of Remote Sensing (LARS) at Purdue and others participated has made continuing study possible. The remainder of this report will deal with EPIMAY data for the intensive study area in western Indiana, where detailed information has been collected.

Thanks to Mr. Walter Stirm, NWS Agricultural Meteorologist with the outstanding Agricultural Weather program in Indiana, six dew sensors were already in operation in the intensive study area. EPIMAY was run on each individual station. The response of EPIMAY in relation to the increase in ground observer blight ratings during the four week period from mid-July to mid-August was studied. The blight ratings, on a unit scale of 0 to 5, were associated with the EPIMAY output for the nearest dew sensor. Wanatah appeared to be representative of northwestern Indiana and was used for Segments 201 through 207. West Lafayette (Agronomy Farm) was used for Segments 209 through 207. Although the station at Hendricks was closer to some of the segments, analysis indicated that it was not as representative as West Lafayette. Using Terre Haute data, EPIMAY gave indicated increases in number of lesions which seemed high by a factor of about 10 for nearby segments. Though Terre Haute was closer, Segment 214 was better related to the West Lafayette station, and Segments 217-219 were included with the station to the south, Vincennes. There were no corn fields containing T-cytoplasm included in the bi-weekly surveillance in the southernmost segments, so they were not included in this study.

To get the appropriate increase in "ground-truth" blight ratings during this period, the ratings from only the T-cytoplasm fields which were visited bi-weekly were averaged for each segment. The difference between the average on the 3rd visit (approximately July 12) and the 5th visit (approximately August 10) was plotted against the indicated increase in number of lesions during the corresponding period from the EPIMAY output. Since the number of lesions on the beginning dates varied from location to location, the increase was normalized by dividing the number of lesions present on the last day of the period by the number present on the first day. This gave a lesion multiplication factor, or the number of time the original number of lesions increased during the four week period. The data generated in this manner must be interpreted with some degree of caution since many of the segments contained only one or two fields. The maximum number for any segment was five.

Figure 3 shows that there is a general relationship between the increase in the number of lesions and the "actual" increase in blight ratings. Simple correlation analysis (Steel and Torrie, 1960) gave a correlation coefficient of $r = 0.64$, which is significant at the 0.01 level of confidence. Because of the relative nature of these values, it is not possible to use this data for prediction purposes through regression analysis.

What Happened in 1971?

Southern corn leaf blight never reached the epidemic proportions which occurred in 1970. It appears that cool weather during July and August may have played an important role in restricting the development of the organism. The weekly mean temperatures for each week during the period July 12 to September 6 are shown in Table 1 for six of Corn Belt States in 1970 and 2971. This time period coincides with the period when SCLB reached epidemic proportions in 1970. During 1970, temperatures alternated from 5°F below normal to about 4°F above normal throughout the period. On the other hand, 1971 temperatures at the same locations averaged below normal through nearly the entire period, with maximum departures occurring the week of July 26 to August 1. Across Illinois, Indiana and Iowa, temperatures averaged 10°F below normal. Mean temperatures averaged in the mid-60's, which would indicate that night-time temperatures averaged well below the critical temperature of 65°F required for germination in a reasonable length of time. Although the low night-time temperatures were also conducive to dew formation, it appears that temperatures stymied the rapid development of the pathogen.

Looking now at the moisture factor, Table 2 shows the number of periods of leaf wetness of varying durations which occurred in 1971 at the three Indiana stations discussed earlier. At the West Lafayette Agronomy Farm, leaf wetness occurred every night in the period July 12 to August 15. Only one night had less than 6 hours of leaf wetness. Four of the nights had 15 hours or more of leaf wetness, but no excessive periods were found similar to a few reported in 1970. Wanatah experienced two nights without leaf wetness, and four nights with less than 6 hours. Vincennes experienced leaf wetness every night, with 20 nights having approximately 9 hours of leaf wetness. Under warm temperature conditions, this

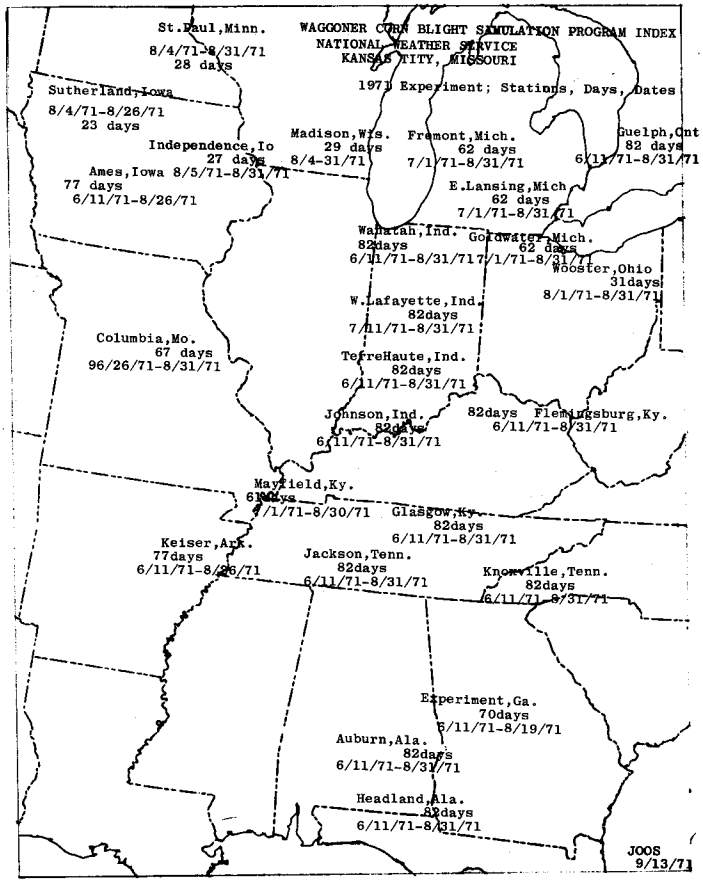


Figure 1. The locations of the dew sensor sites used in the EPIMAY simulation program in 1971. The number of days and dates for which data were processed are also presented.

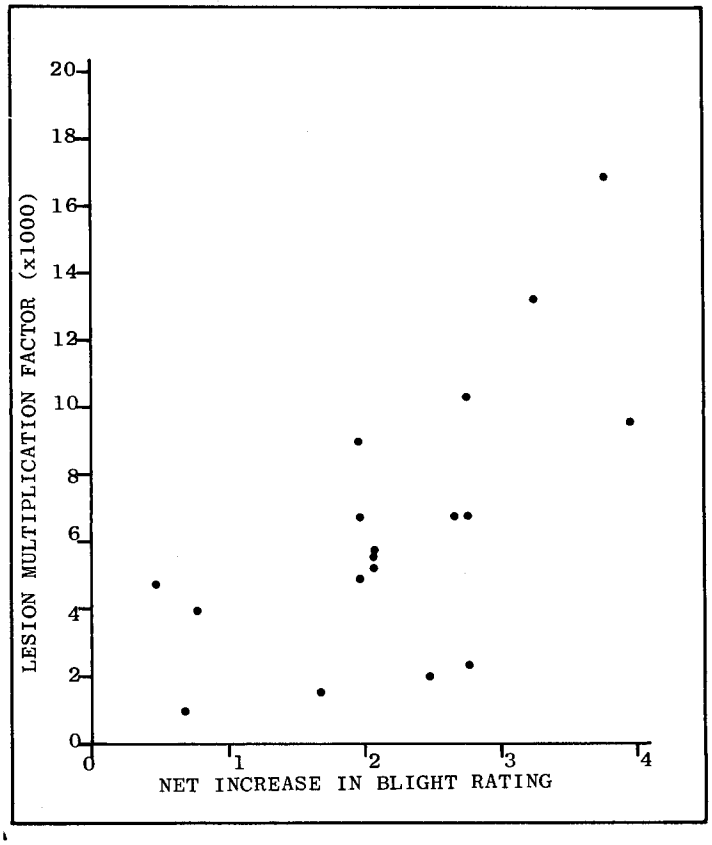


Figure 3. The relationship between the increase in blight ratings from ground truth data and the relative increase in numbers of lesions as indicated by the EPIMAY program. (r= 0.64)

would have been sufficient for germination and penetration to occur.

These data indicate that leaf wetness was not a limiting factor in 1971. With normal to above normal temperatures, development may have progressed at a much more rapid rate.

Some of the Problems

At the present time, the program does not take into account genetic differences in susceptibility in corn hybrids. It is known that different genomes can modify the susceptibility of T-cytoplasm corn to H. maydis. The differences in susceptibility could affect the rate of disease development.

One limitation to the use of EPIMAY this year was the necessary reliance on one dew sensor to represent condensation of moisture over a considerable area. As was pointed out earlier, some areas were better represented by stations further away than the ones nearby. This problem will require further consideration in the future, but basically it becomes a problem of sampling density. We had only 1 to 3 sensors in most States, and even western Indiana had only 6.

One possibility for solving the network density problem would be the inclusion of dew observations in the standard weather observations taken regularly as part of the NWS program. This would insure a readily available source of dew information when critical insect and disease problems such as SCLB occur. The recorders added to this network by us cost about $130 apiece. This included both the sensor and recorder. By modern day cost standards for meteorological instruments, this is very inexpensive. By a rather small investment, the capability of such programs could be increased immensely.

The Future of EPIMAY and Similar Programs

Experience with EPIMAY during 1971 has shown that there is a real potential for monitoring crop diseases on a week-by-week basis through the use of simulation models. As our knowledge of plant disease and weather increase, this capability will increase still further. EPIMAY itself is a fully operational program which gives a reasonable estimate of the areas in which SCLB was developing most rapidly. Because it can be used on a real-time basis, it is particularly useful and provides a tool worthy of further development in the future. The simulator helped prevent any over reaction to the threat this year and provided an immediate, at least tentative, reason for the escape of most of the crop from serious infection. It can serve as a guide for yield and production outlooks and aid national planners in the future.

Summary

EPIMAY is a computer simulation model which mimics the growth and development of H. maydis, the causal organism for southern corn leaf blight.

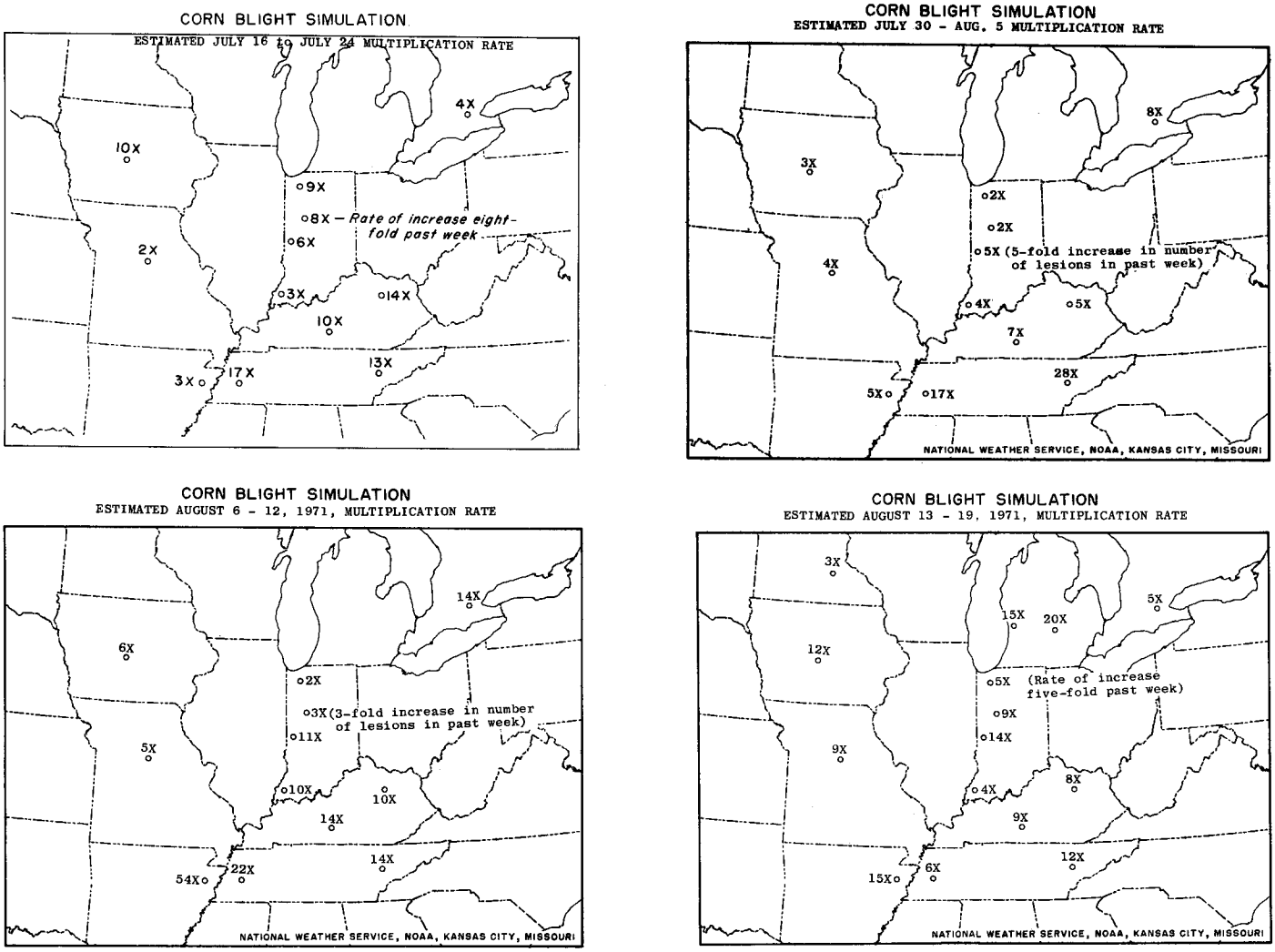


Figure 2. Four of the maps prepared by the NWS in Kansas City and reprinted in the Weekly Weather and Crop Bulletin during 1971.

The efforts which were put forth during 1971 to use this program are described. Preliminary analysis shows that the simulator did perform satisfactorily, and will provide a useful tool in the future for following disease developments.

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