

# WEEKLY WEATHER AND CROP BULLETIN

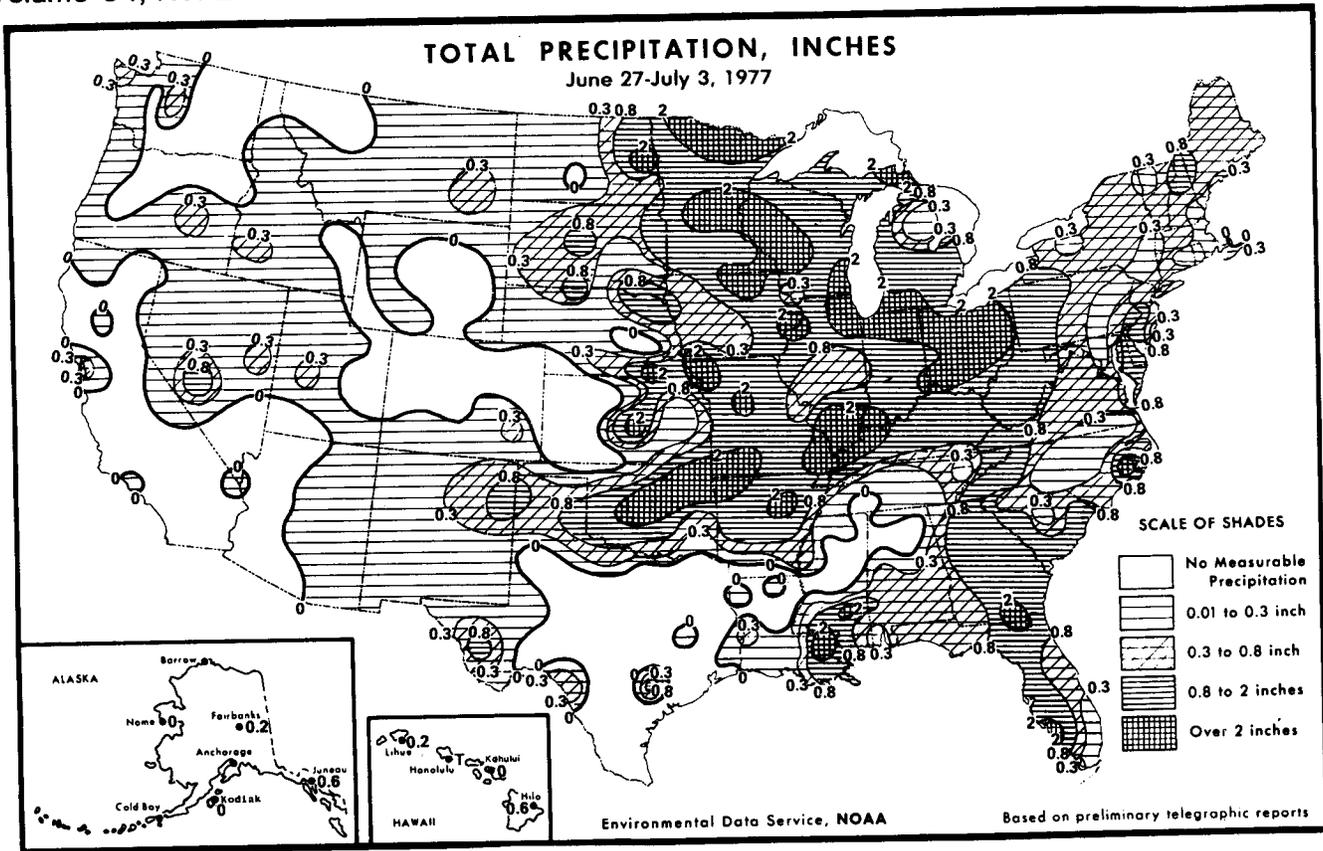
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## National Weather Summary

June 27 - July 3

**HIGHLIGHTS:** Much of the Corn Belt received significant rainfall. Bands of showers and thunderstorms provided the moisture, however, on one day 25 tornadoes roamed over that area and as far east as Ohio and Kentucky. There was also some hail which produced scattered crop damage. Heavy rains also ranged from central Oklahoma to Kentucky. Dry portions of Georgia and Wisconsin got some welcome precipitation.

Temperatures in the eastern U.S. ranged from 3° below normal around New York City to 5° above expected from northern Virginia to South Carolina. Sections of the Plateau Region and southern California leaped 9° above normal.

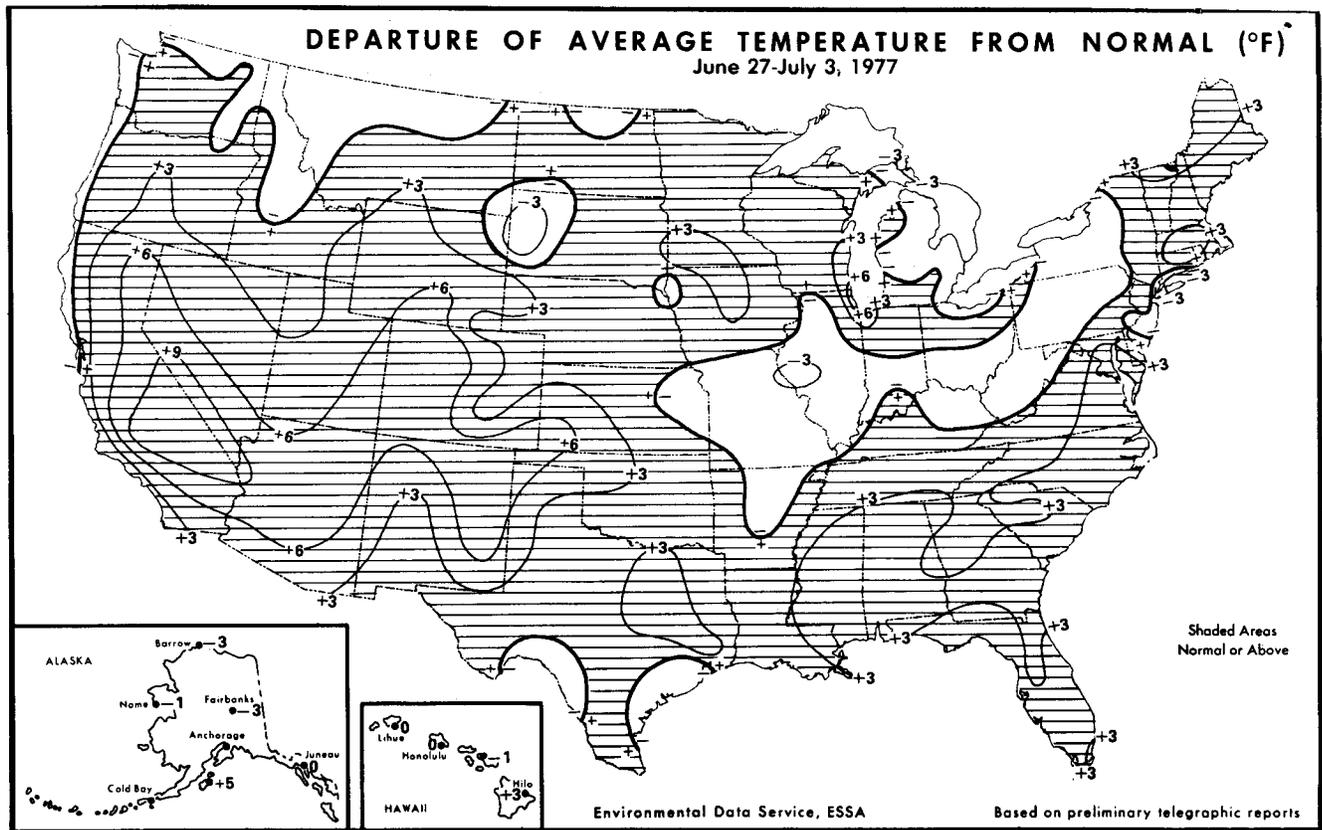
Heavy rains continued into early Monday causing flooding in the St. Louis area. Thunderstorms covered the western sections of Indiana, Kentucky, Tennessee, and eastern Arkansas. Severe weather

during the afternoon triggered tornadoes and hail in North Dakota, Minnesota, and Wisconsin. This activity, however, brought some badly needed moisture to the upper Midwest. A tornado also whirled through Jacksonville, N.C., while three-quarters of an inch of rain fell in the widely separated cities of Columbus, Ohio, Franklin, Pa., and Myrtle Beach, S.C.

Four southwestern stations watched the mercury climb to 114°; they were Las Vegas, Buckeye, Ariz., and Needles and Blythe, Calif.

Tuesday morning thunderstorms, some severe, rushed over the northern half of the Great Plains, middle Mississippi Valley, Great Lakes, and Appalachians. Hail and flooding caused some crop damage in northwestern Missouri.

Locally intense evening thunderstorms rumbled through the Ohio Valley and middle Atlantic Coast region, and in a band from southern Illinois to New Mexico. More than one inch of rain fell in



Wilmington, Del., and Cincinnati. Twisters touched down in Texas, Kentucky, Indiana, and Ohio.

Blistering temperatures again baked parts of the Southwest. One reading near Hoover Dam reached 121°. There were no barefoot boys in Death Valley where the desert sand temperature soared to 184°.

A large high pressure system brought cooler and drier air to the central Plains and upper half of the Mississippi Valley on Wednesday morning. In the afternoon, heavy thunderstorms developed over southern and western New England, and a tornado spun through southwestern Massachusetts. By early evening, the drier air gave way to incoming moisture producing intense thunderstorms, tornadoes, and hail in the eastern Dakotas and Minnesota. Storms also hit from southeastern Colorado into central New Mexico. Just before midnight, similar weather was reported in Iowa, Wisconsin, the southern Appalachians, upper Rio Grande Valley, and Florida Keys.

The last day of June turned violent for much of the middle Mississippi and upper Ohio Valleys. Six States were ripped by 25 tornadoes. The scorecard showed Indiana the leader with 8, Illinois 7, Ohio 5, Kentucky 3, and Wisconsin and Missouri one each. The day began with heavy rain in parts of Iowa and northern Illinois, and by noon precipitation made its mark; the Chicago area was soaked by three and one-half inches.

The complex frontal system that spanned the intense weather slipped eastward at darkness. Midnight reports recorded a band of thunderstorms from the lower Great Lakes to eastern Oklahoma. Isolated storms dotted northern California and Nevada, southwestern Texas, the Gulf Coast, and New England.

On Friday, heavy thunderstorms built up in southwestern Texas and extended across Oklahoma and Tennessee into the northern reaches of the Deep South. Northwestern Arkansas slogged through the most rain when more than three inches fell. By evening, thunderstorms blasted the southern Atlantic Coast and central Gulf Coast States. Less intense rains dotted the upper half of the Intermountain Region, the eastern Colorado/New Mexico border area, and northern Michigan.

New Orleans notched its warmest and driest June on record, an average of nearly 85° and only .39 inch of rain, down from an expected six inches.

Heavy thunderstorms were commonplace in many sections of the country on Saturday. Hard hit were the Plains, especially Texas and eastern Kansas, parts of the Intermountain Region, and the South. Southeastern Arizona reported more than one inch of rain; just outside Yazoo City, Miss., 1.50 inches splashed down in 15 minutes; and hail pummeled points in Georgia, South Dakota, and Utah. Ten head of livestock were killed by lightning southwest of Jackson, Miss.

San Francisco already set a July record of .35 inch of rain for the month; this topped the 1974 peak of slightly less than one-quarter of an inch.

Overnight precipitation was heavy in Wisconsin and Minnesota, but Sunday was generally dry for much of the Nation. A few showers were scattered over the Southwest, Pacific Northwest eastward to Idaho, southern Florida, and South Atlantic Coast States. Tornadoes touched down in Minnesota, Nebraska, and Louisiana. Baton Rouge and Sioux Falls, S. Dak., showed 99° and Dodge City, Kans., sweltered through 101°.

## National Agricultural Summary

June 27 - July 3

**HIGHLIGHTS:** Rains improved growing conditions for row crops and grasslands in the Corn Belt, parts of the Great Plains, and some areas of the South. Crop development advanced rapidly, staying ahead of most recent years. Most of the soybeans to be planted will follow small grains. Winter wheat harvest advanced to 56% complete, only a few points ahead of last year and the average. Fruit growers picked sweet and tart cherries, peaches, and early apples. Soil moisture improved in most of the eastern half of the Nation, but the western States and Deep South were very dry. Pastures rated fair to good in several Corn Belt States and the southern Great Plains; elsewhere pastures rated poor to fair.

**SMALL GRAINS:** Combining advanced rapidly to completion in the southern Great Plains where rains missed fields waiting to be cut. Further north, producers were not as lucky; rains interrupted harvest and produced weedy fields in some areas. Nationally, the winter wheat harvest advanced to 56% complete by July 3, 7 points more than the 1976 figure and 2 points ahead of the average.

In eastern Kansas, wet and weedy fields delayed the wheat harvest, but elsewhere farmers advanced steadily. Kansas wheat combining reached 55% complete compared with 50% in 1976 and 60% average. Oklahoma wheat producers reached 97% complete, ahead of last year's 92% and the average 95%. Most of the uncut acreage was in the Panhandle, but high humidity and wet soils combined with weedy fields to delay completion in other northern areas. The Texas wheat harvest was widespread throughout the High Plains; combining should be complete in a week. Iowa farmers harvested over half the wheat compared with 9% last year and 5% average. Hot dry weather sped the crop to maturity allowing the early harvest.

The spring wheat crop also developed rapidly. In Montana, 45% was headed compared with 60% in 1976 and 25% average.

Oats combining advanced northward into the major production area; 26% of the Iowa crop was harvested. A third of the North Dakota oats ripened, which was ahead of normal; some of the Wisconsin crop lodged.

**CORN:** Rains in most of the Corn Belt spurred growth and development pushing the 1977 crop toward an earlier than normal maturity. In the eastern north central States, corn silked rapidly. The Illinois crop was 33% silked compared with 2% last year and 6% average. Average plant height ranged from 30 to 64 inches, which was 6 to 25 inches higher than normal.

In the western north central States, corn also silked early ranging from 10 to 32%. Average growth reached 41 to 52 inches, almost double the normal.

Drought inflicted losses on corn in Mississippi, Alabama, Georgia and Florida. In the South, corn rated fair to good with silking ranging from 30 to 70%.

**COTTON:** Cotton developed early and rated fair to good. In Texas, early stands squared on the High

Plains. Insect activity was light on the plains, but populations increased southward. Bollworms and bud worms damaged some lower Rio Grande Valley stands. Only 3% of Oklahoma's cotton squared, half the normal progress. Arkansas' crop was three weeks early. Across the South squaring ranged from 80 to 89%; boll set ranged from 13% in Alabama to 77% in Georgia. Weevils remained a problem in South Carolina.

**SOYBEANS:** Rains improved soybean growing conditions with the exception of the Southeast and parts of Virginia. Farmers almost finished planting while only double crop beans were left to be sown. Arkansas reported grassy fields. Plant growth exceeded many recent years and development surpassed the normal. Blooming reached 17 to 23% in some of the north central States compared with the 3 to 10% normal.

**OTHER CROPS:** Sorghum planting was almost complete; farmers replanted some Kansas fields where rains washed away earlier efforts. The crop rated good to excellent. A few early fields headed in Oklahoma while Texas growers planted some fields following wheat harvest. Sorghum reached the boot stage in the southern High Plains; harvesting began in Lower Valley.

Rice rated fair to good in the Delta area. Texas producers drained fields in preparation for combining and Louisiana's crop was 38% headed. Arkansas growers applied midseason nitrogen.

Maine potatoes rated good, but were plagued with excess moisture and too few warm, sunny days. Idaho potato growth exceeded a year ago by a slight margin.

Georgia peanuts were in fair to good condition; 87% of the crop bloomed and 71% pegged. Alabama's crop attained 29% pegged, well behind last year and the average; rains helped the Texas crop.

**FRUITS AND NUTS:** Peach picking advanced further north into New Jersey. In southern areas, peach harvesting reached 77% complete in Georgia, 37% in South Carolina; and 35% in North Carolina; progress lagged last year but exceeded the average. Producers also picked sweet and tart cherries in all major production areas. Growers harvested some early apples in southern areas.

**VEGETABLES:** Florida's vegetable season drew to a close with sweet corn and watermelons comprising the bulk of the shipments. Widespread harvests of summer vegetables included sweet corn, tomatoes, snap beans, and cucumbers. Texas producers shipped melons, sweet corn, cucumbers, squash, peas, onions, lettuce, and cabbage. California growers harvested broccoli, celery, sweet corn, melons, lettuce, onions, peppers, and cauliflower.

**PASTURES AND LIVESTOCK:** Pastures rated fair to good; some localities were excellent on the Great Plains and parts of the Corn Belt. Elsewhere pastures provided less than adequate forage and rated poor to fair. Stock water availability became a problem in several western States forcing producers to haul water and feed to cattle on drought-stressed rangeland.

Temperature and Precipitation Data for the Week Ending Midnight, l.s.t., July 3, 1977

States and Stations	Temperature °F		Precipitation Inches		States and Stations	Temperature °F		Precipitation Inches		States and Stations	Temperature °F		Precipitation Inches	
	Average	Departure	Total	Departure		Average	Departure	Total	Departure		Average	Departure	Total	Departure
ALA. Birmingham . . .	84	+ 5	0	-1.1	La. Baton Rouge . . .	85	+ 3	.1	-1.1	Youngstown . . .	71	+ 1	1.7	+ .9
ALA. Mobile . . .	84	+ 3	.2	-1.6	LAKE CHARLES . . .	84	+ 2	.2	-1.2	OKLA. Okla. City . . .	81	+ 1	2.2	+1.4
ALA. Montgomery . . .	84	+ 3	.8	-.3	LAKE CHARLES . . .	84	+ 3	.9	-.5	Tulsa . . .	82	+ 2	3.7	+2.7
ALASKA. Anchorage . . .	---	---	---	---	LAKE CHARLES . . .	83	+ 1	.1	-.6	OREG. Astoria . . .	57	- 1	.1	-.3
BARROW . . .	34	- 3	T	-.1	MAINE. Caribou . . .	67	+ 4	.6	-.2	Burns . . .	66	+ 2	.5	+ .4
FAIRBANKS . . .	58	- 3	.2	-.2	Portland . . .	67	+ 1	.2	-.5	Medford . . .	71	+ 2	.2	+ .1
JUNEAU . . .	55	0	.6	-.3	MD. Baltimore . . .	78	+ 3	.5	-.4	Pendleton . . .	70	0	0	-.1
KODIAK . . .	57	+ 5	0	-.9	MASS. Boston . . .	75	+ 3	.1	-.6	Portland . . .	65	0	.1	-.1
NOME . . .	48	- 1	0	-.3	Chatham . . .	66	- 0	0	---	Salem . . .	65	+ 1	T	-.2
ARIZ. Flagstaff . . .	70	+ 7	.1	-.2	MICH. Alpena . . .	63	- 1	.2	-.4	PA. Allentown . . .	74	+ 1	.5	-.4
PHOENIX . . .	96	+ 7	T	-.1	Detroit . . .	70	- 1	1.1	+ .4	Erie . . .	68	0	1.1	+ .3
TUCSON . . .	90	+ 5	T	-.3	Flint . . .	69	0	2.0	+1.2	Harrisburg . . .	75	0	.1	-.7
WINSLOW . . .	83	+ 7	T	-.1	Grand Rapids . . .	70	0	1.4	+ .6	Philadelphia . . .	74	- 1	1.6	+ .7
YUMA . . .	94	+ 4	T	0	Houghton Lake . . .	65	0	T	-.8	Pittsburgh . . .	69	- 2	.9	+ .1
ARK. Fort Smith . . .	81	0	.8	0	Lansing . . .	69	- 1	1.5	+ .8	Scranton . . .	69	- 2	.1	-.8
LITTLE ROCK . . .	79	- 1	1.3	+ .5	Marquette . . .	66	+ 2	1.5	+ .7	R.I. Providence . . .	73	+ 3	.1	-.5
CALIF. Bakersfield . . .	90	+ 9	0	0	Muskegon . . .	68	- 1	1.4	+ .8	S.C. Charleston . . .	85	+ 5	1.3	-.5
EUREKA . . .	55	- 1	0	-.1	S. Ste. Marie . . .	58	- 4	2.0	+1.3	Columbia . . .	83	+ 2	T	-1.1
FRESNO . . .	85	+ 7	0	0	MINN. Duluth . . .	65	+ 2	1.6	+ .6	Greenville . . .	81	+ 3	.5	-.5
LOS ANGELES . . .	72	+ 1	0	0	Internatl Falls . . .	65	+ 1	2.7	+1.7	S.D. Aberdeen . . .	70	+ 1	.7	-.1
RED BLUFF . . .	85	+ 5	T	-.1	Minneapolis . . .	72	+ 2	1.9	+1.0	Huron . . .	73	+ 2	.2	-.6
SAN DIEGO . . .	69	+ 2	T	0	Rochester . . .	71	+ 2	1.1	+ .1	Rapid City . . .	65	- 4	.5	-.2
SAN FRANCISCO . . .	61	- 1	.4	+ .4	St. Cloud . . .	69	+ 1	2.3	+1.4	Sioux Falls . . .	74	+ 3	.2	-.7
STOCKTON . . .	80	+ 5	T	0	MISS. Jackson . . .	85	+ 4	0	-.9	TENN. Chattanooga . . .	82	+ 4	.1	-1.0
COLO. Denver . . .	76	+ 6	T	-.4	Meridian . . .	86	+ 5	.3	-.7	Knoxville . . .	73	+ 2	.2	-.6
GRAND JUNCTION . . .	83	+ 7	T	-.1	MO. Columbia . . .	74	- 2	1.2	0	Memphis . . .	83	+ 2	.2	-.6
PUEBLO . . .	76	+ 2	.2	-.2	Kansas City . . .	77	- 2	1.2	0	Nashville . . .	80	+ 1	.1	-.7
CONN. Bridgeport . . .	69	- 3	.8	+ .2	St. Louis . . .	75	- 1	.8	-.2	TEX. Abilene . . .	83	0	0	-.6
HARTFORD . . .	75	+ 4	.2	-.6	Springfield . . .	76	0	2.2	+1.2	Amarillo . . .	80	+ 3	.5	-.3
D.C. Washington . . .	82	+ 5	T	-.8	MONT. Billings . . .	71	+ 3	T	-.4	Austin . . .	84	0	T	-.6
FLA. Apalachicola . . .	82	+ 1	.8	-.8	Glasgow . . .	65	- 2	T	-.5	Beaumont . . .	85	+ 3	0	-1.2
DAYTONA BEACH . . .	83	+ 2	.4	-1.3	Great Falls . . .	65	0	T	-.6	Brownsville . . .	84	0	0	-.5
FT. MYERS . . .	82	0	3.7	+1.5	Havre . . .	65	- 0	T	-.5	Corpus Christi . . .	84	0	0	-.5
JACKSONVILLE . . .	84	+ 3	1.0	-.7	Helena . . .	60	- 1	0	-.4	Dallas . . .	83	- 3	.6	+ .2
KEY WEST . . .	85	+ 1	.1	-1.0	Kalispell . . .	62	- 2	.6	0	Del Rio . . .	83	- 3	.6	+ .2
LAKELAND . . .	84	+ 3	1.3	-.5	Miles City . . .	72	+ 1	T	-.4	El Paso . . .	84	+ 2	.1	-.2
MIAMI . . .	85	+ 3	T	-2.0	Missoula . . .	62	- 1	T	-.9	Fort Worth . . .	87	+ 4	0	-.5
ORLANDO . . .	83	+ 2	.6	-1.4	NEBR. Grand Island . . .	76	+ 1	T	-1.0	Galveston . . .	82	- 1	0	-1.0
TALLAHASSEE . . .	81	0	.3	-1.6	Lincoln . . .	75	+ 2	.6	-.4	Houston . . .	82	- 1	T	-1.0
TAMPA . . .	83	+ 1	1.2	-.6	Norfolk . . .	73	+ 1	.1	-.7	Lubbock . . .	82	+ 3	0	-.6
W. PALM BEACH . . .	82	+ 1	.1	-1.7	N. Platte . . .	73	+ 1	.1	-.7	Midland . . .	83	+ 1	.2	-.2
GA. Atlanta . . .	79	+ 2	1.0	0	Omaha . . .	75	+ 2	.5	-.5	San Angelo . . .	85	+ 1	0	-.4
AUGUSTA . . .	84	+ 4	1.2	+ .2	Valentine . . .	72	+ 1	1.2	+ .5	San Antonio . . .	84	0	0	-.5
MACON . . .	84	+ 3	1.5	+ .5	NEV. Ely . . .	67	+ 4	.3	+ .1	Victoria . . .	84	0	T	-.7
SAVANNAH . . .	84	+ 3	.8	-.8	Las Vegas . . .	96	+ 9	T	-.1	Waco . . .	88	+ 4	0	-.4
HAWAII. Hilo . . .	78	+ 3	.6	-1.1	Winnemucca . . .	72	+ 5	.1	0	Wichita Falls . . .	84	0	.5	-.1
HONOLULU . . .	80	0	T	-.1	N.H. Concord . . .	70	+ 2	.2	-.6	UTAH. Blanding . . .	77	+ 7	.1	0
KAHULUI . . .	77	- 1	0	-.1	N.J. Atlantic City . . .	74	0	.3	-.5	Salt Lake City . . .	75	+ 3	.1	-.1
LIHUE . . .	78	0	.2	-.2	Trenton . . .	76	+ 1	1.3	+ .4	VT. Burlington . . .	72	+ 3	T	-.8
IDAHO. Boise . . .	70	0	.1	-.1	N. MEX. Albuquerque . . .	81	+ 3	T	-.2	VA. Lynchburg . . .	76	+ 1	.4	-.5
LEWISTON . . .	73	+ 3	T	-.3	Roswell . . .	85	+ 6	.1	-.3	Norfolk . . .	82	+ 5	.2	-.9
POCATTELLO . . .	70	+ 3	.1	-.1	N.Y. Albany . . .	72	+ 1	.2	-.5	Richmond . . .	82	+ 5	.4	-.6
ILL. Cairo . . .	79	- 1	2.0	+1.1	Binghamton . . .	68	0	.6	-.2	Roanoke . . .	76	+ 2	.4	-.4
CHICAGO . . .	80	+ 6	2.6	+1.6	Buffalo . . .	69	0	.4	-.2	WASH. Colville . . .	67	+ 2	0	-.3
MOLINE . . .	74	+ 1	3.0	+1.9	New York . . .	75	0	.4	-.3	Omak . . .	66	- 2	0	-.2
PEORIA . . .	73	- 1	.7	-.2	Rochester . . .	69	- 1	.2	-.4	Quillayute . . .	56	- 1	.4	-.3
ROCKFORD . . .	72	0	1.6	+ .5	Syracuse . . .	68	- 2	.5	-.2	Seattle-Tacoma . . .	64	+ 2	T	-.3
SPRINGFIELD . . .	73	- 3	.6	-.4	N.C. Asheville . . .	74	+ 1	1.7	+ .7	Spokane . . .	65	- 1	0	-.2
IND. Evansville . . .	77	0	3.2	+2.4	Charlotte . . .	81	+ 3	.2	-.8	Walla Walla . . .	71	- 1	0	-.2
FT. WAYNE . . .	73	+ 1	2.3	+1.4	Greensboro . . .	79	+ 3	.1	-.9	Yakima . . .	69	+ 1	T	-.1
INDIANAPOLIS . . .	74	0	1.6	+ .7	Hatteras . . .	81	+ 4	.5	-.8	W. Va. Beckley . . .	68	- 2	.8	-.3
SOUTH BEND . . .	72	+ 1	3.7	+2.8	Raleigh . . .	80	+ 4	.1	-.9	Charleston . . .	73	- 1	2.0	+1.0
IOWA. Burlington . . .	74	0	1.3	+ .3	Wilmington . . .	84	+ 4	.4	-1.3	Huntington . . .	73	- 2	1.5	+ .6
DES MOINES . . .	77	+ 3	.3	-.7	N. DAK. Bismarck . . .	68	0	T	-.7	Parkersburg . . .	73	- 1	1.5	+ .5
DUBUQUE . . .	71	0	.7	-.5	Fargo . . .	69	+ 1	.7	-.1	WIS. Green Bay . . .	70	+ 2	1.0	+ .2
SIOUX CITY . . .	72	- 2	.9	-.1	Williston . . .	69	+ 2	T	-.7	La Crosse . . .	73	+ 2	3.4	+2.4
KANS. Concordia . . .	77	+ 1	.1	-.9	OHIO. Akron-Canton . . .	72	+ 1	2.9	+2.1	Madison . . .	71	+ 2	1.5	+ .5
DODGE CITY . . .	83	+ 6	0	-.8	Cincinnati . . .	72	- 3	2.9	+1.9	Milwaukee . . .	72	+ 4	2.6	+1.8
GOODLAND . . .	76	+ 3	0	-.6	Cleveland . . .	69	- 2	2.4	+1.6	WYO. Casper . . .	72	+ 5	T	-.3
TOPEKA . . .	74	- 3	.2	-1.0	Columbus . . .	73	0	2.1	+1.1	Cheyenne . . .	68	+ 2	T	-.5
WICHITA . . .	80	+ 1	T	-1.1	Dayton . . .	73	- 1	1.2	+ .3	Lander . . .	70	+ 4	T	-.3
KY. Lexington . . .	74	- 1	1.3	+ .2	Toledo . . .	70	- 2	1.4	+ .6	Sheridan . . .	66	0	T	-.5
LOUISVILLE . . .	77	+ 1	1.3	+ .4						P.R. San Juan . . .	81	+ 1	.6	-.7

Based on 1941-70 normals

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## State Summaries of Weather and Agriculture

These summaries provide brief descriptions of crop and weather conditions important on a national scale. More detailed data are available in Weather and Crop Bulletins published each Monday by SRS State offices in cooperation with the National Weather Service.

**ALABAMA:** Above normal temperatures and widely scattered showers. Drought continued central and south.

Fieldwork: 5.6 days suitable. Soil moisture very short to short. Cotton good condition; 78% squaring, 28% 1976, 64% average; 13% setting bolls, none 1976, 12% average. Corn poor to fair condition; 61% tasseling, 53% 1976, 54% average. Soybeans fair condition, 88% planted. Peanuts fair condition, 29% pegging, 36% 1976, 53% average. Wheat harvest virtually complete. Irish potato harvest underway. Pastures, hay poor to fair.

**ALASKA:** Crop growth moderate to rapid throughout railbelt. Early seeded fields oats and barley heading out. Rain and wet fields Tanana Valley and Matanuska Valley plague hay making. Soil moisture mostly adequate or better Tanana Valley, short to adequate elsewhere. Livestock in mostly good condition.

Tanana Valley wet and near normal temperatures. Matanuska Valley precipitation ranged from near normal to well above normal. Temperatures above normal. Kenai Peninsula precipitation ranged from well below normal to none. Temperatures above normal. Kodiak Island warm and unusually dry.

**ARIZONA:** Scattered thundershowers east; amounts ranged to 1.00 in. Temperatures 4 to 7° above normal.

Cotton squaring, flowering, setting bolls central and west. Plant growth good south central, southeast. Sorghum planting virtually complete, early plantings full bloom; some heading. Safflower near maturity, harvest expected soon. Wheat, barley harvest virtually complete. Growth for fourth cutting alfalfa well underway. Cantaloup picking continued, some vine deterioration. Watermelon harvest peaked, good quality. Dry onion harvest nearly complete. Potato harvest about finished. Grape harvest active, mostly Thompson seedless. Valencia orange harvest about complete, grapefruit harvest winding down. Scattered showers many areas. Eastern, southeastern mountains received beneficial amounts, other areas remain drouthy. Cattle, calves fair to good condition.

**ARKANSAS:** Temperatures ranged from 87 to 78°. Extremes: 102 and 63°. Precipitation 6.07 to 0.

Soil moisture adequate. Fieldwork: 4.3 days suitable. Soybeans 95% planted, 93% 1976; good condition, fields getting grassy. Cotton good condition, growth very good fruiting 3 weeks ahead normal. Plant bugs required treatment many areas. Acceptable stand 93% of acreage. Rice growing well, good condition. Water weevil damage reported. Midseason nitrogen applications underway. Corn fair to good condition. Sorghum good condition, early fields heading. Apples sizing well. Red Haven peaches harvested. Pastures beginning to recover.

**CALIFORNIA:** Temperature departures from normal greatest in the central valley, as much as 8° warmer. High Sierra average temperatures close to 10° warmer. Thunderstorm activity but gage catch minimal, general 0.10 in. or less.

Hot weather has many irrigated crops developing well. Small grain harvest in progress. Alfalfa in various stages of growth and development. Apricot harvest continues. Grapes developing well.

Thompson seedless harvest continues in desert. Nectarine, peach, and plum harvests continue. Walnuts sizing well. Broccoli, celery, sweet corn, honeydews, lettuce, onion, bell peppers, green peppers increasing. Cauliflower lighter. Cantaloups beginning Bakersfield area. Strawberries holding steady. Range conditions poor. Some north pastures good condition. Northeast unusually hot. Supplemental feeding, water hauling continues. Most cattle on summer range.

**COLORADO:** Warm and dry weather prevailed. Spotty showers reported. Temperatures 2 to 4° above normal.

Winter wheat harvest progressing, 10% harvested, 1976 10%, 8% average. Winter barley fair to good, 21% harvested, 1976 16%, 10% average. Irrigated dry beans fair to good; non-irrigated acreage, southwest poor. Potatoes and sugarbeets good condition. Corn good, except southeast fair, 36 in. high, 1976 21 in. First cutting alfalfa 71% complete, second cutting 6% complete. Sorghum and oats good condition. Range and pasture fair to good northeast and east central; poor to very poor remaining areas. Livestock good condition. Soil moisture short to very short.

**FLORIDA:** Partly cloudy, warm and humid with widely scattered thundershowers becoming more numerous weekend. Temperatures near to slightly above normal. Rainfall 0.25 to 0.50 in. but isolated locations received 2.00 in. or more.

Soil moisture short most farming areas. Corn production greatly reduced by drought. Harvest tobacco underway. Peanuts almost planted. Soybean planting continues; stands fair to poor. Sugarcane making good growth. Hay harvest underway. Pastures suffering from drought Panhandle, northern Peninsula; grazing lands mostly poor to fair elsewhere. Cattle condition poor Panhandle; mostly good elsewhere. Citrus groves mostly in good condition. Some rains received but more needed. Most trees showing new growth; however, late bloom still light. Old crop harvest practically finished. Harvest most vegetables complete. Watermelons, sweet corn providing most volume. Dry weather reduced watermelon supplies, Panhandle. Sweet corn harvest should decline seasonally. Light supplies other vegetables available.

**GEORGIA:** Temperatures 2 to 5° above normal. Widely scattered thundershowers each day except 27th. Amounts quite variable. Averaging 0.25 to 0.50 in. but locally heavy amounts recorded. Scattered thundershowers south weekend.

Soil moisture diminished; mostly very short to short. Fieldwork: 6 days suitable. Heavy insect infestation on row crops. Corn condition mostly poor to fair, rain needed. Tobacco condition fair, 23% harvested, 40% last year, average 25%. Harvesting and spraying for insects very active. Cotton mostly fair to good, slightly improved with 85% squaring, 77% setting bolls; 30% setting bolls last year. Spraying for insects active. Peanuts mostly fair to good, 87% blooming, 88% last year; 71% pegging, 53% last year. Soybeans mostly fair, 92% planted, average 92%. Grain sorghum 68% planted, average 83%. Oat harvest 98% complete, average 95%. Wheat harvest 99% complete, average 95%. Hay condition mostly poor to fair. Peaches mostly fair to good; 77% harvested, 75% last year, average 53%. Apples fair to good; slightly

improved. Watermelons poor to mostly fair, 52% harvested, 30% last year. Pasture condition critical, mostly poor to fair. Cattle mostly fair, Hogs fair to mostly good.

**HAWAII:** Weather generally favorable. Thunder-showers Waianae and northern sections Oahu.

Some light damage to leafy crops but showers mostly beneficial. Heavy irrigation most areas both vegetables and sugarcane. Supplies mustard cabbage, cucumbers, semihard lettuce light, others adequate. Banana supplies moderate to heavy. Papaya supplies heavy. Pineapple harvesting full swing. Sugar harvesting steady. Pastures fair to good.

**IDAHO:** Temperatures above normal. Highs ranged from 100 to 84°. Lows ranged from 33 to 55°. Only precipitation was in Panhandle.

Hot windy weather increased demand for irrigation. Drought becoming evident as typical weather stresses crops on soil with low moisture reserve. Small grain headed 1976, 1977 turned 1976, 1977: Winter wheat 90, 95; 10, 25; spring wheat 45, 75; 0, 10; barley 30, 80; 0, 10; oats 60, 75; 5, 5. Potatoes 6 in. or greater 80, 75; 12 in. or greater 30, 40; closing middles 10, 10.

**ILLINOIS:** Temperatures 6° above normal northeast, near normal elsewhere. Precipitation moderate to heavy, more than 2.00 in. some areas.

Corn good; 33% silked, 2% 1976, 6% average; average height 64 in., 46 in. 1976, 40 in. average; most advanced height 79 in., 61 in. 1976, 58 in. average. Soybeans good; 82% full stand. Winter wheat 75% combined, 62% 1976, 72% average. Oats 96% filled, 90% 1976, 93% average; 66% turned yellow, 58% 1976 and average; 30% ripe, 24% 1976, 20% average; mostly fair to good. Barley 80% combined. Second crop alfalfa hay 50% cut, 34% 1976, 23% average; mostly good. Pastures mostly fair to good. Soil moisture short to adequate. Fieldwork: 4.3 days suitable.

**INDIANA:** Excellent rains ranged from 1.00 in. northwest to 2.00 in. southeast. Scattered areas reported 0.50 to 1.00 in., also more than 3.00 in. Temperatures near normal. Daily maximums high 80's.

Fieldwork: 3 days suitable. Topsoil moisture mostly adequate. Subsoil moisture short to adequate. Pastures mostly fair to good. Corn fair to mostly good, 50 in., 1976 40 in., average 35 in. Soybeans fair to good; 13 in., 1976 13 in., average 8 in. Wheat fair to good; 95% ripe, 1976 85%; 30% combined, 1976 20%, average 30%.

**IOWA:** Warm with moderate showers east and north central to light showers elsewhere.

Topsoil moisture improved; short to adequate. Subsoil moisture short. Corn 10% silked. Soybean 23% bloom stage, last year 7%, average 3%. Oats hay 73% harvested; oats grain 26% harvested. Wheat harvest 51% complete. 2d cutting alfalfa 39% harvested. Fieldwork: 5.8 days suitable. Corn good. Soybeans, oats, wheat and clover hay mostly good to fair. Alfalfa hay mostly fair to good and pastures poor to fair. Livestock mostly good.

**KANSAS:** Precipitation limited, local amounts 1.00 to over 3.00 in southeast and east central. Temperatures 82° southwest, 77 to 80° elsewhere, 3 to 5° above normal west, normal east.

Wet fields east delayed wheat harvest, elsewhere progressing steadily. Wheat harvested to date 55%, last year 50%, average 60%. Harvest most active west, fields east, weedy. Corn doing well, ahead normal, 15% tasseling, 0% last year, average 10%. Sorghum good to excellent, chinch bugs, some re-

planting because rains. Soybeans 5% bloom stage, last year and average 0%. Moisture condition varies, surplus east, adequate central, short southwest. Livestock doing well, excellent pastures. Flies, ticks, hot weather bothering livestock. Farm activities: Harvesting, working summer fallow, haying.

**KENTUCKY:** Thundershower amounts of 1.50 to 3.00 in. Temperatures mid-70's close to normals.

Soil moisture adequate to surplus. Fieldwork: 2 days suitable. Limited activities included harvesting wheat, planting soybeans, hoeing tobacco, clipping pastures, and various insect control measures. Condition of all crops improved. Corn 31% tasseled, 18% last year and 15% average. Soybeans 14 in. in height, last year 10 in., average 9 in. Most beans planted but some acreage to be seeded after wheat harvest. Tobacco: 75% over 12 in. tall; 26% over 24 in. tall; mostly minor insect problems, some fertilized and hoed. About 40% 2d cutting alfalfa completed.

**LOUISIANA:** Temperatures 2 to 5° above normal. Extremes: 68 and 102°. Scattered showers.

Soil moisture short. Fieldwork: 6.0 days suitable. Main activities: Cultivating row crops, insect control and haying. Rice condition fair to good; 38% headed. Cotton condition fair to good; 80% squaring. Corn condition fair; 91% tasselled, 52% dough stage. Sorghum 96% planted, 95% last year; 88% up to stand. Soybeans 96% planted, 100% last year, 94% average; 88% up to stand; condition fair. Sugarcane condition good. Sweetpotato transplanting 93%, same as year ago; fair condition. Pasture, hay and cattle in fair condition.

**MARYLAND & DELAWARE:** Temperatures 3° above normal. Highs, 80's; lows, 60's. Precipitation north, 0.50 to 1.50 in.; south, east less than 0.50 in.

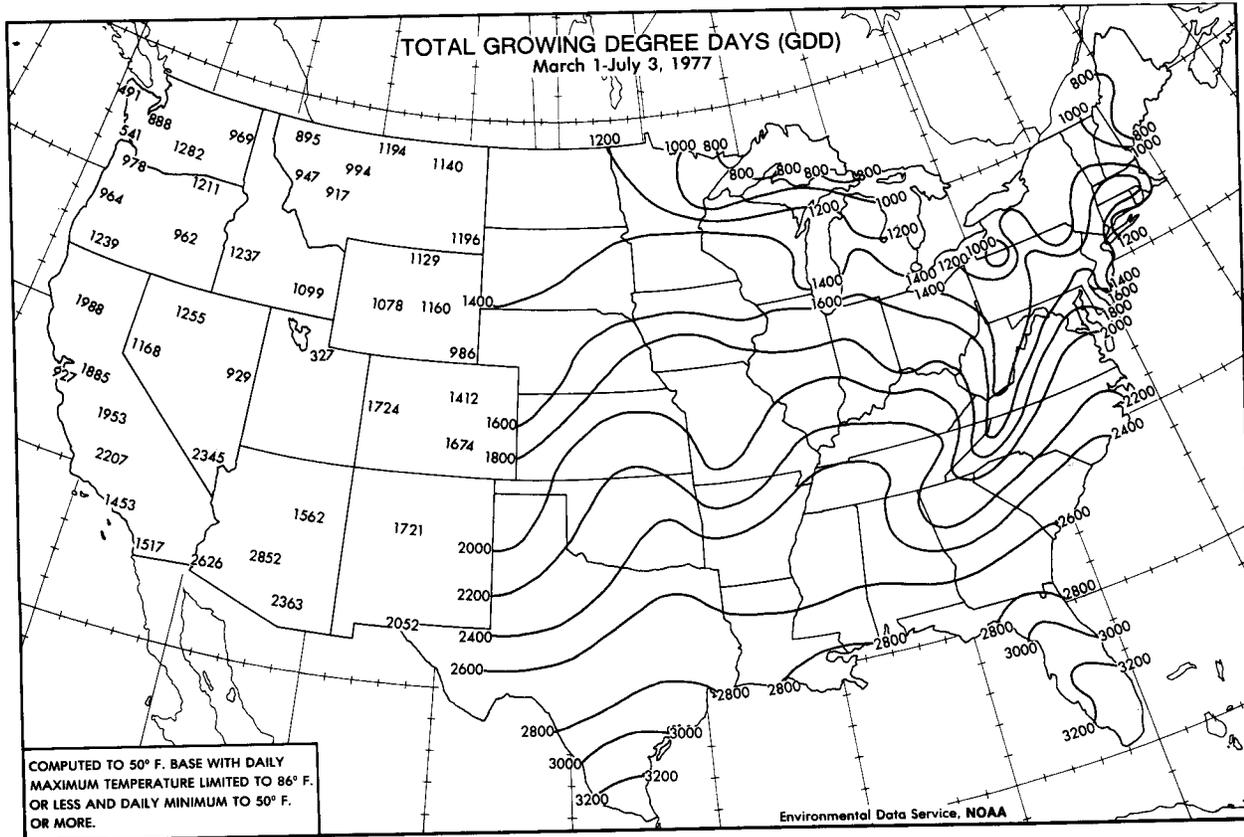
Corn in good condition. Double cropped soybeans being planted as small grains harvested. Barley 90%, wheat 60%. Second cutting alfalfa 60%. Early apples and peaches harvested. Tobacco starting to flower.

**MICHIGAN:** Temperatures 2° below to 2° above normal Lower and 4° below to 4° above normal Upper. Temperatures mid-60's to 70. Precipitation varied 0.05 in. northeast to 2.50 in. Upper.

Soil moisture mostly short. Rains improved crop conditions southern Lower and Upper Peninsulas. Pasture feed supplies short. Fieldwork: 5 days suitable. Dry bean planting virtually complete, 90% last year and normal. Hay 90% first cut, 80% last year, 65% normal. Second cutting underway. Corn height 30 in., 20 in. last year and normal. Winter wheat 10% harvested, zero last year and normal. Oats 80% headed, 5% yellow; 75% headed, 5% yellow last year. Sweet cherry picking 30% complete. Tart cherry harvest started southwest and west central. Strawberry picking 90% complete, 85% 1976.

**MINNESOTA:** Temperatures averaged 1 to 4° above normal. Extremes: 97 and 44°. Precipitation less than 1.00 in. west central and southwest and 1.00 to 2.00 in. elsewhere except 2.00 to 2.75 in. east central and north central. Precipitation 1.00 to 1.75 in. above normal north central through central and east central and up to 1.00 in. above normal elsewhere except normal to 0.75 in. below normal southwest.

Crops maintaining exceptionally early pace. Small grain harvest beginning, corn tasseling, soybeans blooming. Mostly adequate moisture will maintain growth. Rains should help late small grains fill in north. Second crop alfalfa hay



being cut in south. Height: Corn 57 in., 1976 33 in., normal 27 in. Soybeans 17 in., 1976 11 in., normal 10 in. Corn 32% tasseling, 1976 1%, normal 0%. Soybeans 44% blooming, 1976 11%, normal 7%. Turning ripe: Spring wheat 30%, 1976 17%, normal 6%; oats 48%, 1976 28%, normal 8%; barley 43%, 1976 22%, normal 8%; winter wheat 85%, 1976 69%, normal 35%; rye 88%, 1976 70%, normal 43%.

**MISSISSIPPI:** Temperatures 2 to 4° above normal. Extremes: 101 and 65°.

Soil moisture adequate to short northwest, short to very short elsewhere. Fieldwork: 6.0 days suitable. Soybeans 92% planted, 97% 1976, 89% average; 80% up to stand, 90% 1976. Cotton 89% squaring, 47% 1976, 56% average; 63% blooming, 4% 1976; 25% setting bolls, 18% average. Corn 69% silked, 42% 1976; 30% in dough stage, 13% 1976. Hay crops 47% harvested, 44% 1976, 39% average. Peaches 57% harvested, 48% 1976, 43% average. Cucumbers 63% harvested, 45% 1976. Irish potatoes 84% harvested, 85% 1976, 80% average. Sorghums 85% planted, 91% 1976, 87% average. Sweetpotatoes 93% planted, 89% 1976. Pastures in poor condition. Cotton, soybeans, rice in good to fair condition. Corn in poor to fair condition.

**MISSOURI:** Temperatures 1 to 3° below normal. Precipitation 2.86 in. west Ozarks, 3.14 in. east Ozarks and 3.68 in. Bootheel. Central and north averaged from 0.84 in. northeast, to 1.72 in. west central.

Fieldwork: 2.3 days suitable. Planting double crop soybeans 56% complete. 70% wheat harvested, 63% last year, 74% normal. 55% 2d cutting alfalfa harvested, 46% last year, 47% normal. 55% cotton squaring, 17% last year, 44% normal. 27% corn silked, 6% last year. Condition of corn good. Condition of cotton fair to good. Pasture condition fair to good. Soil moisture adequate.

**MONTANA:** Dry and unsettled. Temperatures within 3° normal. Maximums in high 80's and 90's midweek after chilly minimums in 30's near end of month. Precipitation well below normal but good showers across South end of week, dry elsewhere.

Crop development spotty due scattered showers. Topsoil moisture short. Winter wheat fair to good. Nearly 40% winter wheat turning color, last year 25%, normal 8%. Condition spring grains mostly fair except southwest good. Spring wheat 45% headed, last year 60%, normal 25%. Barley 55% headed, last year 45%, normal 30%. Oats 50% headed, last year 60%, normal 25%. First cutting alfalfa 55% cut, last year 35%, normal 32%. Irrigation water supplies short. Grazing prospects late summer ranges mostly poor.

**NEBRASKA:** Temperatures near normal. Precipitation over Panhandle and northern half ranged from 0.20 to 0.80 in.

Topsoil moisture short to adequate. Subsoil moisture adequate. Winter wheat 65% ripe compared to 60% 1976 and 45% normal. Harvest over 35% complete compared to 10% 1976 and 15% normal. Corn started tasseling in east; corn borers and chinch bugs in many areas. Second cutting alfalfa 35% harvested, compared to 15% 1976. Pasture and range feed supplies adequate.

**NEVADA:** Heavy thunderstorms north, scattered south; gusty, dust blowing winds remainder. Temperatures 5 to 10° above normal. Extremes: 114 and 33°.

Alfalfa harvest active. Showers caught some cut hay on ground. Precipitation aiding ranges. Small grain harvest completed south.

**NEW ENGLAND:** Temperatures near normal. Showers and thunderstorms brought from 0.50 to 2.00 in.

Maine potatoes look good but showing effects from excess moisture and need warm sunny weather.

Vegetable growth good. Strawberries harvested. Fruit crops doing well. Field corn good but more sunny hot weather needed for growth. Recent rains helped pastures and second hay crop but slowed hay harvesting.

**NEW JERSEY:** Temperatures 2° below normal north, normal elsewhere. Extremes: 45 and 92°. Rainfall 0.24 in. north, 0.50 in. central and 0.60 in. south.

Soil moisture in percent of field capacity 65% north, 50% central and 33% south. Soil temperature averaged 71° north and central and 75° south.

Recent rains beneficial, south needs additional rain. Harvests sweet corn, tomatoes, snap beans and cucumbers increasing. Early harvest peaches and apples underway. Barley combining about complete. Wheat harvest increasing. Most field corn plantings look good. Soybean planting well advanced. Some late plantings going in following barley, wheat and early vegetable harvests.

**NEW MEXICO:** Widely scattered showers; totals mostly light but accumulations to more than 1.50 in.

Corn, sorghum, cotton good. Alfalfa haying continues with second cut 70% completed in south and first cut virtually complete north. Durum wheat harvest 33% harvested. Winter wheat harvest 65% harvested. Barley harvest 85% completed. Grano onion harvest slowing. Ranges poor to fair. Livestock fair to good.

**NEW YORK:** Thunderstorms 29th and 1st. Heaviest rainfall St. Lawrence Valley. Some light rain on 2d. First part of week warm, temperatures in 80's and 90's; cooling trend 2d and 3d.

Warmer temperatures and rain stimulated crop growth. Most oats headed out. Wheat turning. Dry bean planting complete, condition good. Hay regrowth improved. First cutting alfalfa 85% complete. Onions, snap beans, lettuce growing well. Potatoes in full bloom. Lack of moisture a problem in vegetable areas. Conditions favorable for apples and peaches. Grape set variable.

**NORTH CAROLINA:** Hot and dry.

Fieldwork: 5.3 days suitable. Soil moisture short to adequate. Harvested: Wheat 88%, 1976 83%, average 80%; oats 92%, 1976 87%, average 85%; barley 94%, 1976 87%, average 87%; rye 92%, 1976 87%, average 83%; peaches 35%, 1976 40%, average 34%; hay 60%, 1976 56%; Irish potatoes 80%, 1976 59%. Conditions: Irish and sweet-potatoes, apples, peaches, and peanuts mostly good; tobacco, corn, cotton, soybeans fair to good; hay and pasture fair. Soybean planting nearing completion.

**NORTH DAKOTA:** Temperatures near normal. Extremes: 41 and 96°. Precipitation moderate east, light and spotty west. No rain through much of west central.

Small grains mostly fair to good condition except central and south central where serious drought damage occurred. Limited swathing of early barley. About 33% of small grains turning ripe, close to last year's development rate but well ahead of normal. Row crops generally good condition. Pasture growth generally fair to poor; some areas good. Second cutting alfalfa dependent of timely rain.

**OHIO:** Slightly above normal temperatures. All points reported over 1.00 in. rain.

Soil moisture improved, now adequate. Crop conditions improved to mostly good. Some lodging of corn. Wheat harvest full swing, one week ahead of schedule; 75% ripe, 70% 1976, 45% average. Second cutting alfalfa 20% cut, 15% last year, 5% average. First cutting clo-tim virtually complete, two weeks

ahead of normal. Corn just beginning to silk; height 37 in., 39 in. 1976, 31 in. normal. Soybeans 12 in. tall, 14 in. 1976, 11 in. average. Oat harvest just beginning, slightly ahead of normal; 20% ripe, 5% 1976, 20% normal. Fieldwork: 4.5 days suitable. Pasture condition poor to fair.

**OKLAHOMA:** Temperatures near normal east, 2° above in central and 3° above in west. Precipitation all areas ranging from trace in Panhandle to 1.79 in. central.

Wheat harvest, 97% complete ahead of year ago 92% and average 95%. Uncut acreage in Panhandle but humidity and wet soils along with weed problems also held up completion in north central and north-east. Most stubble ground worked one or more times. Corn in good condition; 18% tasseled, 13% year ago and 30% average. Few early sorghums heading; planting practically complete. Sorghum condition good. Except for some replant, cotton acreage now planted, with 96% acreage up to stand. Only 3% acreage squaring, compared average 6%. Peanuts in good condition with few early fields showing some blooms. Late soybeans following wheat planted in east. Planting at 97% complete, ahead of year ago and average of 95%. Second cutting alfalfa 80% taken. Cultivation of row crops principal activity, followed by haying and seeding late crops. Peaches being picked. Pecan set favorable at present. Ranges making comeback after recent rains but have furnished good grazing since late spring.

**OREGON:** Dry, warm weather prevailed. No rainfall reported except drizzle along coast. Temperatures mostly 3 to 8° above normal west and 4 to 11° east. Extremes: Low 100's, mid-40's west; mid-90's, mid-30's east.

Cereal grains maturing normally in western valleys, most fields look good. Some rust infections reported. Haying continues. Some second cutting being put down. Mint and hops doing well. Vegetables all progressing on schedule. Cherry harvest underway. Strawberries nearly completed. Filberts and walnuts on schedule. Eastern and central, early grain harvest began. Later areas most fall grains headed. Spring grains at boot stage. Barley turning fast. Second cutting hay continues at lower elevation. Peppermint fields mixed. Potatoes on schedule and crop looks good. Onions also doing well. Cattle and calves in fair to good condition. Ranges and pastures fair to good west and poor to fair east. Mountain ranges fair shape east. Stockmen concerned over irrigation situation.

**PENNSYLVANIA:** Warm days and cool nights early in week with scattered rainfall. Overcast with warmer nights near weekend.

Fieldwork: 4 days suitable. Adequate moisture except south somewhat dry. Activities: Spraying, cultivating, making hay and filling silos, combining barley and wheat, baling straw, transplanting tobacco, picking tart cherries, early apples and vegetables. Corn 22 in., last year 23 in. Tobacco all transplanted, same as 1976. Barley 45% ripe, 22% harvested; last year 25% harvested. Wheat 64% turning, 12% ripe; same as 1976. Oats 77% headed, 4% turning; last year 12% turning. Alfalfa first cut 91%, second cut 17%. Clo-tim 83% cut. Feed from pastures average to below.

**Puerto Rico:** Island rainfall 0.86 in. or 0.33 in. below normal. Temperatures 81° on coasts and 76° interior. Extremes: 94 and 59°.

Agricultural drought slightly relieved areas west and east interior from scattered moderate showers. Little or no rain south coast where extreme drought

conditions continued with serious effects on agricultural and public water supplies. Drought emergency measures continued most parts of Island. Dryness of soil limiting planting sugarcane and food crops. Pastures scarce and cattle losing weight. Coffee zones suffering due continued drought.

**SOUTH CAROLINA:** Temperatures above normal. Rainfall below normal except mountain region where adequate. Some scattered thundershowers.

Soil moisture generally short; all crops need rain. Tobacco condition mostly good; harvest continuing. Corn condition fair. Soybean condition fair to good; farmers cultivating, spraying plants. Cotton condition fair; boll weevils still a problem. Peach harvesting brisk all areas, volume expected to increase. Pastures, hay crops fair; pasture condition substandard many areas due dry weather. Watermelon harvesting 36% completed, considerably ahead fast year. Harvesting tomatoes, pickling cucumbers, snap beans, miscellaneous vegetables. Tomato harvest about completed. Soybeans planted 96% 1977, 91% 1976, 95% average. Peaches harvested 37% 1977, 56% 1976, 33% average.

**SOUTH DAKOTA:** Near normal temperatures. Extremes: 101 and 38°. Precipitation most points less than 0.80 in.

Topsoil moisture short. Localized hail damage. All crops ahead of normal. Winter wheat turning 98%, 1976 89%, normal 78%. Spring wheat turning 60%, 1976 52%, normal 14%. Oats turning 94%, 1976 58%, normal 23%. Barley turning 90%, 1976 60%, normal 27%. Harvest of winter wheat, oats and barley underway; normally has not started. Corn heights 41 in., 1976 25 in., normal 25 in. Flax in or past bloom 81%, 1976 80%, normal 61%. Soybeans in or past bloom 24%, 1976 13%, normal 16%. Second cutting alfalfa harvested 20%, 1976 1%, normal 7%. Pastures generally fair to good, but weedy.

**TENNESSEE:** Precipitation 0 to 3.15 in. Temperatures normal west and middle; 3° above normal east.

Soil moisture adequate. Fieldwork: 3.5 days suitable. Soybeans planted 96% 1977, 89% 1976, 98% normal. Corn silking 50% 1977, 20% 1976, 25% normal. Cotton squaring 77% 1977, 40% 1976, 53% normal. Wheat harvested 91% 1977, 82% 1976, 81% normal. Oats harvested 82% 1977, 73% 1976, 76% normal. Barley harvested 90% 1977, 83% 1976, 87% normal. 2d cutting alfalfa 78% 1977, 72% 1976, 70% normal.

**TEXAS:** Hot, dry weather prevailed. Showers in Panhandle. Temperatures above normal except far west and far south near normal. Rainfall concentrated west where near normal amounts received. Central and east received little or no rain.

Fieldwork very active. Farmers harvesting wheat, sorghum, cultivating row crops, baling hay. Cotton good progress; early stands squaring lower northern High Plains. Insect activity on plains light, but fleahopper numbers building southern Low Plains. Bollworm, bud worm increasing Coastal Bend southward; damage medium to heavy lower valley. Wheat harvest active High Plains. Corn fields generally good condition, excellent growth. Sorghum planting virtually complete, except few fields following wheat. Early fields southern High Plains, boot stage. Harvesting begun in Lower Valley. Rice fields good progress; growers draining early fields in preparation for harvest. Peanut planting fair progress. Fields Cross-Timbers responding to recent rains; more moisture needed. Stands mostly fair to good. Soybeans planting nearing completion. Alfalfa weevils causing damage some soybean fields, Upper Coast. Sorghum planted 100% 1977, 97% 1976,

98% average. Peanuts planted 94% 1977, 91% 1976, 95% average. Soybeans planted 99% 1977, 96% 1976, 99% average. Wheat harvested 92% 1977, 87% 1976, 93% average. Barley harvested 98% 1977, 92% 1976, 96% average. Oats harvested 100% 1977, 98% 1976, 100% average.

Harvest melons, sweet corn, peppers, okra, tomatoes, cucumbers, squash, peas continues. Vegetables would benefit from moisture in some areas. Volume movement peaches continues from central, east. Picking active on High Plains. Pecan trees central east beginning to show stress and drop nutlets due dry conditions. Grazing conditions generally adequate to good. Moisture remains short, Trans-Pecos, although some areas received rain. Pastures parts of Blacklands, east also dry. Livestock remain in fair to good condition. Hay harvest continues.

**UTAH:** Scattered thunderstorms; amounts very light but locally over 0.50 in. Temperatures ranged from 3 to 8° above normal.

Nonirrigated land soil moisture very short. Range feed very poor as result of dry weather. First crop alfalfa hay harvest 80% completed. Winter wheat virtually all headed, earlier areas beginning to ripen. Spring grains about 75% headed. Sweet cherry picking 25% completed. Snap beans and sweet corn good, tomatoes and dry onions fair to good.

**VIRGINIA:** Temperatures above normal. Extremes: 99 and 52°. Rainfall averaged 0.06 in.

Topsoil moisture short. Fieldwork: 5.2 days suitable. Corn fair; 21% silked. Soybean condition declining; some double crop planting delayed due to dry soils. Barley 82% harvested, 89% 1976, 74% averaged. Wheat 65% combined, 66% 1976, 45% averaged. Oats harvest 59% done, 68% 1976, 56% average. Peanuts good; thrip controls being applied. Tobacco good; topping began on early fields, sucker controls applied. Hay: 25% of first cut not clipped due to short growth, second cuts starting. Fresh tomato harvest started. Early apples and peaches picking began.

**WASHINGTON:** West: Temperatures near normal. Precipitation below normal.

First cutting hay active. Green pea harvest underway. Sweet corn, cucumbers showing good growth. Small grains turning color. Pastures, livestock generally good condition.

East: Temperatures near normal to 4° above normal. No precipitation.

Cherry harvest continued. Apple and pear thinning active. Haying continued. Barley, wheat headed out. Dry peas and lentils showing drought stress. Range conditions fair to poor. Water for livestock of increasing concern.

**WEST VIRGINIA:** Temperatures near normal. Precipitation above normal except northeast below normal.

Fieldwork: 3.4 days suitable. Soil moisture short to adequate. 1st haying 76% complete, 69% average, 82% 1976; 2d haying 9% complete, 12% average, less than 10% 1976. Small grains mostly fair to good. Harvest: Wheat 11%, average 12%; barley 47%, average 39%; oats 3%. Corn good to fair. Potatoes good to fair. Tobacco fair. Pastures fair to poor. Fruit fair to poor.

**WISCONSIN:** Temperatures near normal. Week began warm and humid, but cooled before becoming hot and humid weekend. Rainfall substantial in showers and thunderstorms, mostly on 27th, 30th, and 3rd. Amounts ranged from 1.00 to 3.00 in. most areas, with isolated totals of 4.00 in. west.

Corn developing rapidly with rain and heat. Average height of corn 45 in., 1976 27 in., normal 19 in. Early fields beginning to silk. Some fields 7 feet tall by 4th. Oats and small grains ripening fast, some lodging from wind and rain. Second crop hay 10% harvested, 1976 and normal none. Farmers in north trying to finish first crop hay but delayed by rains. Soybeans growing fast. Pasture conditions better than year ago but below normal. Tobacco plants growing very well. Vegetable crops look good. Early potatoes ready

for digging soon. Cherries ripening. Soil moisture short to adequate.

WYOMING: Temperatures above normal. Precipitation below normal.

Soil moisture very short to short. Spring wheat headed 74%, oats 59%, barley 74%. Winter wheat 93% headed; 52% turning color, 13 points ahead of last year. Sugarbeets 96% thinned. First cutting alfalfa 55% complete, other hay 19% cut. Ranges and pasture fair, stock water supplies short.

### World Weather and Crop Update

USSR. Crop conditions continued favorable over most of European USSR. Precipitation during June was generally normal to well above normal for much of this area except in Belorussia and the Baltic Plain. Harvest of winter grains--mainly winter barley--was well underway in the southern regions with excellent yields reported. However, continued locally heavy rainfall, especially in the eastern and southern Ukraine and the North Caucasus, created lodging problems, and may hurt yields to some extent. Excellent rains fell over parts of the principal spring wheat regions in western Siberia and northern Kazakhstan. More rain was needed in some areas, especially in Kustanay, Tselinograd, and western Kazakhstan where June precipitation was well below normal.

ASIA. In the People's Republic of China, moderate to locally heavy, even excessive, rain fell throughout the northeastern provinces where spring wheat, soybeans, and coarse grains predominate. Heavy rain also fell throughout the main winter wheat belt in the North China Plain and may have caused local problems with the harvest of winter grains currently in full swing. Moderate to heavy rains occurred, in general, over most of the rice-producing regions in southern China with some localized flooding and waterlogging problems created by excessive precipitation. The monsoon continued active in India and brought needed moisture to widespread areas for transplanting the rice crop. In Australia, light showers were confined mainly along the coast, and the wheat areas received practically no precipitation during the week.

AFRICA. North Africa--Morocco, Algeria and Tunisia--was warm and dry while South Africa was seasonally cool and without any significant rainfall in the major agricultural areas.

SOUTH AMERICA. In Brazil, there were no threatening temperatures in the coffee-producing states. Light

rains moistened the main agricultural states in the south. Argentina's weather was characterized by seasonally cool temperatures with only light precipitation in the principal grain areas.

EUROPE. Crop conditions continued to be favorable in western Europe; widespread light to moderate showers and moderate temperatures enhanced crop development. Non-irrigated crops needed water in central and southern Spain. Moderate showers dampened Italy's Po Valley in the north, but unirrigated crops in southern Italy continued to suffer from a moisture deficit. Light to moderate showers fell throughout eastern Europe, but good soaking rains were needed in all countries except East Germany and Poland. Estimated soil moisture at the end of June was only about three-fourths of normal in Yugoslavia, Bulgaria, and Hungary. There was no easing of the drought in Greece. Heavy showers dampened northwestern Turkey, but precipitation was light throughout the principal agricultural areas.

NORTH AMERICA. Recent rains improved the moisture situation in the eastern Corn Belt of the United States, but some localized crop damage resulted from heavy rain and hail. The current agricultural picture in Wisconsin, Minnesota, and eastern North Dakota also were improved by substantial rainfall. More precipitation, however, was needed in the other spring wheat areas in the northern Great Plains and parts of the Canadian Prairie Provinces. Dry conditions prevailed over most of the southwestern portion of Saskatchewan and all of central and southern Alberta; soil moisture was critically low in the latter area. There was also no improvement in the Deep South's drought situation. It was seasonally dry in California and the Pacific Northwest. Generally good harvest weather helped along the winter wheat harvest in the southern Great Plains.

Percentage of acres harvested as of July 3

#### WINTER WHEAT

	1977	1976	Avg.
Colo.	10	10	8
Ind.	30	20	30
Iowa	51	9	5
Kans.	55	50	60
Mo.	70	63	74
Mont.	0	0	0
Nebr.	35	10	15
Ohio	20	20	10
Okla.	97	92	95
Tex.	92	87	93
U. S.	56	49	54

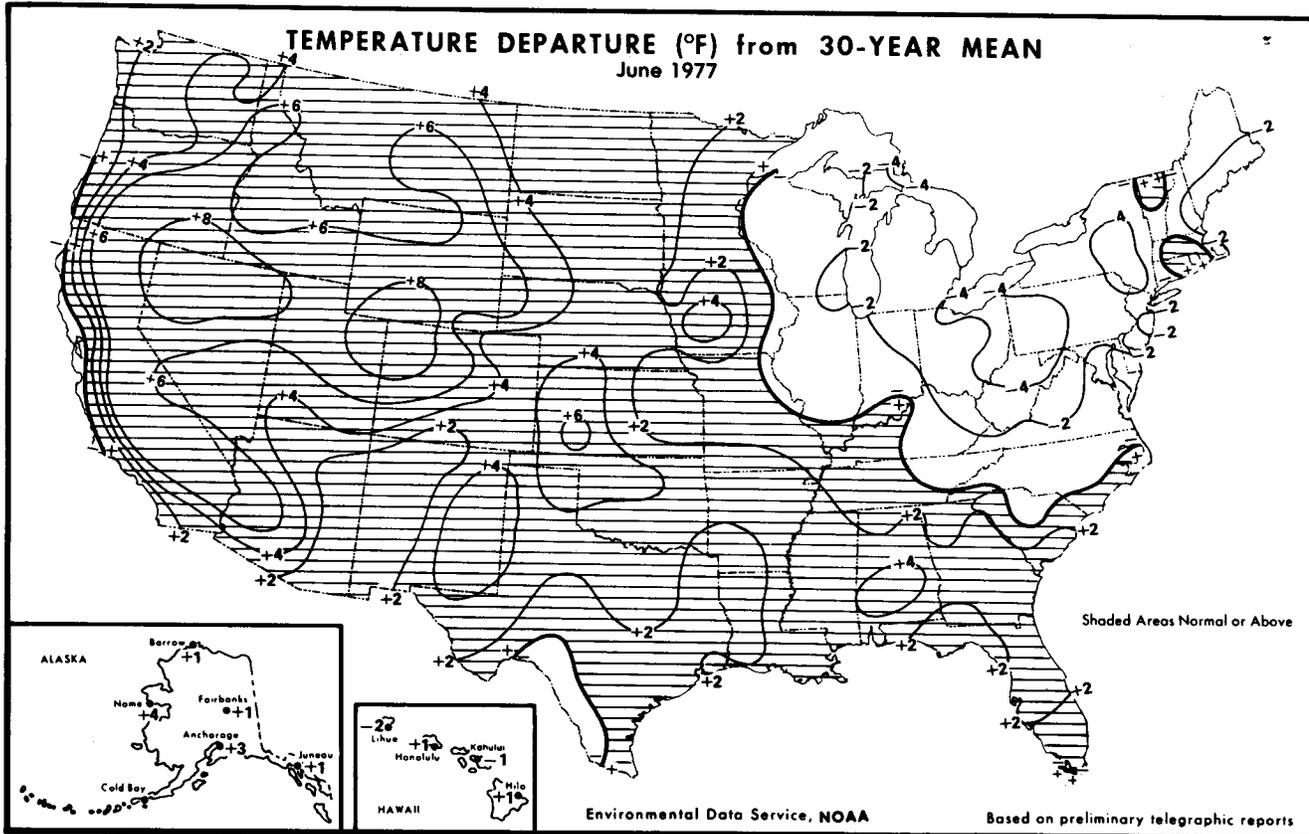
These 10 States produced 77% of the 1976 U. S. winter wheat crop.

### HARVESTING PROGRESS

Temperature and Precipitation Data for

June 1977

States and Stations	Temperature °F		Precipitation Inches		States and Stations	Temperature °F		Precipitation Inches		States and Stations	Temperature °F		Precipitation Inches	
	Average	Departure	Total	Departure		Average	Departure	Total	Departure		Average	Departure	Total	Departure
ALA. Birmingham . . .	80	+ 3	1.0	-3.0	La. Baton Rouge . . .	83	+ 3	1.5	-2.3	Youngstown . . .	63	- 4	5.8	+2.2
ALA. Mobile . . .	83	+ 3	1.3	-4.8	LA. Lake Charles . . .	81	0	6.2	-1.2	OKLA. OKla. City . . .	80	+ 3	2.0	-2.2
ALA. Montgomery . . .	83	+ 4	1.8	-2.2	LA. New Orleans . . .	82	+ 2	1.7	-3.0	OKLA. Tulsa . . .	81	+ 4	6.7	+2.0
ALASKA. Anchorage . . .	58	+ 3	.5	-.6	LA. Shreveport . . .	80	0	2.4	-.9	OREG. Astoria . . .	57	0	1.4	-1.4
ALASKA. Barrow . . .	34	+ 1	.2	-.2	MAINE. Caribou . . .	59	- 1	6.4	+3.0	OREG. Burns . . .	66	+ 7	.4	-.6
ALASKA. Fairbanks . . .	60	+ 1	3.0	+1.6	MAINE. Portland . . .	59	- 3	3.4	+ .3	OREG. Medford . . .	70	+ 6	.5	-.4
ALASKA. Juneau . . .	54	+ 1	3.5	+ .6	MD. Baltimore . . .	71	- 1	3.4	-.4	OREG. Pendleton . . .	69	+ 3	.4	-.6
ALASKA. Kodiak . . .	50	+ 4	---	---	MD. Chatham . . .	67	- 1	2.5	-.7	OREG. Portland . . .	64	+ 2	.8	-.8
ALASKA. Nome . . .	50	+ 4	---	---	MASS. Boston . . .	60	- 4	7.3	+4.7	OREG. Salem . . .	62	+ 1	.7	-.7
ARIZ. Flagstaff . . .	62	+ 4	.9	+ .3	MASS. Chatham . . .	59	- 2	1.4	-1.5	PA. Allentown . . .	69	- 1	3.7	+ .2
ARIZ. Phoenix . . .	91	+ 6	.1	0	MICH. Alpena . . .	66	- 2	3.2	-.2	PA. Erie . . .	62	- 3	4.4	+ .9
ARIZ. Tucson . . .	85	+ 2	.1	-.1	MICH. Detroit . . .	66	- 2	3.2	-.2	PA. Harrisburg . . .	69	- 3	3.2	+ .1
ARIZ. Winslow . . .	74	+ 2	.2	-.1	MICH. Flint . . .	63	- 3	4.7	+1.3	PA. Philadelphia . . .	69	- 3	5.3	+1.6
ARIZ. Yuma . . .	89	+ 3	T	0	MICH. Grand Rapids . . .	65	- 2	3.5	+ .1	PA. Pittsburgh . . .	64	- 5	2.9	-.6
ARK. Fort Smith . . .	80	+ 2	4.2	+ .3	MICH. Houghton Lake . . .	61	- 2	.9	-2.4	PA. Scranton . . .	64	- 4	3.2	-.2
ARK. Little Rock . . .	80	+ 2	2.4	-1.1	MICH. Lansing . . .	64	- 3	3.5	0	R.I. Providence . . .	87	+ 1	3.9	+1.2
CALIF. Bakersfield . . .	84	+ 7	.1	0	MICH. Marquette . . .	59	- 1	3.1	-.3	S.C. Charleston . . .	81	+ 3	2.1	-4.2
CALIF. Eureka . . .	54	- 1	.1	-.6	MICH. Muskegon . . .	62	- 4	2.5	-.1	S.C. Columbia . . .	78	- 1	2.2	-1.6
CALIF. Fresno . . .	80	+ 6	.1	0	MICH. S. St. Marie . . .	55	- 4	2.4	-.9	S.C. Greenville . . .	78	+ 2	2.9	-1.2
CALIF. Los Angeles . . .	69	+ 1	0	0	MINN. Duluth . . .	60	+ 1	3.9	-.5	S.D. Aberdeen . . .	68	+ 3	2.0	-1.6
CALIF. Red Bluff . . .	82	+ 6	.5	0	MINN. Internat Falls . . .	62	+ 2	4.2	+ .3	TEX. Huron . . .	70	+ 3	1.3	-2.5
CALIF. San Diego . . .	66	0	T	-.1	MINN. Minneapolis . . .	68	+ 1	3.6	-.3	TEX. Rapid City . . .	69	+ 5	1.8	-1.9
CALIF. San Francisco . . .	60	- 2	T	-.1	MINN. Rochester . . .	67	+ 1	4.7	+ .1	TEX. Sioux Falls . . .	71	+ 3	1.7	-2.6
CALIF. Stockton . . .	77	+ 5	0	-.1	MINN. St. Cloud . . .	66	+ 1	3.5	-.1	TENN. Chattanooga . . .	78	+ 2	2.4	-1.3
COLO. Denver . . .	72	+ 6	1.0	-.9	MISS. Jackson . . .	82	+ 3	2.2	-1.2	TENN. Knoxville . . .	75	- 1	6.5	+2.9
COLO. Grand Junction . . .	79	+ 8	T	-.6	MO. Meridian . . .	82	+ 3	1.6	-.2	TEX. Memphis . . .	82	+ 3	3.4	-.1
COLO. Pueblo . . .	74	+ 3	.3	-1.1	MO. Columbia . . .	74	+ 1	5.2	+ .6	TEX. Nashville . . .	77	0	4.3	+ .9
CONN. Bridgeport . . .	65	- 3	2.8	+ .2	MO. Kansas City . . .	75	+ 1	6.2	+1.1	TEX. Abilene . . .	81	+ 1	1.7	-1.1
CONN. Hartford . . .	68	0	4.0	+ .5	MO. St. Louis . . .	75	0	5.5	+1.1	TEX. Amarillo . . .	78	+ 3	2.1	-1.4
D.C. Washington . . .	74	- 1	3.3	-.2	MO. Springfield . . .	76	+ 2	7.1	+2.4	TEX. Austin . . .	82	0	1.2	-1.9
FLA. Apalachicola . . .	81	+ 1	.3	-5.0	MONT. Billings . . .	69	+ 6	.6	-2.0	TEX. Beaumont . . .	84	+ 3	3.4	-1.4
FLA. Daytona Beach . . .	81	0	9.0	+ .1	MO. Glasgow . . .	66	+ 4	1.2	-1.5	TEX. Brownsville . . .	83	0	4.7	+1.9
FLA. Ft. Myers . . .	81	+ 2	2.7	-3.6	MO. Great Falls . . .	65	+ 4	.5	-2.6	TEX. Corpus Christi . . .	83	+ 1	3.6	+ .9
FLA. Jacksonville . . .	83	- 1	2.0	-2.6	MO. Havre . . .	67	+ 5	.6	-2.0	TEX. Dallas . . .	---	---	---	---
FLA. Key West . . .	83	- 1	2.0	-2.6	MO. Helena . . .	64	+ 5	1.4	-1.0	TEX. Del Rio . . .	83	- 1	1.2	-.8
FLA. Lakeland . . .	83	+ 2	5.0	-1.7	MO. Kalispell . . .	62	+ 5	.4	-2.2	TEX. El Paso . . .	82	+ 2	T	-.6
FLA. Miami . . .	82	+ 1	12.4	+3.4	MO. Miles City . . .	71	+ 6	1.4	-1.9	TEX. Fort Worth . . .	84	+ 3	.7	-2.4
FLA. Orlando . . .	83	+ 3	4.5	-2.6	MO. Missoula . . .	63	+ 4	.7	-1.4	TEX. Galveston . . .	81	0	2.8	-1.3
FLA. Tallahassee . . .	80	0	2.1	-4.5	NEBR. Grand Island . . .	74	+ 3	1.4	-3.0	TEX. Houston . . .	81	0	3.6	-.9
FLA. Tampa . . .	84	+ 3	2.7	-3.8	NEBR. Lincoln . . .	74	+ 2	1.0	-4.0	TEX. Lubbock . . .	79	+ 2	2.3	-.5
GA. Palm Beach . . .	81	0	4.0	-4.1	NEBR. Norfolk . . .	73	+ 3	5.0	+ .1	TEX. Midland . . .	82	+ 2	.8	-.7
GA. Atlanta . . .	77	+ 1	3.0	-.7	NEBR. N. Platte . . .	70	+ 2	1.3	-2.5	TEX. San Angelo . . .	82	0	.5	-1.4
GA. Augusta . . .	80	+ 2	1.8	-1.9	NEBR. Omaha . . .	73	+ 3	2.2	-2.7	TEX. San Antonio . . .	82	0	2.3	-.5
GA. Macon . . .	82	+ 2	1.1	-2.8	NEBR. Valentine . . .	71	+ 4	2.9	-.7	TEX. Victoria . . .	82	0	12.2	+8.9
GA. Savannah . . .	82	+ 3	2.0	-3.9	NEV. Ely . . .	63	+ 5	.5	-.4	TEX. Waco . . .	85	+ 3	.8	-1.9
HAWAII. Hilo . . .	76	+ 1	2.5	-4.1	NEV. Las Vegas . . .	88	+ 6	.1	0	UTAH. Wichita Falls . . .	83	+ 2	2.5	-.9
HAWAII. Honolulu . . .	80	+ 1	.1	-.2	NEV. Reno . . .	69	+ 7	1.0	+ .6	UTAH. Blanding . . .	71	+ 5	.1	-.4
HAWAII. Kahului . . .	76	- 1	.1	-.1	NEV. Winnemucca . . .	71	+ 9	2.4	+1.4	UTAH. Salt Lake City . . .	73	+ 7	.1	-1.2
HAWAII. Lihue . . .	76	- 2	3.2	+1.6	N.H. Concord . . .	63	- 2	3.5	+ .1	VT. Burlington . . .	65	0	2.1	-1.4
IDAHO. Boise . . .	70	+ 5	1.3	+ .2	N.J. Atlantic City . . .	68	- 2	1.5	-1.9	VA. Lynchburg . . .	70	- 3	3.4	0
IDAHO. Lewiston . . .	72	+ 7	.4	-1.4	N.J. Trenton . . .	70	- 1	5.2	+2.0	VA. Norfolk . . .	74	- 1	2.4	-1.2
IDAHO. Pocatello . . .	69	+ 7	.8	-.5	N.MEX. Albuquerque . . .	76	+ 1	T	-.5	VA. Richmond . . .	73	- 1	1.3	-2.2
ILL. Cairo . . .	79	+ 1	4.1	-.3	N.MEX. Roswell . . .	82	+ 5	.3	-.9	VA. Roanoke . . .	71	- 1	2.4	-1.1
ILL. Chicago . . .	70	- 1	5.1	+1.1	N.Y. Albany . . .	65	- 3	2.9	-.1	WASH. Colville . . .	65	+ 4	1.5	-.2
ILL. Moline . . .	70	- 1	5.2	+ .8	N.Y. Binghamton . . .	62	- 3	3.2	-.4	WASH. Omak . . .	68	+ 4	.5	-.7
ILL. Peoria . . .	70	- 1	2.1	-1.8	N.Y. Buffalo . . .	64	- 2	2.8	+ .6	WASH. Quillayute . . .	55	0	2.1	-1.4
ILL. Rockford . . .	67	- 2	4.7	+ .3	N.Y. New York . . .	69	- 3	3.6	+ .7	WASH. Seattle-Tacoma . . .	63	+ 3	.5	-1.0
ILL. Springfield . . .	72	- 1	4.3	+ .1	N.Y. Rochester . . .	65	- 2	1.3	-1.2	WASH. Spokane . . .	65	+ 3	1.5	+ .1
IND. Evansville . . .	75	0	6.6	+3.0	N.Y. Syracuse . . .	63	- 4	3.3	+ .2	WASH. Walla Walla . . .	72	+ 5	.4	-.8
IND. Ft. Wayne . . .	68	- 2	3.8	-.1	N.C. Asheville . . .	70	- 1	5.1	+1.1	WASH. Yakima . . .	69	+ 4	.5	-.2
IND. Indianapolis . . .	71	- 1	3.9	-.3	N.C. Charlotte . . .	75	- 1	3.1	-.6	W.Va. Beckley . . .	64	- 3	5.7	+1.5
IND. South Bend . . .	67	- 2	5.7	+2.0	N.C. Greensboro . . .	74	0	1.5	-2.4	W.Va. Charleston . . .	69	- 3	5.9	+2.6
IOWA. Burlington . . .	70	- 1	2.1	-2.6	N.C. Hatteras . . .	75	+ 1	3.1	-1.7	W.Va. Huntington . . .	69	- 3	4.7	+1.3
IOWA. Des Moines . . .	75	+ 4	1.3	-3.6	N.C. Raleigh . . .	73	- 1	.8	-2.9	W.Va. Parkersburg . . .	68	- 4	6.0	+2.0
IOWA. Dubuque . . .	68	0	2.2	-3.1	N.C. Wilmington . . .	78	0	4.3	-1.3	WIS. Green Bay . . .	64	- 1	2.3	-1.1
IOWA. Sioux City . . .	71	+ 1	4.8	+ .2	N.DAK. Bismarck . . .	66	+ 2	2.4	-1.2	WIS. La Crosse . . .	68	- 1	3.5	-.9
KANS. Concordia . . .	75	+ 2	5.0	0	N.DAK. Fargo . . .	67	+ 2	1.6	-1.6	WIS. Madison . . .	65	- 1	2.6	-1.7
KANS. Dodge City . . .	80	+ 6	1.1	-2.2	N.DAK. Williston . . .	66	+ 3	1.3	-2.0	WIS. Milwaukee . . .	63	- 2	5.8	+2.2
KANS. Goodland . . .	72	+ 3	1.3	-1.6	OHIO. Akron-Canton . . .	66	- 2	5.4	+1.9	WYO. Casper . . .	69	+ 7	.2	-1.2
KANS. Topeka . . .	75	+ 1	10.9	+5.1	OHIO. Cincinnati . . .	69	- 3	7.4	+3.6	WYO. Cheyenne . . .	65	+ 4	2.4	0
KANS. Wichita . . .	78	+ 2	3.2	-1.3	OHIO. Cleveland . . .	63	- 5	4.9	+1.6	WYO. Lander . . .	68	+ 7	.7	-1.2
KY. Lexington . . .	72	- 1	4.8	+ .5	OHIO. Columbus . . .	68	- 2	4.0	-.1	WYO. Sheridan . . .	65	+ 4	2.1	-.9
KY. Louisville . . .	74	+ 1	7.6	+3.5	OHIO. Dayton . . .	69	- 2	2.5	-1.4	P.R. San Juan . . .	82	+ 1	1.5	-4.1
					OHIO. Toledo . . .	65	- 4	3.5	+ .1					



### June Weather Summary

**HIGHLIGHTS:** June produced above normal rain from eastern Kansas through Missouri and the Ohio and Tennessee River Valleys to the central Appalachians. Much of Iowa and Wisconsin and a strip across the center of the Corn Belt had less than normal rainfall. Most of the Gulf Coast States had below normal moisture--some areas totaled only a third of the expected amount. The western U.S. was seasonally dry although many areas recorded above normal amounts of rain.

Temperatures were cooler than normal in the Northeast, warmer in the West, and near normal elsewhere.

During the early days of June, much-needed rain fell in Minnesota and Wisconsin. The timely moisture helped germinate late-sown corn and soybeans and promoted growth of the newly emerged plants. Abundant rain continued in the central Great Plains, but abated in the southern portion allowing wheat harvest to progress. Heavy rain saturated southern Florida but to the north, in Alabama and Georgia where nearly an inch was expected, only a few showers fell on the dry corn and pastures.

Temperatures were warm in much of the Nation for early June; only the Northeast was near or slightly below normal.

June's second week brought rain to thirsty crops in the major corn and wheat areas. Showers and thunderstorms supplied an inch or more of water from central Illinois eastward to the Coast and into New England. Hail damaged some crops, but most of the areas welcomed the late spring rains. Most of the dry western States, from the Plateau in Nevada through the northern Rockies, had significant showers which were of some benefit to the dry rangelands. Light showers fell in the Southeast,

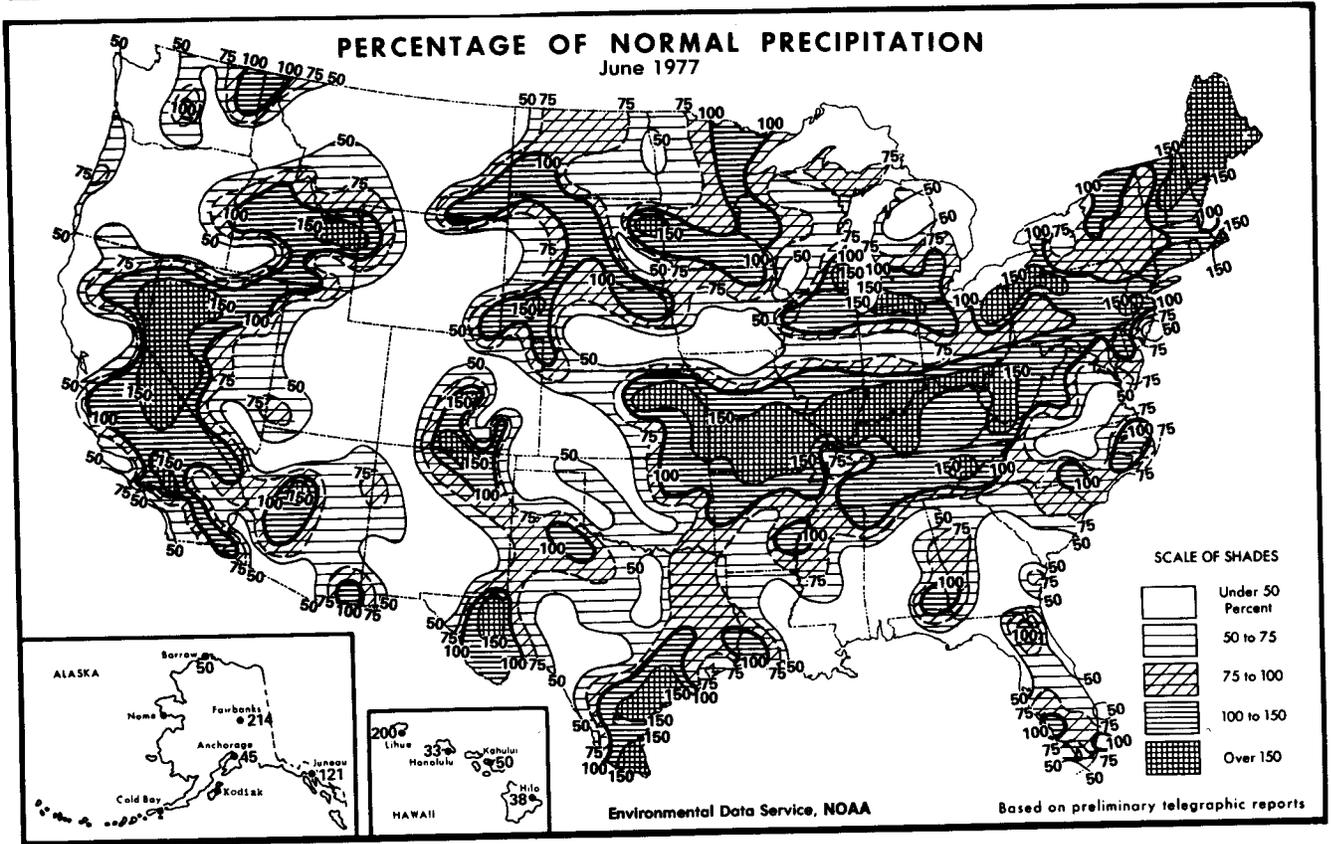
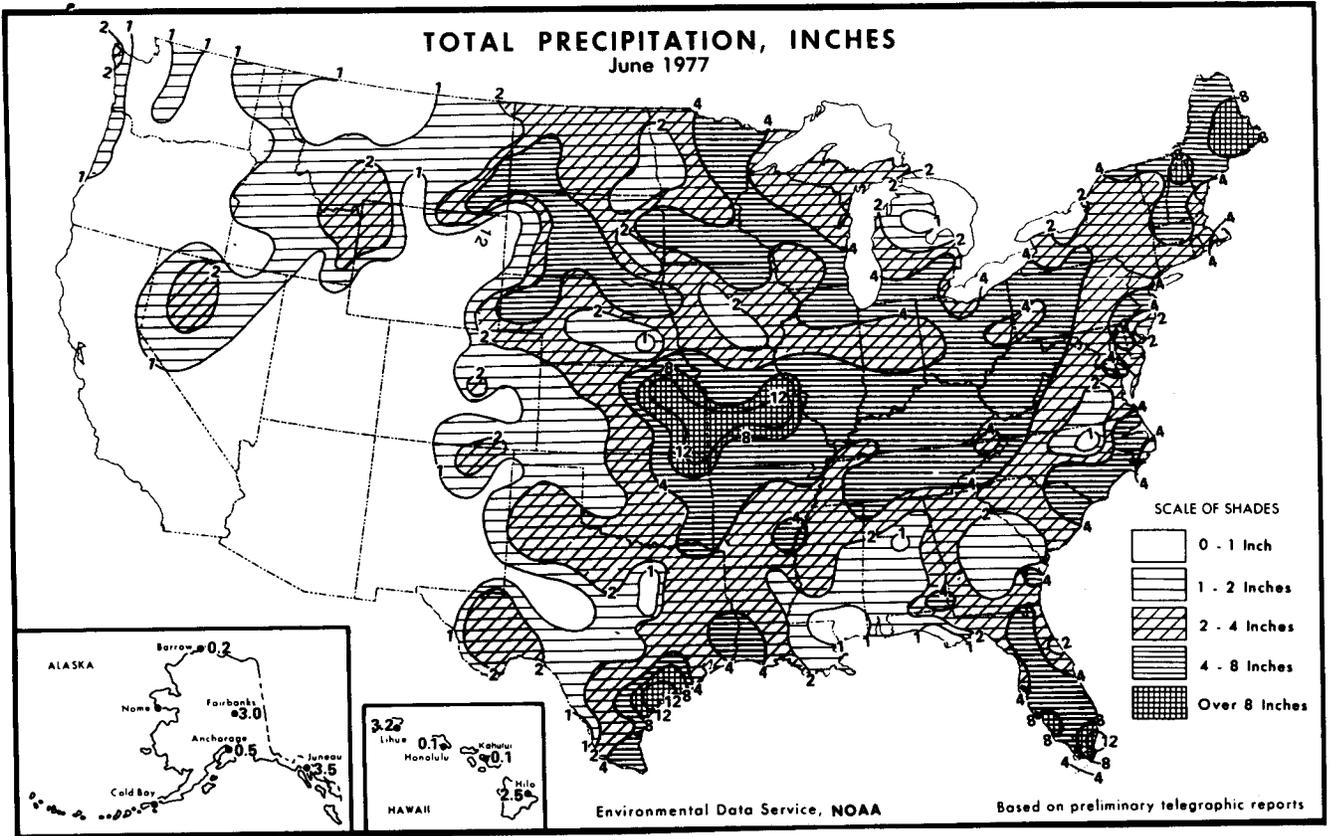
however, measurements were short of the normally expected amounts.

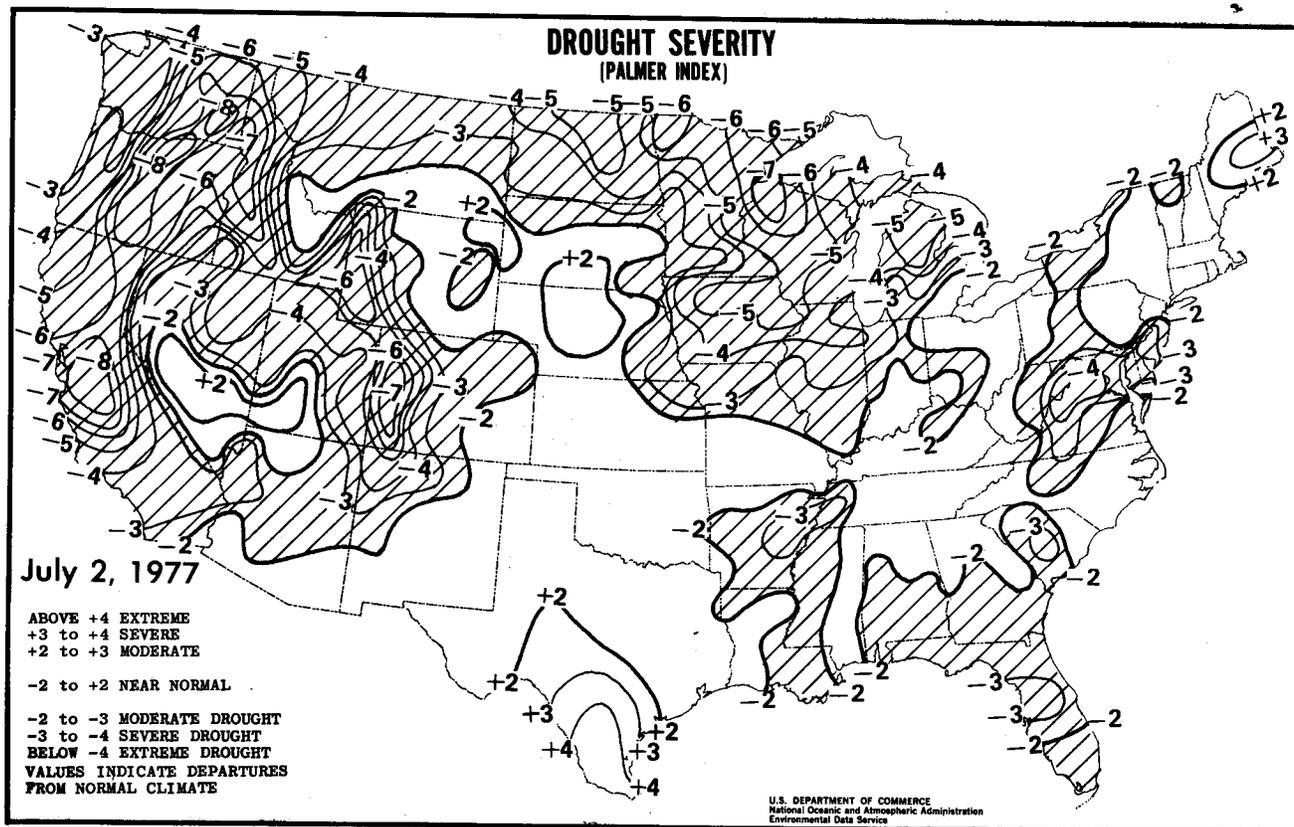
Cool weather invaded the East in the second week of June and pushed as far south as Georgia. Portions of Pennsylvania, Ohio, and West Virginia averaged 12° below normal for the week.

In the week of mid-June, the pattern of showers and thunderstorms that had brought plentiful moisture to the central and western Plains moved a little eastward and spread its bounty from eastern Texas and Louisiana through Minnesota. It was not all bounty though as floods occurred in eastern Texas where some areas recorded more than 5 inches; nor was it bounty when the heavy rain and hail damaged some fields from Texas to Minnesota. Excluded from the pattern of inch-or-more rains were the dry areas of eastern and northern Missouri and southern Iowa. The Southeast, again expecting nearly an inch of rain, had to be satisfied with half that amount. Temperatures were generally warm in most areas averaging 2 to 3° above normal in the East and 6 to 9° warmer than normal in much of the West.

The last full week of June brought a frontal system from the west which spread heavy rain from the Plains through the Ohio Valley to the Appalachians. Heavy rain inundated an area from southern Kansas through Missouri to the St. Louis area. Some points measured 9 or more inches. Tornadoes were reported from the Dakotas to Florida; damage to property and crops was reported in many areas. The driest portions of the South and Southeast had some severe weather but little rain, although northern Florida fared quite well.

The last few days of June provided additional rain from the western Corn Belt to the eastern Ohio Valley.





#### THE PALMER AND CROP MOISTURE INDICES

The Palmer Index was designed to evaluate the scope, severity, and frequency of prolonged periods of abnormally wet or dry weather. For this purpose it works reasonably well. However, it does not provide a measure of the current status of agricultural drought; i.e. the effects of short periods of very dry weather. For this reason the Crop Moisture Index was developed to respond rapidly to changes in the soil moisture situation and take into account only those moisture aspects which affect vegetation and field operations.

If one is interested in the overall soil moisture situation, which will integrate the effects of the past weather over weeks and even months, the Palmer Index provides the best evaluation. However, if one is interested in the availability of moisture to meet current demands, the Crop Moisture Index is the most useful. For example, a recent rain might have replenished the soil sufficiently to meet the current demands. However if the Palmer Index is highly negative, one can interpret this to mean that the overall soil moisture situation is very poor.

A negative CMI value means that the demand for moisture, or the potential evapotranspiration, has been greater than available supplies so that actual transpiration has been reduced. On the other hand, positive CMI values mean that either actual evapotranspiration exceeded the expected amount, or

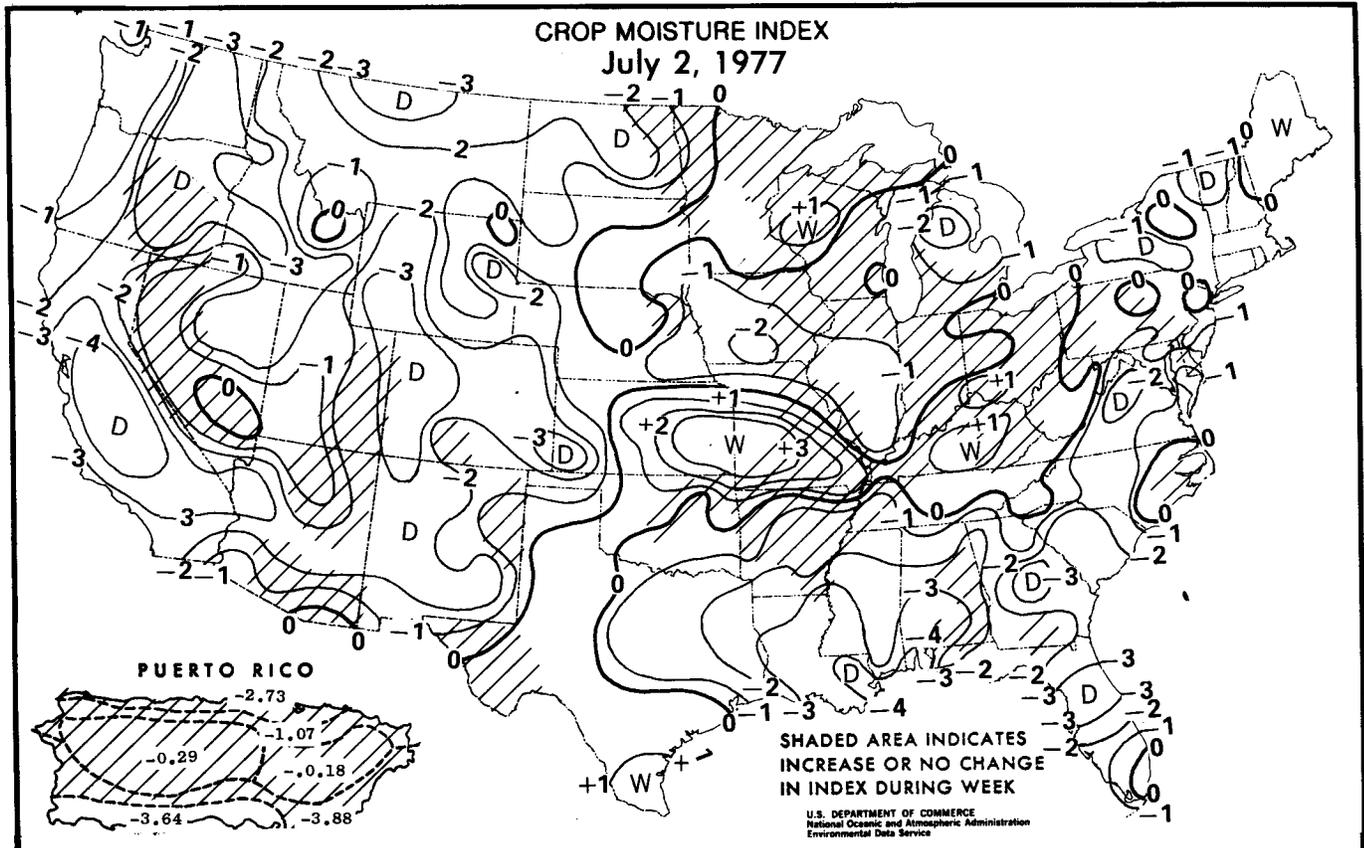
recent rainfall exceeded the moisture requirements of the crops and the additional moisture was added to the soil or was regarded as runoff.

Negative Palmer Index values imply negative abnormalities of either evapotranspiration, the amount of moisture stored in or added to the soil, or of runoff, or a combination of all these types of moisture shortages. In other words, negative PI values simply indicate that the weather has been abnormally dry, and do not specify the exact nature of the effects of the dry weather.

However, positive PI values indicate that the moisture supply either from current or antecedent rainfall exceeded the amount required to sustain soil moisture levels that would be considered as normal and appropriate for the climate of the area.

In brief summary, Palmer Index values are based on all aspects of the moisture situation, but the Crop Moisture values refer only to the crop moisture situation. In addition, the PI values are highly dependent on antecedent moisture conditions, whereas CMI values are much more responsive to weekly or current rainfall, or the lack of it.

The CMI map will appear each week in the Bulletin during the season from now through October. The Palmer Index will be published only in the first issue of each month during the same period.



The Crop Moisture Index measures the degree to which moisture requirements of growing crops were met during the previous week. The index is computed from average weekly values of temperature and precipitation. These values are used to calculate the potential moisture demand. Taking into account the previous soil moisture condition and current rainfall, the actual moisture loss is determined.

If the potential moisture demand, or potential evapotranspiration, exceeds available moisture supplies, actual evapotranspiration is reduced and the CMI gives a negative

value. However, if moisture meets or exceeds demand the index is positive.

Shaded areas indicate the index was unchanged or increased from the previous week's value; soils dried in the unshaded areas. Centers of positive and negative areas are identified by W for wet and D for dry.

Local moisture conditions may vary because of differences in rainfall distribution or soil types. The type of agriculture and stage of crop development must be considered when assessing the impact of moisture conditions based on the Crop Moisture Index. Some general guidelines follow.

UNSHADED AREAS:	INDEX DECREASED
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	EXTREMELY DRY, MOST CROPS RUINED

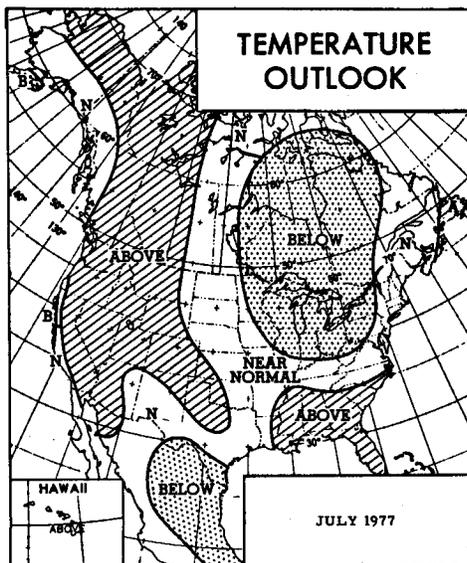
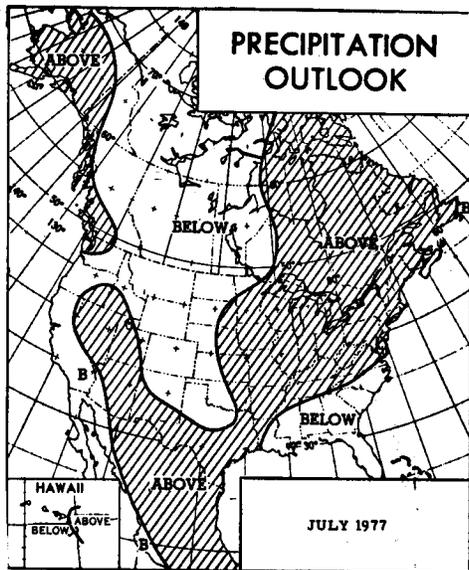
SHADED AREA:	INDEX INCREASED OR DID NOT CHANGE
ABOVE 3.0	EXCESSIVELY WET, SOME FIELDS FLOODED
2.0 to 3.0	TOO WET, SOME STANDING WATER
1.0 to 2.0	PROSPECTS ABOVE NORMAL, SOME FIELDS TOO WET
0 to 1.0	MOISTURE ADEQUATE FOR PRESENT NEEDS
0 to -1.0	PROSPECTS IMPROVED BUT RAIN STILL NEEDED
-1.0 to -2.0	SOME 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 EXTREMELY DRY



**FIRST CLASS MAIL**

COM 210

**Average Monthly Weather Outlook**



Heating Degree Days (Base 65° F.)

June 1977

ALA. Birmingham	0	MAINE. Caribou	203	OKLA. Okla. City	0
Mobile	0	Portland	184	Tulsa	0
Montgomery	0	MD. Baltimore	18	OREG. Astoria	238
ALASKA. Anchorage	210	Boston	43	Burns U.	51
Barrow	922	Chatham	140	Hedford	17
Fairbanks	155	MICH. Alpena	206	Pendleton	26
Juneau	320	Detroit	85	Portland	68
Nome	—	Pitt	119	Salem	35
ARIZ. Flagstaff	102	Grand Rapids	91	PA. Allentown	108
Phoenix	0	Houghton Lake	159	Erie	126
Tucson	0	Lansing	98	Harrisburg	32
Winslow	0	Marquette U.	193	Philadelphia	36
Yuma	0	S. Ste. Marie	305	Pittsburgh	102
ARK. Fort Smith	0	MENN. Duluth	171	Scranton	90
Little Rock	0	Internat. Falls	114	R.I. Providence	51
CALIF. Bakersfield	0	Minneapolis	17	S.C. Charleston	0
316	0	Rochester	37	Columbia	0
Fresno	0	St. Cloud	39	Greenville	0
Los Angeles U.	1	MISS. Jackson	0	S. DAK. Aberdeen	23
Red Bluff	0	Meridian	0	Huron	12
Stockton	0	Vicksburg U.	—	Rapid City	17
San Diego	3	MO. Columbia	0	Sioux Falls	4
San Francisco	141	Kansas City	0	TENN. Chattanooga	2
COLO. Denver	0	St. Louis	3	Knoxville	0
Grand Junction	0	Springfield	0	Memphis	0
Pueblo	1	MONT. Billings	28	Nashville	1
CONN. Bridgeport	62	Glasgow	59	TEX. Abilene	0
Hartford	45	Great Falls	70	Amarillo	0
D.C. Washington	3	Havre	30	Austin	0
FLA. Apalachicola	0	Helena	90	Beaumont	0
Ft. Myers	0	Kalispell	114	Brownsville	0
Jacksonville	0	Miles City	3	Corpus Christi	0
Jackson	0	Missoula	76	Dallas	—
Lakeland U.	0	NEBR. Grand Island	0	Del Rio	0
Miami	0	Lincoln	0	El Paso	0
Orlando	0	Norfolk	0	Fort Worth	0
Daytona Beach	0	North Platte	2	Galveston U.	0
Tallahassee	0	Omaha	1	Houston	0
Tampa	0	Valentine	8	Lubbock	0
GA. Atlanta	0	NEV. Ely	96	Midland	0
Augusta	0	Las Vegas	0	San Angelo	0
Macon	0	Reno	30	San Antonio	0
Savannah	0	Winemucca	15	Victoria	0
IDAHO. Boise	7	W.H. Concord	119	Waco	0
Lewiston	10	N.J. Atlantic City	42	Wichita Falls	0
Pocatello	6	Trenton U.	30	UTAH, Milford	50
ILL. Cairo U.	0	N. MEX. Albuquerque	0	Salt Lake City	0
Chicago	52	Roswell	0	VT. Burlington	89
Moline	15	N.Y. Albany	85	VA. Lynchburg	26
Peoria	17	Binghamton	130	Norfolk	1
Rockford	43	Buffalo	90	Richmond	7
Springfield	12	New York	28	Roanoke	23
IND. Evansville	4	Rochester	89	WASH. Colville	63
Fort Wayne	42	Syracuse	111	Omak	—
Indianapolis	19	N.C. Asheville	25	Quillayute	283
South Bend	68	Charlotte	7	Seattle-Tacoma	79
IOWA. Burlington	15	Greensboro	11	Spokane	66
Des Moines	2	Hatteras R.	0	Walla Walla U.	15
Dubuque	40	Raleigh	14	Yakima	34
Sioux City	2	Wilmington	1	W. VA. Beckley	97
KANS. Concordia	0	N. DAK. Bismarck	45	Charleston	52
Dodge City	0	Fargo	30	Huntington	45
Goodland	0	Williston U.	46	Parkersburg U.	47
Topeka	0	OHIO. Akron-Canton	82	WIS. Green Bay	113
Wichita	0	Cincinnati U.	36	Madison	95
KY. Lexington	19	Cleveland	115	Milwaukee	51
Louisville	7	Columbus	64	WYO. Casper	12
LA. Baton Rouge	0	Dayton	38	Chesapeake	44
Lake Charles	4	Lake Charles	91	Lander	22
New Orleans	0	Youngstown	127	Sheridan	53
Shreveport	0				

Preliminary reports from airport locations, except those marked U for urban and R for rural.  
 \*Estimated.