96th Congress
2d Session

COMMITTEE PRINT

1981 AGRICULTURAL OUTLOOK

Papers Presented at the Agricultural Outlook Conference Sponsored by the U.S. Department of Agriculture—Held in Washington, D.C., November 17–20, 1980

PREPARED FOR THE

COMMITTEE ON AGRICULTURE, NUTRITION, AND FORESTRY

UNITED STATES SENATE

JANUARY 1981

Printed for the use of the
Committee on Agriculture, Nutrition, and Forestry

U.S. GOVERNMENT PRINTING OFFICE
69-563 O WASHINGTON : 1981

IMPACTS OF RECENT WEATHER ON CROP PROSPECTS FOR 1981

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Weather anomalies again played a dominant role in the 1980 agricultural scene. Many important crop areas in Europe and Asia experienced extended periods of wet and/or cold weather. Agricultural impacts ranged from beneficial for wet-season crops in India and Southeast Asia to nearly disastrous for South Korean and Japanese rice and most Soviet crops. Rainfall deficits reduced production of many crops in North America and wheat yields in some Southern Hemisphere areas. The resulting declines to grain reserves make the crop prospects for 1981 even more crucial.

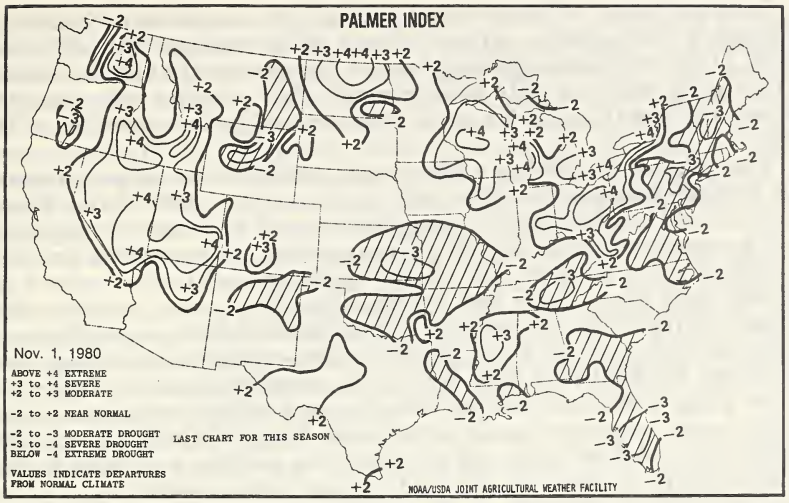
Autumn weather this year in the Northern Hemisphere has ameliorated conditions somewhat. Normally low evaporation rates associated with the cooler transitional season facilitate rapid recharge of soil moisture, and rainfall alone at this time sets the stage for moisture availability next spring. Much uncertainty remains, of course. Who could have foreseen the cold, wet growing season in European U.S.S.R. this year, or the heat wave in the United States? Such extreme seasonal weather cannot be predicted. However, with an awareness of current progress in fieldwork, and soil moisture conditions resulting from recent weather, one can use climatic data to anticipate probable scenarios next spring.

THE UNITED STATES (USING INFORMATION SUPPLIED TO THE WEEKLY WEATHER AND CROP BULLETIN)

The 1980 spring growing season began with expanding dry conditions in the northern Great Plains. Then in June, the heat wave began in Texas, and gradually spread to the east and northeast, encompassing southwestern portions of the Corn Belt. Moisture deficits were nearly at their peak in the upper Midwest by late July, stressing spring wheat in the Dakotas and corn in the southwestern portion of the Corn Belt.

Early August rain eased dry conditions in the spring Wheat Belt and northwestern portions of the Corn Belt. However, soils remained dry in the South until late September when abundant rains primarily from tropical storms covered much of the region. The dryness persisted in the Kansas Wheat Belt, and only in mid-October did storms bring substantial relief to eastern portions of the belt.

Figure 1 shows the Palmer Drought Index map for November 1, 1980. This index was designed to provide a means for evaluating the scope and severity of prolonged periods of abnormally wet or dry



weather. It integrates weather over several months, but does not always adequately indicate moisture conditions with respect to current plant water requirements. The map shows that conditions have improved substantially in many areas, especially in the northern Great Plains. However, long-term supplies are not nearly as good as last year at this time for much of the United States. Important agricultural areas in Florida and the central Great Plains currently have the most serious water deficits.

Winter wheat: Sowing of the 1981 crop had been nearly completed in the major production areas by early November. Sowing has lagged in eastern Colorado, southwestern Kansas, western Oklahoma, and northern Texas due to dry surface soils. Some reseeding was necessary because of spotty emergence, and relatively slow growth precluded much grazing in these areas. In spite of generally adequate subsoil moisture, rainfall and mild temperatures are needed immediately to encourage growth and thereby prevent soil blowing, which is a constant threat in this drier part of the Wheat Belt. Conditions for autumn growth are much better in eastern portions of both Kansas and Oklahoma, where rains arrived earlier than last year, and wheat should be in good condition. However, in the longer term, above-normal rainfall will be required to recharge subsoil moisture which will be needed for growth next spring.

In Montana and the Pacific Northwest, present wheat growing conditions and the outlook for next spring are much better than last year. In both areas, plants have emerged and developed satisfactorily. But more importantly, soil moisture supplies have improved substantially from a year ago, especially in eastern Washington.

Spring wheat: Abundant rainfall since midsummer over most of the cropping area has increased soil moisture dramatically. Only a few small areas still show abnormal moisture deficits, making the outlook for the coming spring sowing much better than last year. Even with moderate winter precipitation shortfalls, soil moisture should be generally in good supply next spring.

Corn/soybeans: Above-normal rainfall in August and September alleviated soil moisture deficits in most of the western Corn/Soybean Belt. Drier weather beginning late in September allowed harvesting to progress more rapidly than normal. Fall plowing was also well ahead of schedule in all but some northern and eastern portions of the belt.

The outlook for 1981 is a little more variable than in recent years. In southwestern parts of the belt (as in eastern parts of the Wheat Belt), above-normal winter precipitation will be needed to replenish soil moisture before the spring growing season progresses too far. This is indeed quite possible, but subsoil moisture deficits are quite a bit greater here than a year ago. On the other hand, many northern and eastern parts of the belt have quite abundant soil moisture, so that even with less than normal winter precipitation, excessive water may cause problems for fieldwork next spring. To complicate matters further in these areas, more than normal plowing may remain to be done unless much more progress is made before soils freeze. Only in the unlikely event that the drier areas get precipitation and the wet areas do not, will moisture problems of one kind or another be avoided.

Water supply in the West: Water storage reservoirs in the West are fed by rivers which originate in mountainous terrain. Palmer Drought Index values are calculated for flatter agricultural land, so they may not always give an accurate indication of water supplies. The following comments are based on information provided by SNOTEL, a cooperative effort run by the Soil Conservation Service with the National Weather Service's Hydrologic Section.

Water supply prospects are excellent in the southwestern quarter of the United States. Colorado River reservoirs have maintained above-normal levels from heavy rains early this year. California water supplies range from twice normal in the south to normal in the north. The Columbia River Basin has not been so fortunate. Low reservoir levels of last year have carried over, and above-normal snowpack must accumulate in the mountains in order to replenish supplies.

International situations (based on data compiled at the NOAA/USDA Joint Agricultural Weather Facility through November 12, 1980)

The U.S.S.R.: Weather during the 1980 growing season was not favorable to agricultural production in European U.S.S.R. Cold and wet weather delayed planting and crop development over most of the region, but dry conditions stressed crops in parts of the Volga Valley. Grain yields were reduced, and delays in crop maturation interfered with fall plowing and sowing, exposed late-harvested crops to the onset of cold weather, and probably prevented much of the maize from maturing at all. Some small grains have not been harvested because of persistent wet weather, and fall sowing intentions were not fulfilled in the northwest. On the plus side, soil moisture in the major winter grain belt is in good supply. Although grains were sown a little late, they probably had time to develop sufficiently to resist winterkill before cold and snow moved in at the beginning of November. Conditions going into winter are much better than they were a year ago.

China: Abundant rainfall was the rule in most crop areas during 1980. Some minor deficiencies occurred in the north and in southeast coastal areas, but the excesses were more noteworthy. Near record flooding in the Yangtze Valley caused problems for many crops as they entered the latter stages of development in August. The rains left reservoirs full; but irrigation needs have remained relatively low. October precipitation, in contrast to last year, surged much above normal in the winter Wheat Belt. These late rains put the wheat in good condition as the dry winter season approaches.

India: A strong monsoon produced a good rice crop in 1980. Flooding of low fields was more than offset by benefits of the moisture to upland areas. An early withdrawal from the west and northwest left cotton and groundnuts short of late season moisture. In the northwest, conditions are favorable for winter grain germination in most areas, and abundant groundwater and reservoir supplies make the outlook much better than a year ago.

Europe-Canada: Weather earlier in the 1980 growing season was unfavorable for small grains in these areas; too wet in Europe and too dry in Canada. Conditions ameliorated during August, substantially improving final yields. October precipitation increased soil moisture supplies in both areas, with a tendency toward some excesses in Europe and some deficits in Canada.

Argentina: Most crop areas were relatively dry as the spring season began, putting some stress on winter wheat, especially in southwestern areas. In mid-October, the weather turned wetter in northern wheat areas, where maize and soybeans are also concentrated. The moisture is not beneficial to wheat which is nearing maturity, but conditions for corn and soybean planting have become much more favorable in recent weeks.

Brazil: Above-normal rainfall in the south is causing problems for mature winter wheat again this year. The rains have not been as intense as last year, but the persistent wet weather is not at all favorable to the crop. Conditions are good for soybean planting, which should be well along now. Soil moisture may be excessive in some parts of Rio Grande do Sul, but this is much preferable to moisture deficits, and some time remains before planting must be completed. It is difficult to be too optimistic, however, for these porous soils can dry out rapidly in the heat of summer.