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Crop yields are subject to large variations from projected trends due primarily to the effects of weather prior to and during the crop cycle. The impact of anomalous weather depends, to a large extent, on existing crop conditions and the stage of development. The 1981 growing season was no exception as several major agricultural areas were subjected to the erratic behavior of the weather.

In the United States, persistent wet weather during the spring and early summer in much of the Corn Belt delayed crop plantings in most areas and by up to a month in the eastern section. The late growing season posed potentially serious problems for farmers. In particular, the crucial reproductive stages of development would occur later than normal, coinciding climatically with the warmest month of the year--August--also frequently the month of greatest moisture stress. Due to the late start, concern was high that an early frost might end the growing season prematurely before crops ripened. However, generally favorable weather during the summer and early fall produced good to excellent crop yields in much of the Corn Belt.

In the USSR, the 1981 growing season for grains began favorably with adequate moisture for early growth. However, episodes of hot, dry weather during crucial growth stages caused a rapid depletion of moisture supplies resulting in crop yields well below the anticipated levels for the third consecutive year. The probability of three successive unfavorable grain yield years is extremely low, but the adverse weather conditions during these three years were not at all similar. In 1979, the effects of early season moisture stress could not be overcome by variable rainfall patterns as the season progressed. In 1980, excessive moisture caused delays in planting, crop lodging, harvest delays, and eventual abandonment in some areas as the winter season set in.

In Asia, the early withdrawal of the Indian Monsoon has reduced crop prospects, especially for grains harvested in the early spring. Unfavorably dry weather is posing problems for crops still to be harvested in the Southern Hemisphere.

With this brief summary of the 1981 growing season in mind, let's review the present agricultural weather situation and some preliminary insights into prospects for the 1982 crops. The present moisture situation and climatological expectations form the basis for this overview.

With autumn harvests mostly complete in major Northern Hemisphere agricultural areas, attention now is focused on moisture availability for sowing and emergence of winter grains and pre-season moisture conditions for next spring's planting season. Adequate soil moisture at sowing is essential for crop germination, emergence and establishment. For winter wheat, in particular, adequate rainfall during the growing season may not fully compensate for the ill-effects of poor autumn emergence. Similarly, in spring wheat areas, pre-season moisture accumulated after fall harvest is directly related to potential of crop yields. Thus, the initial indicator of crop prospects is already being formulated in the Northern Hemisphere wheat areas.

A summary of moisture conditions for both national and international crop areas follows. Figure 1 highlights the agricultural weather situation for Northern Hemisphere winter grains and Southern Hemisphere crops to be harvested in the next several months.

NATIONAL SITUATION

United States: In contrast to the widespread moisture deficits prevalent during the 1980 growing season, 1981 summer rainfall was unusually heavy from southern Texas to the western Great Lakes. Some areas received twice the normal amount for the season. However, the Southeast was somewhat drier than normal, a pattern which continued into October. As a result, present soil moisture supplies range from adequate to surplus in portions of the Northeast and Northern Great Lakes region, short in much of the Southeast, and, short to adequate in nearly all other crop areas. Mid-October rains, slowing fieldwork in the south-central Plains and the western two-thirds of the Corn Belt, increased soil moisture supplies in these areas. The most serious moisture deficit remains in the Southeast and mid-Atlantic Coast States where marginally dry weather has persisted throughout most of the growing season. Less than average rainfall during the past several months in eastern Montana also is causing short sub-soil moisture supplies.

Winter Wheat: For much of the hard red winter wheat area of the Great Plains and the white winter wheat area of the Pacific Northwest, autumn sowing has progressed at a relatively normal pace. Emergence has been rated mostly good in these areas as top-soil moisture supplies have been adequate for good germination and early seedling establishment prior to winter dormancy. Sub-soil moisture reserves in the Plains are mostly adequate, providing a favorable outlook for early spring growth. The soft red winter wheat areas of the Corn Belt and the Southeastern United States show sharply contrasting moisture conditions, however. Autumn sowing in the Corn Belt has fallen behind both last year as well as the long-term average due primarily to the late harvest of summer crops. Moisture supplies are generally adequate for emergence and germination of winter wheat. Late plantings, however, may limit autumn growth prior to dormancy, potentially reducing the resistance of the plants to winter's low temperatures. This, of course, depends on a number of factors, including the severity of cold weather and snow cover. In the Southeastern U.S., the problem is inadequate moisture for proper germination and emergence. Soil moisture supplies are especially short in Mississippi, Georgia and South Carolina. As a result, winter wheat stands in these areas are rated poor to fair.

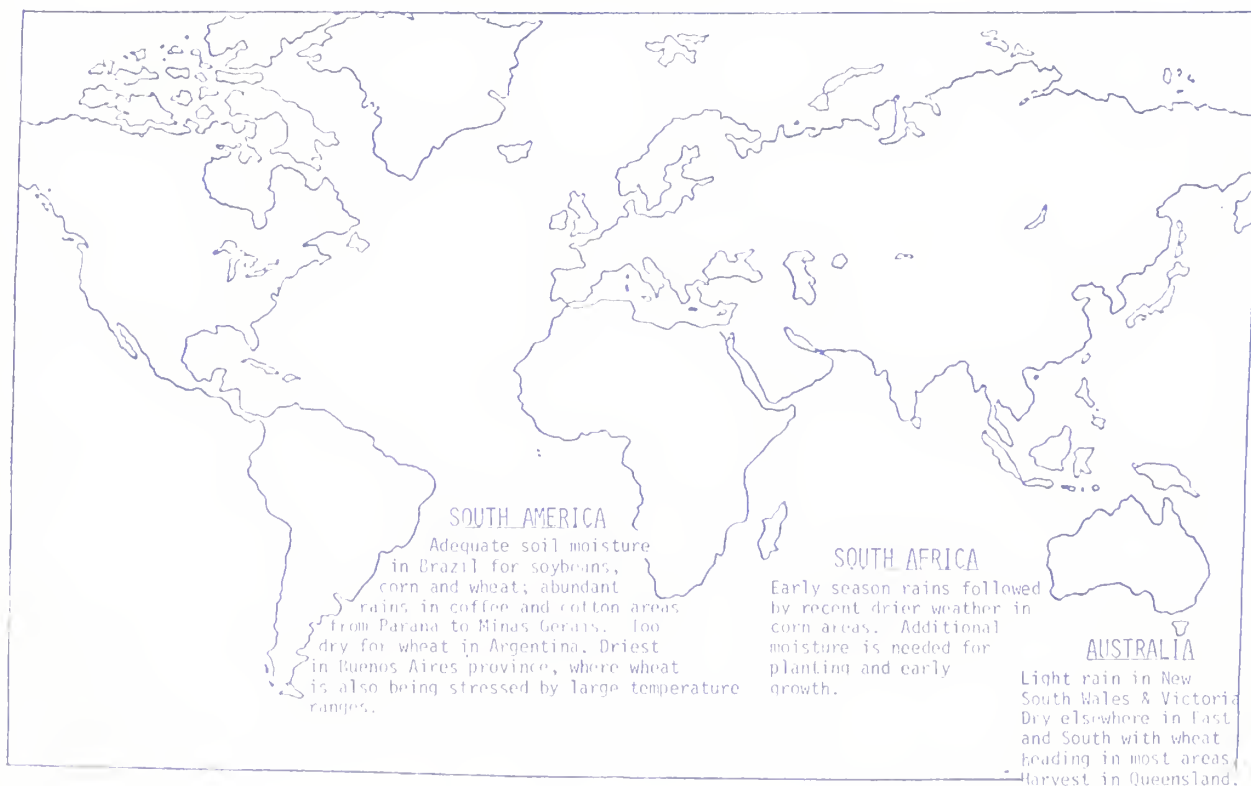
AGRICULTURAL WEATHER HIGHLIGHTS
NORTHERN HEMISPHERE WINTER GRAINS

DATE OCTOBER 22, 1981



AGRICULTURAL WEATHER HIGHLIGHTS
SOUTHERN HEMISPHERE CROPS

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Spring Wheat: A seasonal rainfall pattern during the summer and early fall in the northern Great Plains kept soil conditions from becoming excessively dry at the end of the growing season. Some areas of South Dakota have low soil moisture reserves. Thus, timely spring rains will be required to provide favorable growth conditions for spring wheat.

Corn/Soybeans: The persistently wet weather during the 1981 growing season in the Corn Belt will manifest itself next spring in adequate sub-soil moisture supplies throughout most of the region. The late harvest, however, has pushed autumn ploughing far behind schedule. Thus, favorable spring weather will be essential for land preparation and sowing of crops to offset the delayed agricultural season of this past year.

Thus, with the exception of the Southeast, generally favorable moisture conditions offer an optimistic early outlook for crop growth and development during the 1982 growing season. The biggest contrast between this year and last year at this time is in the Central Plains where a more favorable moisture pattern exists. However, the Southeast is again too dry and will need significant winter and spring rains to replenish soil moisture reserves. But, a heavy winter precipitation pattern in the northern Corn Belt may again cause planting delays as experienced this past spring due to excessive wetness. Finally, the Far West will require average to above-average snow fall in the mountains to replenish reservoirs and sustain river levels.

INTERNATIONAL SITUATION

(Based on data compiled at the NOAA/USDA Joint Agricultural Weather Facility through October 18, 1981)

USSR: For the third consecutive year, grain yield prospects were cut drastically by adverse weather conditions. Abundant moisture in the European USSR during the spring provided a good start to the 1981 growing season. However, hot dry weather during the period of peak moisture demand caused a rapid depletion of moisture supplies and imposed severe stress on crop development. A favorable precipitation pattern in September and early October allowed harvesting and winter grain sowing to progress rapidly. Soil moisture supplies have been adequate for early autumn growth and plants should have developed sufficiently to withstand winter's cold weather. However, sub soils remain drier than normal, and the possibility of moisture shortages limiting spring growth are possible. Significant precipitation is needed before soils freeze or before plant water usage becomes substantial in the spring. In the spring wheat area, autumn rains have improved soil moisture reserves, depleted during the growing season. Although soil moisture supplies are not as abundant as last year, early growth conditions for winter wheat are generally adequate and initial pre-season moisture supplies in the spring wheat area provide an optimistic note for spring sowing.

China: Heavy rains inundated portions of central China's Sichuan Province during the summer, and excessive rainfall during the past few weeks in double-crop rice areas soaked the maturing rice. Despite these excesses, however, 1981 was a relatively successful crop production year in China. Sowing of winter grains for the 1982 harvest has been aided by generally favorable moisture supplies, except in crop areas of Hebei and Shandong, where persistent dry weather has dimmed sowing prospects somewhat. Much needed rain fell in mid-October providing some topsoil moisture for sowing but additional rainfall is needed in this area to ensure adequate development before cold weather forces the crop into dormancy. Autumn moisture conditions in general are similar to those of last year in the winter grain area.

India: The intense monsoonal activity which prevailed during the first half of the wet season weakened considerably over northwest India and withdrew about a month early. Figure 2 depicts the percentile rankings of total rainfall for August and September in the major winter wheat area of India. Ten meteorological stations with 31 years of rainfall data were used for the analysis. The results show that a significant portion of India's winter wheat area, including Punjab, Haryana and western Uttar Pradesh was ranked below the 20th percentile indicating well below average rainfall for these two months. Most other wheat areas received below average rainfall and were ranked between the 20th and 40th percentile. This premature withdrawal lowered prospects of rice yields and reduced soil moisture supplies for winter grain sowing. Several days of substantial rains over much of the winter grain area at the end of September improved prospects, but supplemental irrigation will be required in many areas. This raises concern for reservoir supplies which suffered from the early end of the wet season. Crop conditions were more favorable in southern India.

Brazil: Frost and dry weather during the winter had a significant adverse impact on coffee as well as wheat in northern crop areas. Recent rains substantially improved moisture conditions for spring-sown crops in Parana and Sao Paulo. Conditions have been more favorable for wheat growth in southern crop areas where beneficial rains during the early spring have provided adequate soil moisture supplies. Thus, prospects for corn and soybeans are favorable at this time. However, due to the porous nature of the soils, especially in southern crop areas, timely rains are necessary to sustain favorable growth conditions.

Argentina: Weather conditions are repeating last year's pattern in the major corn, soybean and wheat-producing areas. Persistent below-average rainfall during August and September reduced soil moisture reserves to low levels at crucial periods of crop development. Winter wheat has entered the moisture-sensitive reproductive stage, and, corn and soybeans are in the planting and early growth stages. Thus, it is imperative that at least seasonal rains develop during October and November to meet these crop moisture needs. Some shower activity has provided temporary relief in northern crop areas but additional moisture will be needed, especially for corn, soybeans, and other newly-sown crops.

PERCENTILE RANKINGS OF RAINFALL IN INDIA'S WINTER WHEAT AREA (AUGUST AND SEPTEMBER COMBINED FOR 1981)

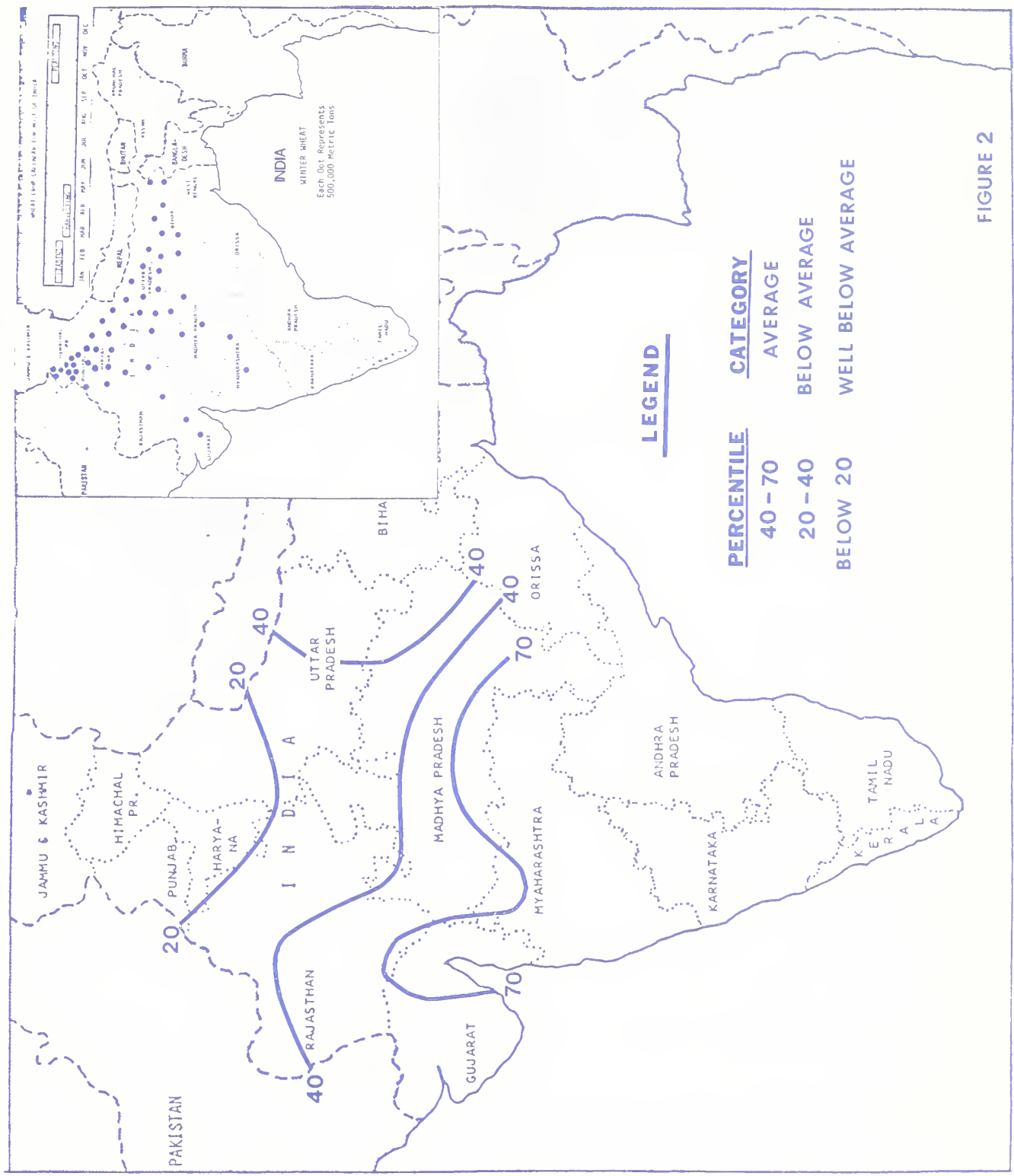


FIGURE 2