OUTLOOK '86

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Environmental factors play a major role in determining crop development and yield. Agricultural areas around the world are vulnerable to weather's erratic behavior, but the impact on final yield output is largely determined by the type of weather which occurs during key stages of the crop's growth cycle. In retrospect, the 1985 growing season was no exception, as weather events in several major agricultural areas played an important role in determining crop yields.

In the United States, unseasonably warm weather early in the spring allowed corn, soybean, cotton, and spring wheat planting to progress ahead of their normal pace and well ahead of 1984's slow pace. The early spring pushed crop development ahead of normal, and crop progress remained ahead of normal during much of the growing season. In spring wheat areas of the northern Great Plains, the crop emerged in good condition with ample moisture. However, persistent dryness from mid-June through July, particularly in Montana and the extreme western section of North Dakota, reduced yield prospects as spring wheat advanced through the critical reproductive stage. Planting of the 1985 corn crop occurred with favorable moisture conditions in most areas. However, farmers in the southeast had to replant corn due to dryness. The crop emerged in good condition through much of the Corn Belt. Timely rains during the growing season combined with available soil moisture to meet crop moisture needs, contributing to a record national corn yield of 116.6 bushels per acre (based on November 12 estimates). This yield is about 9 percent above last year's crop and 3 percent above the previous record set in 1982.

In Canada, sufficient planting moisture was available for spring grains in most of the Prairie Provinces and crops emerged in good to excellent condition. However, a drying trend which began in early June in southern Alberta and southwestern Saskatchewan persisted through much of the growing season, lowering spring grain yield prospects for the second consecutive year. Furthermore, the unseasonably cool, wet August and September weather in the southeastern Prairies caused extensive harvest delays and lowered the quality of grains. Overall, untimely weather events plagued crop development in the Prairies grain belt during the 1985 season.

In the USSR, winter wheat broke dormancy in spring 1985 with less-than-favorable moisture supplies for vigorous vegetative growth. However, timely rains in mid-May were beneficial for the crop in the reproductive stage. Spring grain planting west of the Ural mountains occurred with favorable moisture conditions. Above-normal precipitation in June and July benefited crops in the reproductive and filling stages.

In spring grain areas east of the Ural mountains, topsoil moisture in most areas was very good for spring crop emergence and early growth. In June, unseasonably dry weather in spring grain areas in the southern Urals and western Kazakhstan was accompanied by periods of hot weather, which reduced yield prospects for crops in the heading stage. Wet weather in early July in these areas halted any further declines in the yield potential. In general, prospects for the 1985 total grain crop improved from the previous year with generally more favorable weather conditions.

In India, the late arrival of the southwest monsoon delayed planting of cotton and groundnuts in Karnataka, Andhra Pradesh, Maharashtra, western Madhya Pradesh, and eastern Gujarat. Once the monsoon arrived, the rainfall pattern was erratic, with below-normal precipitation falling on most areas. As a result, some yield losses were realized particularly in Gujarat, Maharashtra, Karnataka and western Madhya Pradesh where rainfall was below normal during the critical repoductive period. This past year's weather in cotton and groundnut areas of India was quite similar to the 1982 growing season.

Autumn harvests are nearing completion in major Northern Hemisphere agricultural areas, and attention is now focused on next year's crops. Winter grain sowing is nearing completion in most areas, and adequate soil moisture accompanied by seasonable temperatures is needed for proper crop germination, emergence, and establishment. Also, pre-season precipitation is needed to recharge soil moisture supplies for next spring's planting season. In the Southern Hemisphere, summer crop planting is taking place in South America, southern Africa, and Australia, and adequate soil moisture is needed for proper emergence and early establishment. These factors, which are important determinants for next year's yield prospects, serve as initial indicators for the 1986 outlook.

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.

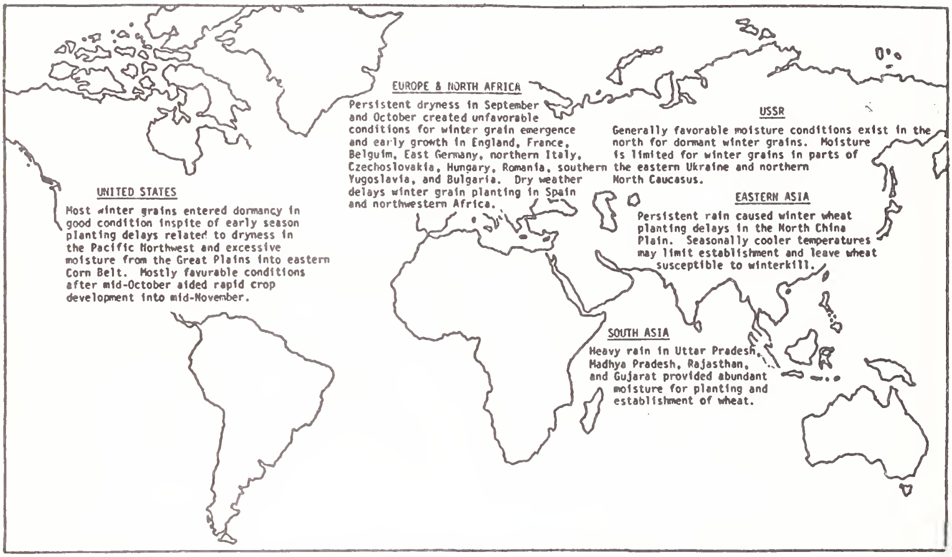
National Situation

Winter Wheat: Persistent showers delayed winter wheat planting from the northern Rockies, across the Great Plains and into the Corn Belt during October. Some reseeding of the crop was necessary in Oklahoma and eastern Kansas due to heavy rains which washed out seeds and young stands. In late October and early November, winter wheat planting progressed rapidly, especially in the central and northern Plains where the weather was dry. As of November 17, 1985 most states reported planting progress which was at, or ahead of both last year and the normal pace. Exceptions were Georgia, Missouri, and Texas where seeding lagged behind the normal pace. In most crop areas, winter wheat has emerged in good condition, with the crop reported as excellent in Kansas. In most major winter wheat areas, adequate to abundant moisture provides an optimistic outlook for the 1986 winter wheat crop. Snowfall preceded recent bitter cold over winter wheat areas in the northern Great Plains and the Pacific Northwest, protecting stands of newly emerged wheat. However, the cold weather halted the emergence of late planted wheat.

WORLD AGRICULTURAL WEATHER HIGHLIGHTS

NOVEMBER 19, 1985

NORTHERN HEMISPHERE



SOUTHERN HEMISPHERE

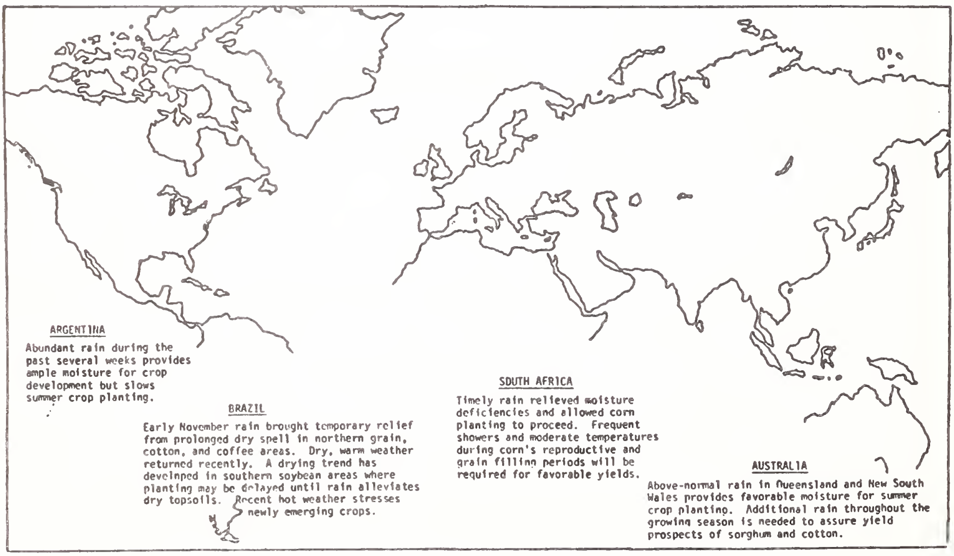


Figure 1. World Agricultural Weather Highlights.

<u>Spring Wheat</u>: Above-normal October rains in the northern Great Plains, particularly northern Montana, North Dakota, and parts of South Dakota increased subsoil moisture recharge at the end of the growing season. These reserves should provide a good start to next year's growing season, leading to early indications of a favorable outlook for spring wheat. Early November snow added to the potential soil moisture recharge.

<u>Corn, Soybeans, Cotton</u>: October's wet weather throughout much of the Corn Belt, Delta, and the Southeast continued through early November. The damp weather in the Corn Belt caused delays in corn and soybean harvesting, particularly in Missouri, Iowa, and South Dakota. Significant soybean harvest delays in the Delta and the Southeast were caused by torrential rains from hurricane Juan in late October. Some delays in cotton harvesting also occurred in these areas; however somewhat early maturity partially offset these delays. As of November 17, corn harvest progress was 78 percent compared with 86 percent last year and the 90 percent average. Soybean harvest progress was 81 percent, ahead of last year but behind the normal. Above normal October rainfall throughout the Corn Belt, Delta, southern Great Plains and the Southeast aided soil moisture recharge. Thus, early prospects are good for the beginning of next year's crop season in these areas.

The long-term Palmer Drought Index, as of November 2, 1985 summarizes the current moisture situation (Figure 2). The Index changes slowly from week to week and reflects the general long-term status of water supplies. Moist conditions throughout the Great Plains, middle Mississippi Valley, and the Delta will provide adequate subsoil moisture supplies next spring.

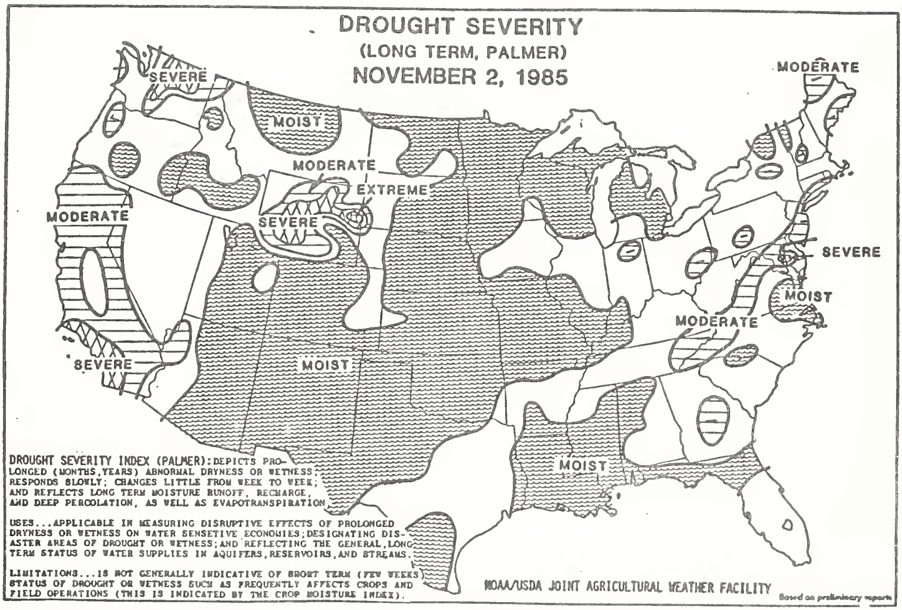


Figure 2. Drought Severity Index for November 2, 1985.

Limited moisture conditions exist in parts of the Ohio Valley and the Atlantic Coast States, where timely winter and spring precipitation will play an important role in the yield potential. However, recent heavy rain will improve the moisture reserves in these areas as well.

International Situation

Europe: September and October are the normal planting months for winter grains over most of Europe. Figure 3 depicts the areal coverage of percent of normal precipitation for September through October for most European winter wheat areas. Most crop areas received below-normal precipitation during the period, except in the extreme southern tip of Italy and central Yugoslavia where precipitation was above normal. Winter wheat areas in the eastern United Kingdom, the southern two-thirds of France, southwestern East Germany, southern Yugoslavia, and southeastern Romania had much below normal rainfall (less than 25 percent of normal).

PERCENT OF NORMAL PRECIPITATION FOR SEPT.-OCT. 1985

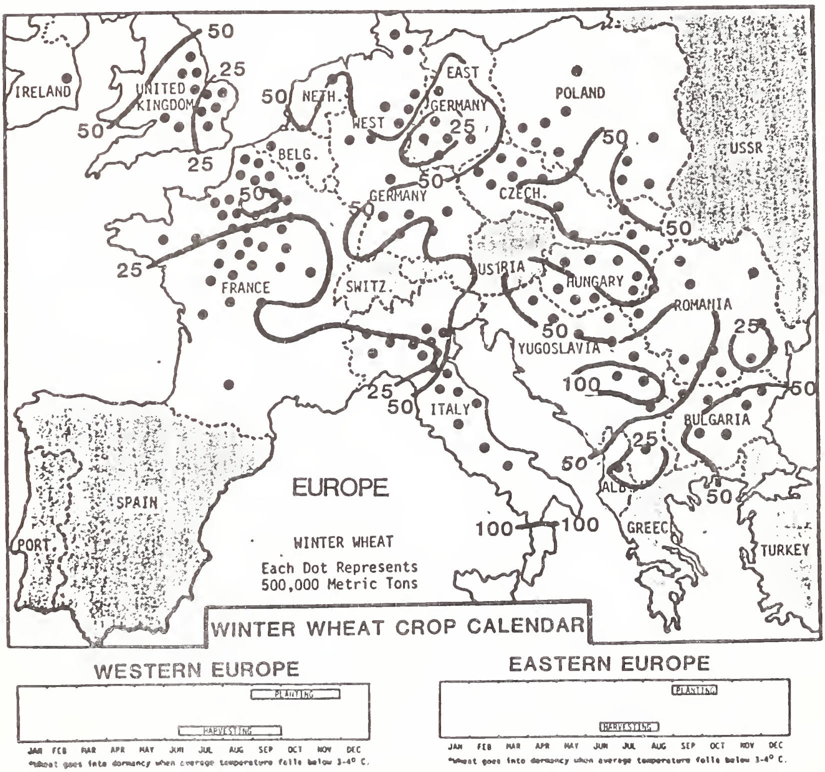


Figure 3. Percent of Normal Precipitation (Sept-Oct 1985) for Europe.

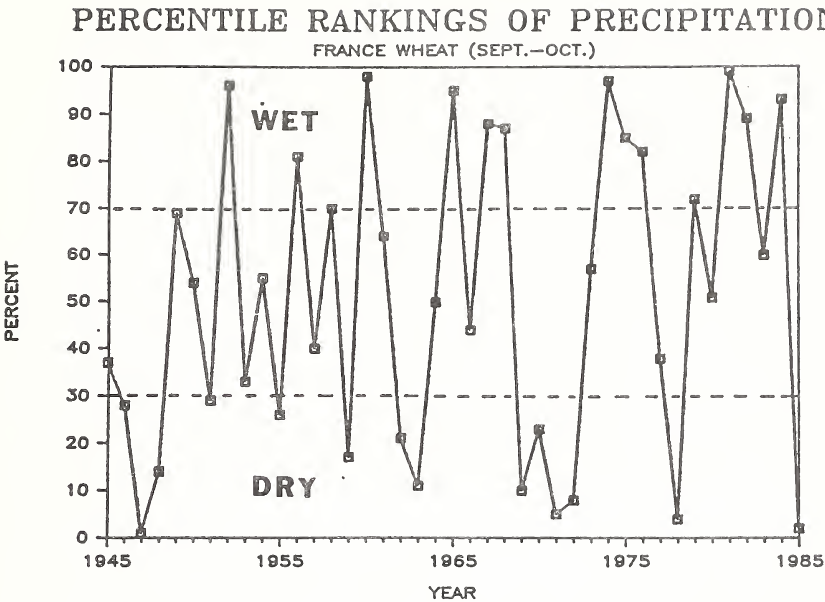


Figure 4. Percentile Rankings of Precipitation for France Wheat Areas (Sept-Oct).

The chronic dryness in these areas created the likelihood for spotty seed germination and poor early establishment. Unfavorable planting moisture (25 to 50 percent of normal rainfall) also covered parts of the United Kingdom, northern France, central West Germany, eastern Czechoslovakia, parts of Hungary, Yugoslavia, Romania, and Bulgaria. In Figure 4, percentile rankings of total monthly rainfall for September and October for an average of 3 stations in the major wheat area of northern France is presented. A total of 112 years of rainfall data were used in the analysis. Only the years from 1945 to 1985 were plotted. The results show that precipitation in the wheat area was ranked in the 2nd percentile in 1985, depicting the well-below-normal rainfall in these areas. Precipitation for September and October, 1985 was the lowest since 1947. In fact, rainfall during these two months in 1985 was the second lowest since 1874. In early November, showers returned to many European crop areas, improving moisture conditions, but wintry weather halted crop growth. Favorable temperatures and additional precipitation will be needed prior to winter dormancy for winter grains in many areas. Normally, winter grains enter dormancy by late November in northern and eastern Europe, and in early December in England, northern France, Yugoslavia, and Italy's Po Valley. Winter grain planting in Spain was delayed due to dryness, but recent showers increased planting moisture. At present, the outlook for winter grains in Europe is poor. Favorable overwintering conditions and timely spring rains will be needed to ensure favorable yield prospects for winter grain crops.

USSR: Timely moisture during key growth stages of many crops boosted the 1985/86 crop yield potential above those of the past 6 years. Autumn 1985 weather conditions for winter grains in northern crop areas of Western USSR were mostly favorable for emergence and early growth. Winter grains entered dormancy at near-normal dates in good condition. In the south, soaking rains in early September provided favorable moisture conditions for early winter grain planting. However, precipitation from early September through October was below normal, particularly in parts of the eastern Ukraine and the northern North Caucasus, where October's rainfall was less than 25 percent of normal. October's generally dry weather in these areas created limited moisture conditions for winter grain planting, especially that portion of the crop which was planted in early October. Historically, these areas account for about 20 percent of total winter wheat production. Early November showers improved moisture conditions in many areas as unseasonably warm temperatures allowed winter grains to add on autumn growth. Winter grains entered dormancy by mid-November in most areas. In spite of dryness in some areas, overall autumn weather conditions up to the present have been favorable for winter grain establishment, providing a helpful start for next year's growing season. However, favorable overwintering conditions and timely spring rains will be needed to maintain this optimism.

South Asia: Heavy rain in northern India covered major wheat producing areas. Abundant moisture exists for wheat establishment in Uttar Pradesh, Madhya Pradesh, Gujarat, and Rajasthan. Wheat normally progresses into the moisture-sensitive reproductive stage in January, coinciding with a minor rainy season across the northern wheat belt. Much of India's wheat is irrigated but additional moisture would benefit yield prospects.

China: Above-normal rain in October delayed winter wheat planting and summer crop harvesting. Cotton quality has likely been reduced by persistent wetness in Anhui and Jiangsu. Seasonally cooler temperatures may limit establishment of late planted winter wheat in Henan, the major wheat producing province. A period of gradual cooling is needed for establishment and sufficient hardening so that wheat will be less susceptible to winterkill. Moisture is generally favorable for winter wheat establishment in Hebei and Shandong. Winter wheat normally breaks dormancy in early March in the North China Plain and spring rains would benefit the crop following the usually dry winter.

Argentina: Frequent rain during October and early November provided ample moisture for wheat, which advanced through reproduction and grain filling during the period. Soil moisture is also abundant for early summer crop development. However, wet field conditions have recently slowed planting of corn, sorghum and sunflowers. Recent reports indicate that flooding has occurred primarily in grazing areas of Buenos Aires. Drier weather is needed for winter wheat harvesting and to complete coarse grain and oilseed planting. Soybean planting is just beginning throughout Argentina's major producing area of Santa Fe and northern Buenos Aires.

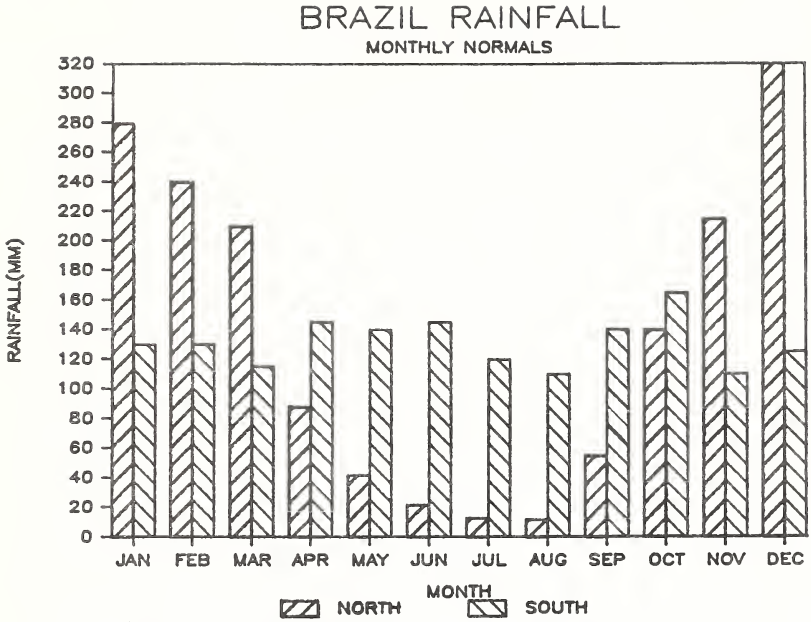


Figure 5. Monthly Normal Rainfall Distribution for Brazil's Northern and Southern Soybean Areas.

Brazil: The normal monthly rainfall distribution for Brazil's northern and southern soybean area is shown in Figure 5. The normal June-August dry season (June-August) in the highly diversified crop area of Minas Gerais, Sao Paulo and surrounding states (north) turned into a 5-month drought as much-below-average September and October rainfall hurt agricultural activities. Coffee tree flowering was severely stressed, and corn and cotton planting was delayed. Early November rain broke the long dry spell, bringing temporary relief to the drought-stricken area. The ideal corn and cotton planting period had already passed, but soybean planting normally extends into early December. Dry weather returned to the region after the first week in November. A drying trend has developed in Brazil's southern soybean areas of Rio Grande do Sul since late September. Moisture has been rapidly depleted in early November with hot weather pushing maximum temperatures into the 90's and above 100F. Rain will be needed soon in all areas to stimulate planting of soybeans and other summer crops and to sustain crop development. Present dry soils will require frequent, timely rains to improve crop prospects in the major crop areas of Brazil's center-south, especially during January and February when crops advance through more weather-sensitive growth phases.

Australia: Moisture is favorable for summer crop planting and early growth in southeastern Queensland and northern New South Wales. Additional rainfall will be required as moisture demands of cotton and sorghum increase during the reproductive cycle. Rainfall normally increases in these regions during the summer.

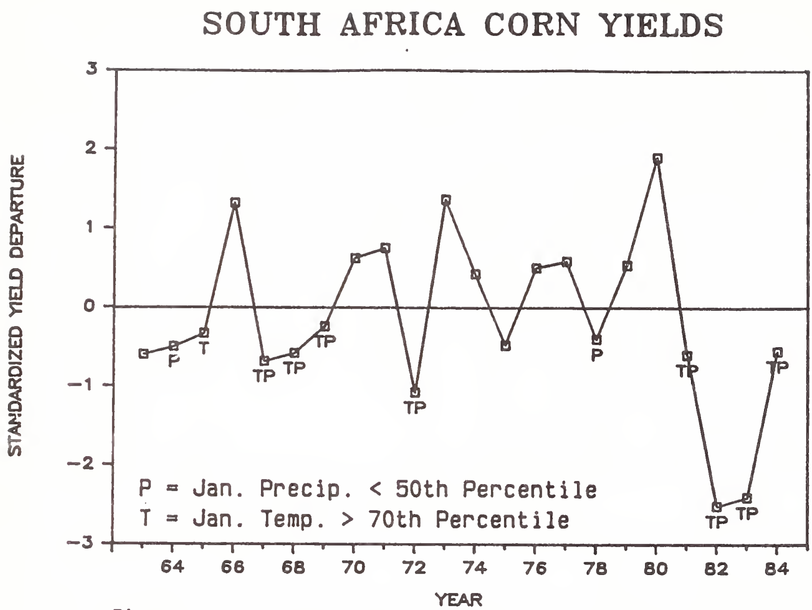


Figure 6. Standardized Yield Departures for South Africa Corn (1963-1984).

South Africa: Below-normal rainfall and above-normal temperatures during most of October slowed planting in the Maize Triangle. However, widespread, heavy rain in late October and early November greatly improved planting conditions. The optimum time for corn planting in eastern corn areas is early November. Moisture is adequate in western corn areas where planting can continue into early December. Thus far, yield prospects for the South Africa corn crop remain favorable. In Figure 6, standardized yield departures from trend are plotted for South Africa corn for 1963 to 1984. Negative yield departures indicate below-trend yields while positive departures reflect years with above-trend yields. A zero departure is one where the yield value is equal to the trend. Also, percentile rankings of January monthly average temperature and precipitation were computed for 1951 through 1984. For years when January precipitation falls below the 50th percentile and/or January temperatures are above the 70th percentile, a respective P or T is placed next to the standardized yield departure value which corresponds with that same year. From Figure 6, a relationship can be observed between hot, dry January weather and corn yields. On most years when the standardized yield departures are negative, hot and/or dry weather occurred during January. Therefore, although current conditions point towards a generally favorable outlook for the 1986 South Africa corn crop, the weather during January, which is normally the critical reproductive period for corn, will be very important in determining yield prospects.