

International Weather and Crop Summary
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HIGHLIGHTS

EUROPE: Mild, dry weather for much of the week encouraged winter crop development, while late-week rain improved soil moisture supplies over France and Germany.

FSU-WESTERN: Sunny skies and above-normal temperatures further accelerated winter wheat development and other seasonal fieldwork.

MIDDLE EAST: Additional showers improved soil moisture supplies for winter grains in Turkey, while late-week rain maintained good to excellent soil moisture for spring growth in Iran.

NORTHWEST AFRICA: Mostly sunny skies accelerated wheat and barley development, though topsoil moisture continued to decline in Algeria.

EAST ASIA: Showers across southern China increased soil moisture for rapeseed and recently sown rice.

SOUTHEAST ASIA: Seasonal rainfall in eastern and southern portions of the region maintained favorable soil moisture for spring-sown rice, as seasonal heat was building in Thailand.

AUSTRALIA: Soaking rains slowed dry down and harvesting of early-maturing cotton and sorghum but benefited immature crops.

SOUTH AFRICA: Warm, sunny weather spurred rapid development of corn and other filling to maturing summer crops.

ARGENTINA: Rain continued across northern farming areas, as favorably drier conditions developed farther south.

BRAZIL: Widespread, locally heavy showers maintained favorable conditions for corn, cotton, and other summer crops in most major agricultural areas.

EUROPE: Mild, dry weather continued to promote earlier-than-normal winter crop development, though late-week showers boosted moisture supplies in key northern growing areas. Winter crops over northern and eastern Europe broke dormancy two to four weeks ahead of average, and were now advancing through the vegetative stage of development in mostly good condition. Winter dryness had been a concern in France and parts of Germany, though early-March rain coupled with this week's late-arriving scattered showers (2-20 mm) eased lingering dryness concerns and improved soil moisture supplies for spring development. Sunny, mild conditions (1-3°C above normal) also promoted winter crop development in Poland and the northern Balkans before light to moderate showers (2-15 mm) returned at the end of the period. Meanwhile, a pair of slow-moving storms triggered widespread showers across southern Europe. One storm produced 5 to 50 mm of rain (locally more) in southern Spain and southwestern France, while the other brought moderate to heavy showers (10-60 mm) to the southern Danube River Valley. In the former, the moisture was beneficial for vegetative to heading winter grains in Spain, though northern parts of the country (Castilla y León) missed out and are in need of moisture. In the lower Danube River Valley, the rain maintained adequate to abundant moisture supplies for wheat and rapeseed development.

A much warmer-than-normal February accelerated wheat and rapeseed out of dormancy over all but the coldest eastern growing areas. Temperatures averaged 2 to 5°C above normal from France to the western Balkans, with near-normal readings confined to the lower Danube River Valley and Poland. Drier-than-normal winter weather lingered into February in France, Germany, and the Balkans, though rain by month's end improved soil moisture for spring development. Farther south, moderate to heavy rain (50-180 mm) improved winter grain prospects in Spain and boosted irrigation reserves and spring runoff prospects in northern Italy. By early March, winter grains and oilseeds broke dormancy over eastern portions of the continent, while beneficial showers continued in previously-dry portions of France, Germany, and the Balkans.

FSU-WESTERN: Unseasonable warmth eroded the region's remaining snowpack and accelerated winter wheat development in southern growing areas. For the third consecutive week, above-normal temperatures (4-8°C above normal) prevailed, with daytime highs topping 10°C (above 15°C along the Black Sea Coast) in Ukraine and Russia's winter wheat areas. As a result, crops continued to develop up to 4 weeks ahead of average in the south, while spring grain planting progressed rapidly farther north. At week's end, the region's snowpack was confined to Russia's Volga District, more on par with the typical early-April extent. Moisture reserves remained generally favorable for winter wheat development, though short-term dryness (less than 50 percent-of-normal precipitation over the past 60 days) in central and southern Ukraine reduced topsoil moisture for vegetative winter wheat. Rain during the period was generally confined to western-most portions of Ukraine (10-22 mm) and Belarus (5-15 mm), though light showers (2-8 mm) dotted central and eastern Ukraine and western Russia. However, key winter wheat areas of southwestern Russia (Krasnodar Krai in the Southern District) benefited from 5 to 15 mm of rain at week's end.

Conditions for dormant winter wheat were good to excellent over the region during February. A bitter cold first half of the month had little – if any – impact on winter crops due to

widespread deep snow cover. A pronounced warm up during the latter half of the month rapidly melted the region's snowpack and accelerated winter wheat out of dormancy in southern portions of Ukraine and Russia. The sharply contrasting temperature regimes resulted in monthly values near normal, though daytime highs in the teens (degrees C) in southern Russia at the end of February were more typical of readings observed in late March and early April. Precipitation was favorable in southern Russia (100-200 percent of normal), while drier-than-normal conditions (locally less than 75 percent of normal) developed during February in central Ukraine's winter wheat areas.

FSU-EASTERN: During February, seasonably cold, snowy conditions prevailed in the north while rain and snow boosted moisture supplies for dormant winter wheat in the south. Central Russia and neighboring portions of northern Kazakhstan were encased in a deep snowpack as bitter cold (-40 to -30°C) prevailed over the region. Farther south, moderate to heavy rain and snow (100-270 percent of normal) maintained adequate to abundant moisture reserves for dormant winter wheat in Uzbekistan.

MIDDLE EAST: Warm, wet weather improved winter grain prospects across much of the region. Temperatures up to 3°C above normal accelerated winter grain green up in Iran and crop development across Iraq and the eastern Mediterranean Coast. Cooler readings (near-normal temperatures for the week) returned to Turkey, slowing wheat and barley development somewhat after unseasonably early green up. More notably, moderate to heavy rain (10-40 mm, locally more) boosted soil moisture from central Turkey's Anatolian Plateau (a key wheat and barley area) into Syria, Iraq, and northern Iran. At week's end, a vigorous storm coupled with a renewed influx of moisture was producing moderate to heavy rainfall across Iraq and Iran, with preliminary rainfall totals ranging from 25 to 60 mm on March 20; more information on this system will appear in next week's *Bulletin*.

Expanding dryness over the western half of the region contrasted with soaking rainfall in the east. Dryness was most pronounced in central and southeastern Turkey, where precipitation during February totaled a meager 1 to 4 mm (less than 10 percent of normal, making this the driest February over the past 30 years). Winter crops on central Turkey's Anatolian Plateau broke dormancy by month's end, heightening the need for moisture to maintain current yield prospects. The dry weather extended southeast into Syria and southern Iraq, lowering soil moisture supplies for

vegetative wheat and barley. Meanwhile, a series of slow-moving storms produced widespread moderate to heavy rain (25-100 mm) in Iran, with amounts as high as 305 mm in typically-arid southwestern portions of the country. As a result, current yield prospects for Iran's winter wheat are good to excellent as the crop enters the spring growing season.

NORTHWEST AFRICA: Mostly sunny skies and near- to above-normal temperatures maintained overall favorable winter grain prospects across the region. Temperatures averaged up to 3°C above normal in Algeria and Tunisia, promoting faster-than-normal crop development. In Morocco, somewhat cooler conditions brought on by late-week clouds and showers (1-22 mm) slowed crop growth, though wheat and barley were progressing through the heading and flowering stages of development one to two weeks ahead of average. Winter grain prospects remained good to excellent in Morocco due to near-normal season-to-date rainfall (since October 1), in sharp contrast to last year's drought-ravaged crop. Conditions also remained favorable for vegetative winter grains in Tunisia, where growing-season precipitation has averaged near to above normal. In Algeria, conditions are mixed, with short-term drought (10-25 percent of normal rainfall over the past 30 days) trimming yield potential for jointing to heading winter crops in northeastern portions of the country, while heavy January rainfall has helped carry winter grains through the recent dry spell in central and western Algeria.

Despite developing dryness in central growing areas, winter grain prospects remained better than average and much improved over last year. Showers maintained moisture supplies for vegetative winter grains in Morocco, with locally more than 100 mm observed

in key northwestern growing areas. Likewise, 50 to 100 mm of rain sustained good to excellent prospects for vegetative wheat and barley in northeastern Algeria and northern Tunisia. Dry, warm weather settled over Algeria, promoting crop development after January's heavy to excessive rainfall but diminishing topsoil moisture.

SOUTH ASIA: Seasonably dry weather continued in India during February. The dry conditions along with building seasonal heat (daytime temperatures in the 30s degrees C across central and southern areas) promoted drydown of winter (rabi) crops sown early in the season. The warmer weather, however, increased irrigation demands on crops sown later in the season. Wheat grown in northern areas was maturing and generally unaffected by the warmer weather. In fact, yield prospects are better than last year based on satellite-derived vegetative health. In Sri Lanka, 50 to 100 mm of rain was reported in southern portions of the country, aiding immature winter (maha) rice, while drier conditions elsewhere supported ripening of the earliest planted rice.

EAST ASIA: Showers overspread southern China including much of the Yangtze Valley. Rainfall totals of 10 to 25 mm were reported in the western-most areas (Sichuan and Guizhou), while 25 to 75 mm (locally over 100 mm) occurred farther east and to the south.

The moisture benefited vegetative to reproductive rapeseed and newly sown early-crop rice. Meanwhile, sunny, mild weather across the North China Plain promoted wheat development, with adequate soil moisture and irrigation supplies sustaining good yield prospects.

Near- to above-normal rainfall was reported across winter crop areas of eastern China during February. Showers on the North China Plain (10-25 mm) and within the Yangtze Valley (25-50 mm) maintained favorable soil moisture for wheat and rapeseed. Crops began breaking dormancy by month's end, 2 to 4 weeks earlier than normal, aided by temperatures 2 to 4°C above normal. Meanwhile in southeastern China, rainfall totals (25-50 mm) were nearly half the normal amount, limiting recharge of irrigation supplies for early-crop rice sown in the spring.

SOUTHEAST ASIA: Seasonal rainfall continued across eastern and southern sections of the region. Showers (25-100 mm or more) in the eastern and southern Philippines maintained favorable moisture conditions for spring-sown corn and rice. Similar rainfall amounts throughout Indonesia kept oil palm and recently sown spring rice well watered. Showers were more scattered in Malaysia, with rainfall amounts varying between 10 and 50 mm over most districts. Though, rainfall totals over the last 90 days have been near to above normal, maintaining good yield prospects for fruit bunches harvested in the summer. Meanwhile farther north, seasonal heat was building in Thailand and surrounding environs, as daytime temperatures peaked above 40°C and spurred locally heavy rainfall (over 100 mm) in southern Thailand. Dry-season rice harvesting was underway in most of Indochina.

In February, most of the seasonally wetter areas received near-to above-normal rainfall. The eastern and southern Philippines totaled 100 to 200 mm or more of rain for the month (100-200 percent of normal), while most of Malaysia and Indonesia recorded in excess of 200 mm (100-150 percent of normal). The earliest sown rice in the Philippines and Indonesia was ripening and little benefited from the wet weather. However, the wet weather was still favorable for later planted rice while boosting irrigation supplies for spring-sown varieties. Additionally, the

showers maintained good moisture conditions for oil palm in Malaysia and Indonesia, improving summer yield prospects.

AUSTRALIA: In southern Queensland and northern New South Wales, soaking rains (10-50 mm, locally near 100 mm) hampered dry down and likely delayed harvesting of early-maturing cotton and sorghum. Although the wet weather was unfavorable for crops awaiting harvest, the rain benefited cotton and sorghum that were sown later in the growing season, boosting topsoil moisture and easing irrigation requirements for immature crops. Unseasonably warm weather accelerated crop development in major summer crop producing areas, with temperatures averaging about 1 to 2°C above normal. Stressful heat was absent from the region, however, with daily maximum temperature generally ranging from the upper 20s to middle 30s degrees C.

During the first half of February, hot, dry weather in southern Queensland and northern New South Wales decreased soil moisture for cotton and sorghum and increased water requirements for irrigated crops. The heat and dryness likely trimmed yield prospects for some summer crops, with dryland crops the most likely impacted. Occasional showers and seasonably warm weather returned during the latter half of the month, helping to stabilize yield prospects for immature summer crops.

SOUTH AFRICA: Warm, mostly dry weather dominated major agricultural areas, spurring rapid development of filling to maturing summer crops. Across the corn belt (North West and Free State to Mpumalanga, including neighboring locations in Limpopo and KwaZulu-Natal), weekly temperatures averaged up to 2°C above normal, with daytime highs reaching the upper 20s and lower 30s (degrees C) and just a few locations recording rainfall totaling more than 10 mm. Mostly dry, sunny weather also spurred rapid growth of irrigated sugarcane in eastern Mpumalanga and northern KwaZulu-Natal; rain-fed production areas of southern KwaZulu-Natal recorded 5 to 25 mm, though summer warmth (temperatures reaching the lower and middle 30s) maintained high crop moisture requirements. The rain extended westward along the coast of Eastern Cape but elsewhere in the Cape Provinces, warm, mostly dry conditions fostered rapid development of irrigated row crops – including corn and cotton in the Orange River Valley – as sunshine and warmth promoted harvesting of tree and vine crops in Western Cape.

In February, ample rainfall sustained favorable yield prospects for rain-fed summer crops throughout the corn belt. Monthly accumulations totaled well above 100 mm in most farming areas from North West and Free State eastward through Mpumalanga, with many locations recording more than 200 mm. Similar amounts were

recorded in southern sugarcane areas of southern KwaZulu-Natal, providing a late-season boost in moisture for sugar production. Meanwhile, more seasonable amounts of rainfall (monthly accumulations totaling less than 100 mm) reduced irrigation requirements of sugarcane in northern KwaZulu-Natal and eastern Mpumalanga. Monthly average temperatures were within 1°C of normal throughout major eastern commercial farming areas, with daytime highs generally reaching the upper 20s and lower 30s (degrees C) in the corn belt. Farther west, frequent showers supplemented irrigation for summer crops in the Cape Provinces, including cotton and corn in the Orange River Valley. In contrast, dryness and periodic heat (daytime highs reaching the middle and upper 30s) favored late development and harvesting of tree and vine crops in Western Cape.

ARGENTINA: Showers continued across northern farming areas as favorably drier conditions developed in Buenos Aires. Moderate to heavy rain (10-50 mm, locally higher) covered a large area spreading from Salta southeastward through Corrientes and Entre Rios. The area receiving the rainfall included the cotton belt (Santiago del Estero, northern Santa Fe, Chaco, and Formosa), which could benefit from drier weather following several weeks with heavy rain. In contrast, drier conditions prevailed in recently wet southern farming areas. Much of Buenos Aires recorded little to no rain, with most locations receiving 15 mm or less; similar amounts were recorded in eastern Cordoba and southern Santa Fe. Virtually no rain fell in La Pampa, with less than 10 mm of rainfall recorded in western sections of both Buenos Aires and Cordoba. The sunny weather in southwestern farmlands benefited late-season growth of corn and soybeans and helped to alleviate wetness that had been hampering fieldwork. After a brief warm up (daytime highs reaching the upper 20s and lower 30s), the frontal system driving the northern rainfall ushered cooler weather into the region, with nighttime lows falling below 10°C as far north as Santiago del Estero. As the cool days and nights outweighed the brief period of warmth, weekly temperatures averaged 1 to 4°C below normal throughout the region. According to the government of Argentina, sunflowers were 50 percent harvested as of March 16, compared with 67

percent last year, with delays attributed to the recent periods of wetness.

A generally wet weather pattern prevailed for much of February, maintaining adequate to locally excessive levels of moisture for immature summer grains, oilseeds, and cotton. Monthly accumulations in excess of 200 mm were concentrated over central Buenos Aires and Entre Rios, renewing concerns for potential damage to corn and soybeans from flooding of lower-lying fields.

However, the consistency of the rainfall maintained high yield prospects elsewhere, including traditionally lower yielding farmlands in northern Argentina and across southern Buenos Aires.

February average temperatures were 1 to 2°C above normal throughout agricultural areas of both northern and central Argentina. In southern production areas, daytime highs occasionally reached the middle 30s (degrees C), fostering rapid development of well-watered crops. Temperatures in traditionally warmer northern areas approached 40°C on several days.

BRAZIL: Widespread, locally heavy showers maintained overall favorable prospects of corn, cotton, and many other summer crops. Rainfall totaling 25 to 100 mm in the Center-West and northeastern interior regions (Mato Grosso and Mato Grosso do Sul northeastward through Tocantins) maintained favorable prospects of second-crop corn and cotton, with near- to above-normal temperatures (daytime highs reaching the middle 30s degrees C) fostering rapid development of well-watered crops. The rainfall was particularly welcomed in western Bahia, following a brief return to unfavorable dryness. Despite the rainfall, the final stages of fieldwork advanced; according to the government of Mato Grosso, corn planting was virtually finished as of March 17, and soybeans were nearly 95 percent harvested, more than 9 points ahead of last year's pace. Elsewhere, drier weather (rainfall totaling less than 10 mm in some areas) and unseasonable warmth (daytime highs in the middle 30s) returned to much of Sao Paulo and Minas Gerais, reducing moisture for sugarcane and coffee, as well as immature summer row crops. Meanwhile, moderate to heavy rain (25-50 mm, locally approaching 100 mm) maintained adequate to abundant levels of moisture for immature summer row crops in southern Brazil, including late-planted soybeans in Parana and Rio Grande do Sul.

During February, frequent, near- to above-normal rainfall

maintained favorable summer crop prospects throughout primary production areas of southern and central Brazil. The heaviest amounts (monthly accumulations totaling more than 400 mm) were concentrated over Mato Grosso, with other locations in the Center-West and northeastern interior (Goias to Maranhao) receiving well over 200 mm; this included soybean and cotton areas of western Bahia that had experienced earlier periods of unseasonable dryness. Weekly temperatures averaging up to 2°C above normal (daytime highs often reaching the middle 30s degrees C) maintained rapid rates of crop development in the aforementioned areas. February rainfall was also near to above normal in most of southern Brazil, with periods of dry, sunny weather benefiting filling to maturing corn and soybeans from Mato Grosso do Sul southward through Rio Grande do Sul. As in central Brazil, summer warmth (highs reaching the lower and middle 30s) fostered rapid development of the generally well-watered crops. In contrast to the wetness in the southern soybean and corn belt, unseasonably drier conditions prevailed for much of the month in Sao Paulo and neighboring locations in Minas Gerais, reducing moisture for sugarcane and coffee.

MEXICO: During February, showers boosted local moisture reserves for winter cropping in some northwestern and eastern coastal agricultural areas. The heaviest rainfall (monthly accumulations exceeding 100 mm) was reported locally in Veracruz and Tabasco, with most other locations reporting 10 to 25 mm or more. In the northwest, periods of unseasonably heavy rain boosted reservoirs serving winter grains – including corn – in Sinaloa, Sonora, and Durango. In the northeast (notably Tamaulipas), showers benefited rain-fed winter sorghum, though amounts diminished with distance from the coast. Meanwhile, seasonable dryness favored the final stages of corn harvesting across the southern plateau.

According to the government of Mexico, national reservoir levels stood at 69.1 percent on February 28, compared with 70.8 percent last year and 71.9 percent in 2015. In the northwestern winter grain areas (notably Sinaloa and Sonora), reservoirs were at 67.7 percent capacity versus 69.0 last year and 65.3 in 2015.

CANADIAN PRAIRIES: Above-normal temperatures dominated the Prairies for much of February, despite an early-month outbreak of arctic cold (nighttime lows falling below -30°C on several consecutive evenings). Large sections of the southwest (farming areas of southern Alberta and southwestern Saskatchewan) were void of snow cover prior to the onset of the bitter cold; however, most locations gained a protective layer of snow upon passage of the cold front, offering some protection to overwintering grains and pastures. Protective snow cover was quickly lost over large sections of Alberta and Saskatchewan with the onset of unseasonable warmth (daytime highs exceeding 10°C on several days). Several weeks later, another outbreak of cold weather dropped temperatures as low as -20°C in snow-free agricultural districts of south-central Saskatchewan, raising concerns for potential winterkill on overwintering grains. Light precipitation (monthly accumulations of 5-25 mm, Prairie wide) added to a sufficient snow cover in winter grain areas of southern Manitoba, where crops enjoyed a protective layer of snow cover throughout the month.

SOUTHEASTERN CANADA: Milder- and wetter-than-normal weather dominated agricultural districts across Ontario and Quebec throughout the month of February. Monthly temperatures averaged 2 to 5°C above normal, with large parts of the region recording more than twice the normal precipitation (more than 100 mm liquid equivalent, locally in excess of 200 mm). By month's end, much of Ontario was void of snow cover, leaving winter wheat exposed to potential outbreaks of a killing freeze. Nighttime lows dropped below -10°C during the latter half of the month – ahead of the warmest weather – but locations recording the lowest temperatures (nighttime lows at or below -17°C) still had some snow. The loss of snow was accelerated by periods of warm, rainy weather, at which time daytime highs rose above 10°C. While some loss of winter hardiness was likely, however, temperatures did not reach the threshold for crops breaking dormancy.