EARTH
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J.B.BODA

Hottest March in 122 years may singe wheat

The early sown Wheat between October 8 and November 1 in the Jhajjar district of Haryana could escape the sudden spike in temperatures from the second half of March, which scientists fear may impact grain yields in many wheat-growing areas of India. Maximum temperatures in Jhajjar crossed 35 degrees on March 15, 38 degrees on March 20 and 40 degrees by the month-end.

A typical 140-145 days wheat crop takes 90-100 days to flower. That's when the "baali" (gearheads bearing the flowers) fully emerge from the tillers (stems that grow from the parent shoot). Pollination (transfer of pollen from the male anther to the female stigma part of the same flower) also takes place by this time, which is followed by about 25 days of early kernel formation ("milk" stage) and another 15 days or more of grain-filling ("dough"). Day temperatures should ideally be in the range of the early-thirty degree during the dough stage when the kernel accumulates starch and nutrients.

For the wheat sown on time – before November 15 – yield losses from the soaring mercury are seen to be minimal, as flowering would have been over by mid-February. Much of grain-filling, too, would have been completed when temperatures really surged after around March 20. The losses would be even less for the crop sown early, by the first week of November.

The crop in Punjab, Haryana, Madhya Pradesh and Rajasthan, which is largely timely or early sown, may not be affected much. The problem would be with the moderately late (mid-to end-November) to late (December onwards) sown wheat in most parts of Uttar Pradesh and Bihar as per Mr. Rajbir Yadav, head of the Indian Agricultural Research Institute's division of genetics. In UP, farmers usually plant wheat around December after harvesting their "ratoon" season sugarcane. This crop is now in the grain-filling stage when maximum temperatures in Hardoi and Shahjahanpur are at 41-42 degrees.

Yadav is the chief breeder of HDCSW-18, a high-yielding variety suitable for sowing from the second week of October. Normal wheat varieties cannot be sown before early November, as the crop tends to prematurely flower 10-15 days earlier.

HDCSW-18 has a mild "vernalisation requirement" or the need for a certain minimum period of low winter temperatures for initiation of flowering. If it is sown on October 15, flowering and pollination will take an extra 10 days: 100-110 days, instead of 90-100. But even that's over by late-January or early-February, giving a longer window for grain-filling. The general thumb rule is that every extra day during the grain-filling stage confers an additional wheat yield of 40-50 kg per hectare.

HDCSW-18 is also amenable for zero-tillage agriculture: Farmers harvesting paddy in early to mid-October can sow this wheat the same day – directly with the leftover stubble on the field using a Happy Seeder.

But terminal heat stress – high March temperatures forcing premature ripening and drying of wheat grains – isn't the only issue facing farmers. The mustard yields have also averaged only 15 men or 6 quintals per acre this time, as against 22 men (8.8 quintals) last year. The cause: Excess rains in January when the crop was in the late flowering stage.

January was bad for mustard and March for wheat. As things stand, the Union Agriculture Ministry may have to revise downward its all-time-high production estimates of 111.32 million tonnes (mt) for wheat and, maybe, also the 11.46 mt for rapeseed-mustard.

Source - https://indianexpress.com

Catastrophic floods and landslides hit Durban, KwaZulu-Natal, South Africa

At least 443 people have been killed in severe floods and landslides affecting South Africa's KwaZulu-Natal province, particularly the city of Durban, since April 10, 2022. There are still dozens of people missing and the death toll is expected to continue rising.

South Africa experiences regular flooding but this week's downpour was unprecedented

The city of Durban suffered the heaviest rains in more than 60 years, resulting in catastrophic floods and landslides. The entire province of KwaZulu-Natal has been declared a disaster area. The rains were brought by Subtropical Depression "Issa" – officially named by RSMC La Reunion at 12:00 UTC on April 12.

At 16:00 LT on April 11, a Level 5 warning was issued for the coast and adjacent interior of KwaZulu-Natal. This was subsequently escalated to a Level 8 warning at 20:00 LT. However, following reports of further impacts and persistent, heavy rainfall, SAWS has upgraded the heavy rain warning to an Orange Level 9 for the remainder of April 12.

“Overnight rainfall reports from KwaZulu-Natal have underscored the particularly heavy and extreme nature of the rainfall, with some 24-hour falls exceeding 200 mm (7.8 inches),” SAWC said. More noteworthy, is that a few stations even reported 300 mm (11.8 inches) or more.

A selection of the highest overnight rainfall measured in KwaZulu-Natal includes King Shaka International Airport (225 mm / 8.85 inches), Margate (311 mm / 12.2 inches), Mount Edgecombe (307 mm / 12 inches), Port Edward (188 mm / 7.4 inches) as well as Virginia airport (Durban north) with 304 mm / 11.9 inches.

“Such rainfall is of the order of values normally associated with tropical cyclones; however, SAWS must strongly emphasize that this system is not tropical in nature, nor is it a tropical cyclone.”

Another 100 mm (4 inches) fell along the southeastern coast of South Africa in 6 hours to 12:00 UTC on April 13, as reported by RSMC La Reunion. However, the rains continued falling over the region through the rest of the day as “Issa” slowly drifted away from the coastline.

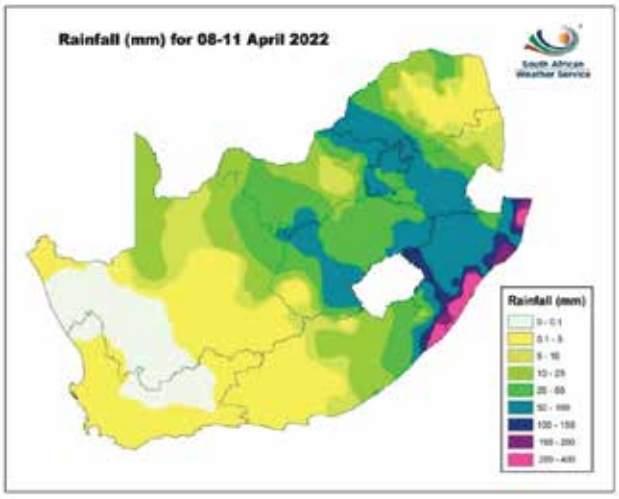
“As Issa weakens and moves away from the coast, the rainfall character will decrease and will be more confined to the sea off the coast,” RSMC La Reunion said in their last bulletin for the system, issued at 12:00 UTC on April 13.

“The improvement of the weather conditions should logically be more marked at the end of the day.”

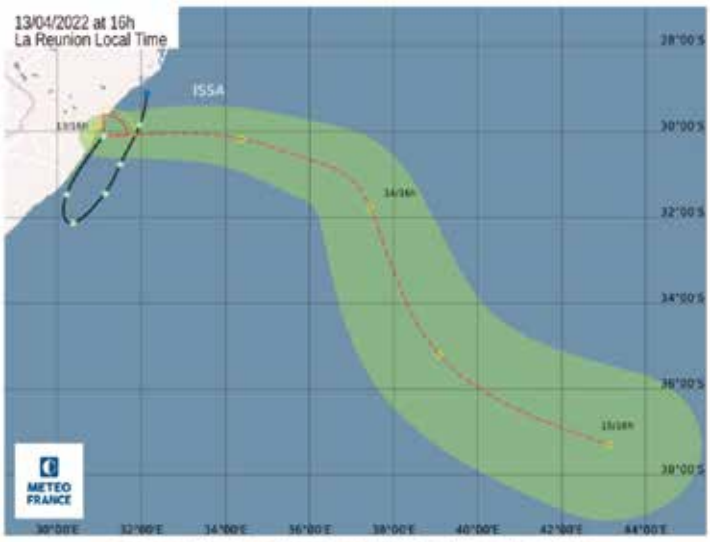
What was the reason for the heavy rain?

“In short, a cut-off low in the upper reaches of the troposphere is currently moving seawards, off the eastern coast of South Africa. Cut-off lows are associated with widespread instability in the atmosphere, which can promote periods of prolonged rainfall, as witnessed over many of the interior provinces of South Africa at the weekend. For KwaZulu-Natal, however, the effect of the cut-off low system has been markedly enhanced by the presence of sustained low-level maritime air which has been fed in from the southern Indian ocean, thus driving the system to produce more rainfall,” SAWC said in the release.

“Moreover, the original source of the maritime air was from warmer, sub-tropical parts of the ocean, with a greater capacity to transport moisture, an essential ingredient of any rain-producing system.”



Accumulated rainfall (mm) for the period of April 8 to 11, 2022 (including the first 8 hours of April 12). Of particular interest and relevance are the values indicated in light pink, indicating 200-400 mm (7.8 – 15.7 inches). Credit: SAWS.



Subtropical Storm “Issa” forecast track by RSMC La Reunion on April 13, 2022

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Impact of this Flood:

- Key roads across the city were shut and mudslides have destroyed many homes. “The bridges & the roads have collapsed, people have died, and people are injured.”
- While the military was called in to help rescue affected residents, their efforts were delayed until Wednesday, April 13 as the ‘military’s air wing was also affected by the floods,’ General Rudzani Maphwanya said.
- Most of the province suffered water shortages as well as power cuts after heavy flooding at various power stations.
- Scores of hospitals and more than 500 schools have been destroyed in what’s being described as one of South Africa’s worst natural disasters.
- The weather improved significantly on April 14.
- The latest reports coming from the region are mentioning looting in Boxer and Usave stories in Umlazi, near Durban.
- The Department of Co-operative Governance in KwaZulu-Natal has appealed to people, whose homes were damaged and washed away by floodwaters, to refrain from immediately returning to disaster-stricken areas.
- South Africa has suffered a loss of ZAR 400 bn due to this flood.

Catastrophes in South Africa:

In terms of natural catastrophes, the most prominent occurrences are two extremes: **Floods and Droughts.** There are also isolated incidences of meteorological phenomena, including tropical cyclones, tornadoes, and severe thunderstorms. These occurrences may lead to subsequent flooding, as well as structural damage to buildings and loss of life. Other natural catastrophes include veldt and forest fires, locust infestations, and very rarely earthquakes and landslides following heavy rainfall. There is speculation as to the occurrence of climate change. The change can be described as an increase in climatic variability. That means that the occurrence of extreme events may be on the increase. Both the two important natural catastrophes (floods and droughts) affect the insurance industry. The insurance industry does not suffer great losses due to droughts because they were historically supported to a large extent by government funding by means of the drought relief fund. Looking at an insurance loss perspective, flooding poses a greater risk, due to the widespread damage caused over a short time span.

Notable flooding in the past:

9-10 Oct 2017, Durban: ZAR 2.7 bn total damage & ZAR 1 bn insured loss.

24-26 Jul 2016, Cape Town, Durban: ZAR 2 bn insured loss.

28 Nov 2013, Gauteng, South Africa: ZAR 3 bn total damage & ZAR 1.2 bn insured loss.

1-31 Jan 2011, Mozambique, South Africa: ZAR 3.55 bn total damage & ZAR 30 m insured loss.

2 Feb 1994, Ladysmith: Worst flood in 78 years. Damage of ZAR 60 m.

29 Feb 1988, Central Interior: Thirty magisterial districts declared disaster areas.

28 Sep 1987, Natal: Worst flood in Natal ever. Damage of ZAR 3.3 bn.

25 Jan 1981, Laingsburg: One of the greatest disasters in SA history.

On average floods that cause relatively large-scale damage to occur once every two years in South Africa.