Wheat rust advisory - risk assessment from surveys and forecasts in Pakistan Summary period: 16 Mar - 22 Mar 2026

Overall risk level:

Caution

Key messages

Extensive surveys have now been undertaken throughout most of the main wheat growing areas, with 203 fields surveyed to date. Disease pressure is generally low, but some leaf rust was observed in Sindh. Yellow rust is prevalent in the northern areas, currently at low incidence and severity but crops in these areas are likely to be at earlier growth stages and with the current highly conducive currents further disease may develop in the northern areas.

Suitability forecasts 16-21 Mar indicate a marked increase in suitability for all rusts. High suitability is now forecast across virtually all of Pakistan, this likely linked to a combination of rising temperatures and rainfall.

Dispersal patterns are quite complex. Southern infected sites generally show an easterly dispersal pattern, whereas infected sites in central areas are showing southerly dispersal and infected sites in northern areas are showing westerly to southern dispersal.

Given the forecast high suitability for disease development, it is likely that disease development could occur on susceptible crops at earlier growth stages. The high prevalence of yellow rust in northern areas, coupled to high suitability needs to be monitored carefully. Stem rust is present only at the nursery site near Karachi, but there needs to careful monitoring for occurrence in other areas as conditions are extremely favorable for disease development.

Recommendations

Close monitoring of fields, particularly of susceptible varieties, is recommended. Highly suitable conditions for disease development are forecast and northern areas may see disease occurrence, especially stripe rust. Crops in these areas are likely to be at earlier stages.

Scouting should be undertaken and farmers informed to be vigilant for the emergence of rust. Particular attention should be paid to any appearance of stem rust, as it was present in the off season in both Bhutan and Nepal with another new exotic race detected in Bhutan. Conditions are forecast to extremely suitable for stem rust development.

- Awareness should be raised amongst stakeholders at all levels, including farmers, to be vigilant for early appearance of rusts. **Early control to stop increased spread and further build-up of disease is very important.**
- Sampling should be undertaken to determine races of rust present.

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Field surveys

Looking at surveys in the period since Jan 01 2026. Surveys undertaken Jan 13 2026 - Mar 09 2026. A total of 203 fields surveyed. Legend for severity and incidence intensity: Low: less than 20%; moderate: 20-40%; high: more than 40%.

Leaf Rust reported from 15 out of 203 fields surveyed (7%). Moderate to high incidence of leaf rust has been seen in 6 fields (40% of infected fields). Moderate to high severity of leaf rust has been seen in 9 fields (60% of infected fields).

Stripe Rust reported from 36 out of 203 fields surveyed (18%). Moderate to high incidence of stripe rust has been seen in 7 fields (19% of infected fields). Moderate to high severity of stripe rust has been seen in 17 fields (47% of infected fields).

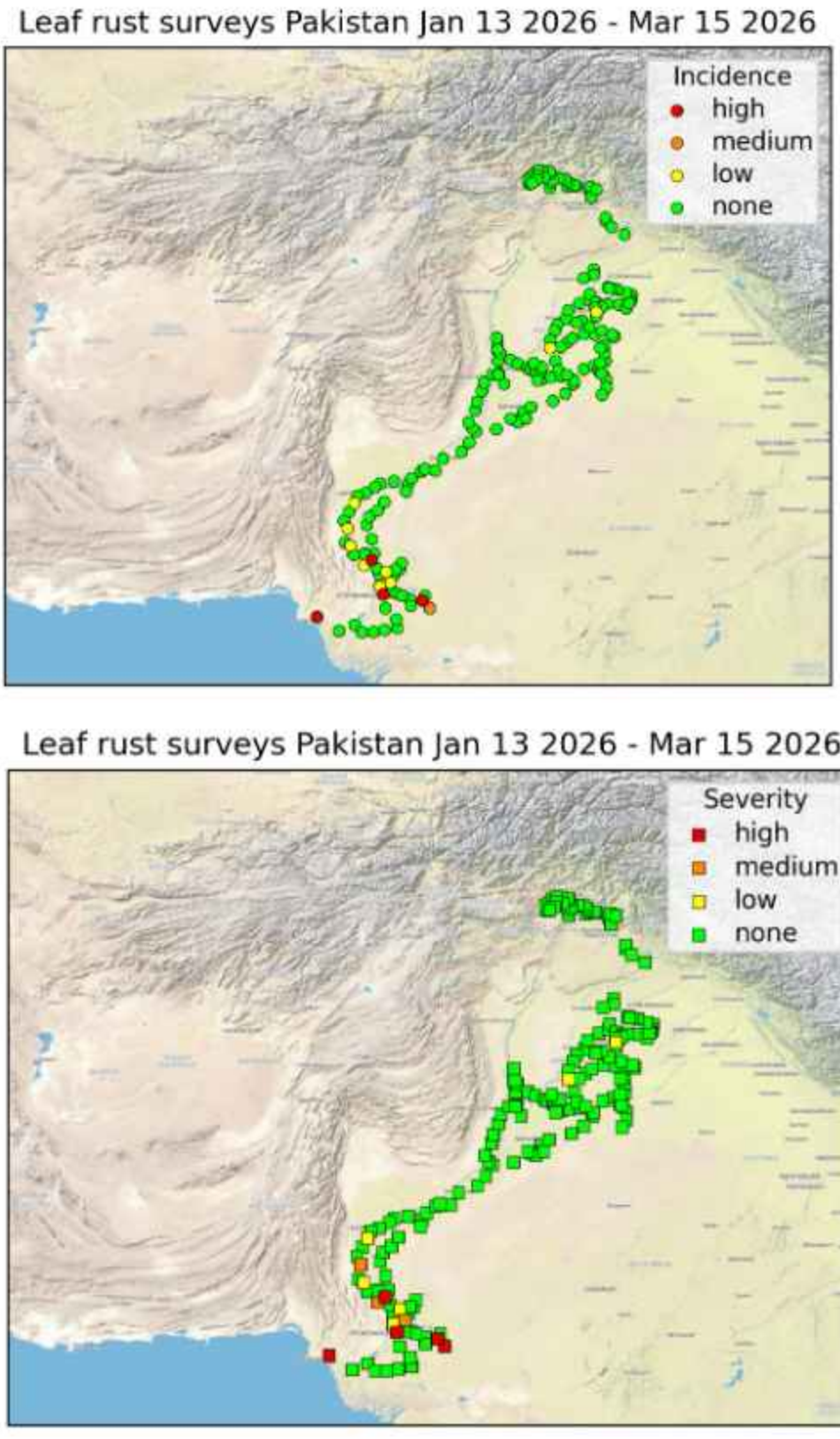
Stem Rust reported from 1 out of 203 fields surveyed (<1%). Moderate to high incidence of stem rust has been seen in 1 fields (100% of infected fields). Moderate to high severity of stem rust has been seen in 1 fields (100% of infected fields).

Table 1: Variety analysis of surveys.

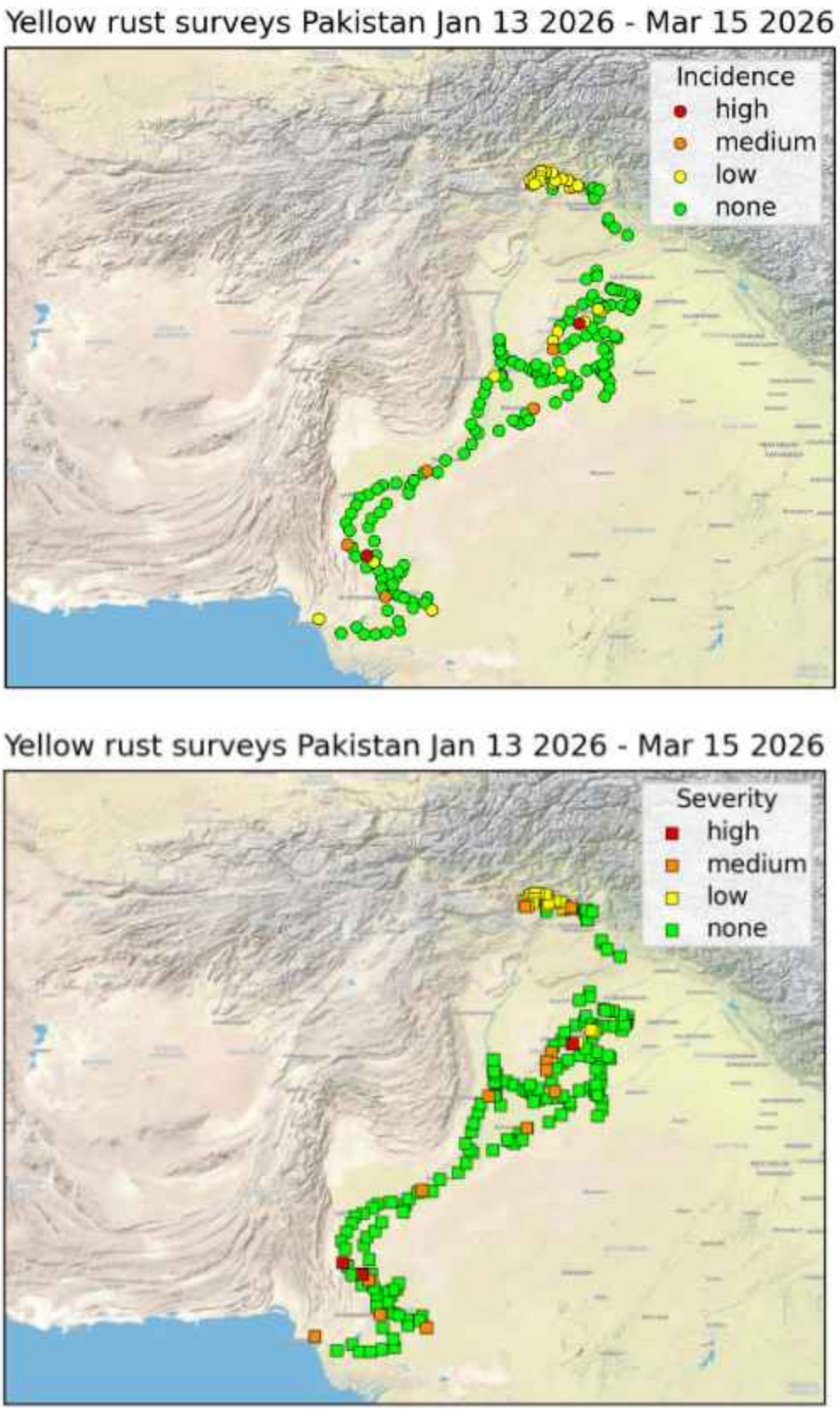
Variety	Number of surveys	Number of surveys reporting infection of		
		stem rust	stripe rust	leaf rust
Akber_2019	36	0	0	0
Arooj_22	1	0	0	1
AS_2002	6	0	0	0
Bhakkar_Star	2	0	0	0
Faisalabad_2008	9	0	2	0
Fakhr_e_Bhakkar	1	0	0	0
Ghazi_19	1	0	1	0
Unknown	147	1	33	14

Table 2: Growth stage analysis of surveys conducted in the last week (since Mar 09 2026).

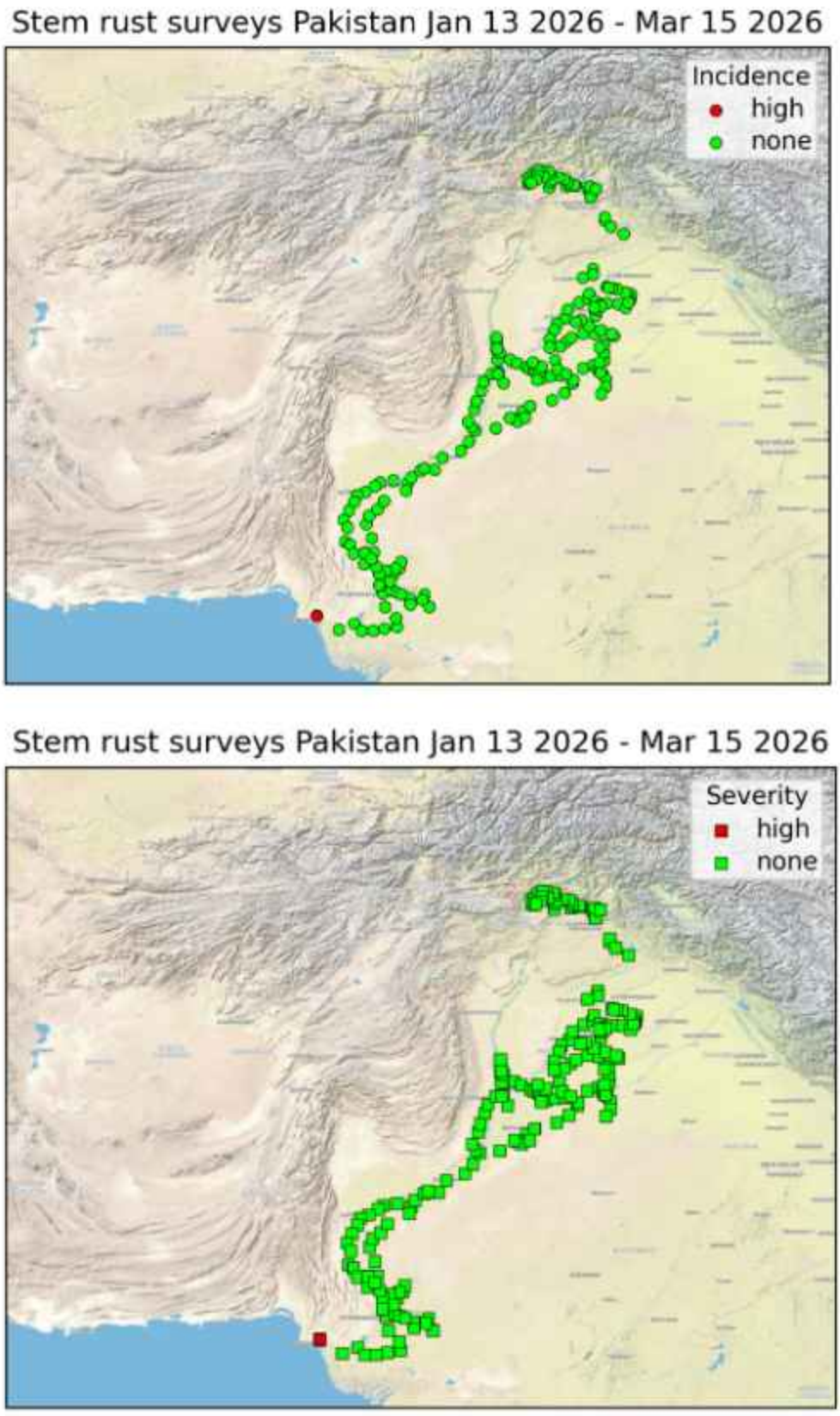
Country	Number of surveys in the last week that observed wheat growth stage:									
	tillering	boot	heading	flowering	milk	dough	maturity	NA	na	n/a
Pakistan	0	0	1	8	3	2	0	0	0	0



Map 1: Leaf Rust incidence (top) and severity (bottom) in Pakistan field surveys Jan 13 2026 - Mar 15 2026



Map 2: Stripe Rust incidence (top) and severity (bottom) in Pakistan field surveys Jan 13 2026 - Mar 15 2026



Map 3: Stem Rust incidence (top) and severity (bottom) in Pakistan field surveys Jan 13 2026 - Mar 15 2026

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Spore dispersal forecasts

Spore dispersal forecasts run by the UK Met Office and Cambridge University are displayed for stem, stripe and leaf rusts for the forecasted period. Surveys in each district are gathered to provide a single source per administrative area for dispersal forecasts (red dots in figure).

Environmental / climatic suitability for infection forecasts

These forecasts give the probability of wheat rust infection occurring based on meteorological factors. The maximum infection efficiency that can occur is 100%. This means that 100% of the spores deposited on susceptible wheat plants could complete the infection process. Therefore, a forecast Infection Efficiency of 100% indicates the highest risk of wheat rust infection occurring in susceptible wheat varieties.

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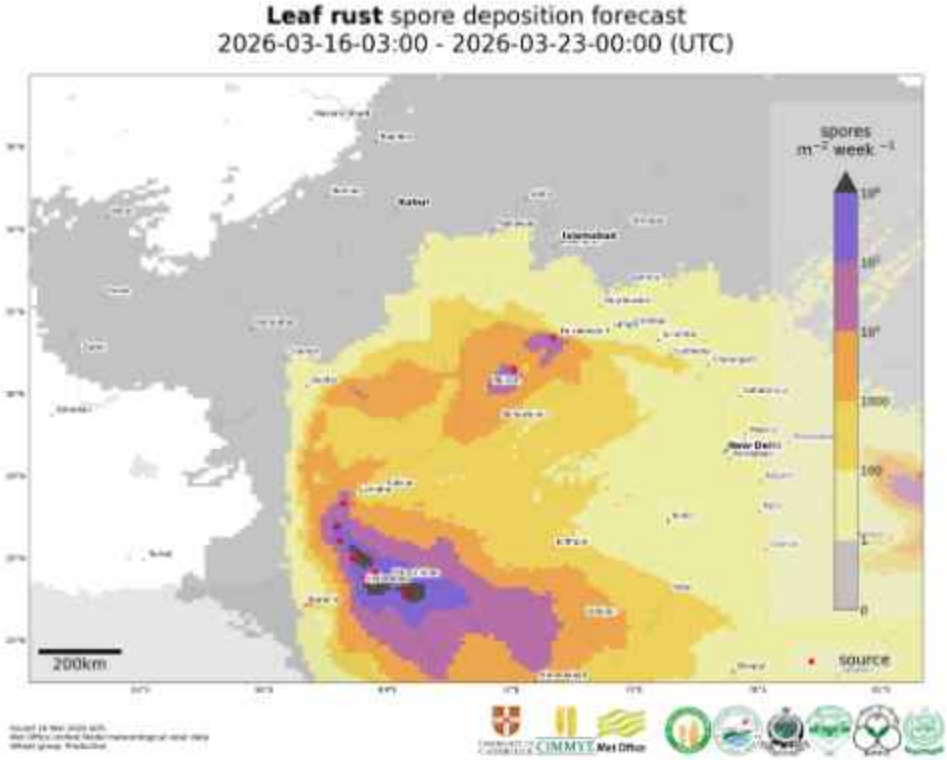
Leaf rust

Dispersal: Current forecast (16 Mar - 22 Mar) indicates dispersal in a predominantly easterly direction from infected sites in the south. In contrast, infected sites in the north show dispersal in a predominantly southerly direction.



Map 4: Leaf rust spore deposition forecast Pakistan 16 Mar - 22 Mar 2026

The 20 most impacted districts (spore deposition) per country are presented in the table below.

admin2Name	admin1Name	Leaf rust spores per m^2 per week
Hyderabad	Sindh	2800000
Tando Allahyar	Sindh	2800000
Matiari	Sindh	2500000
Umer Kot	Sindh	1200000
Mirpur Khas	Sindh	1200000
Shaheed Benazir Abad	Sindh	990000
Tando Muhammad Khan	Sindh	540000
Sanghar	Sindh	320000
Badin	Sindh	270000
Tharparkar	Sindh	210000
Jamshoro	Sindh	160000
Naushahro Feroze	Sindh	93000
Dadu	Sindh	91000
Khanewal	Punjab	34000
Thatta	Sindh	30000
Faisalabad	Punjab	23000
Kambar Shahdad Kot	Sindh	12000
Toba Tek Singh	Punjab	11000
Sujawal	Sindh	9800
Multan	Punjab	8900

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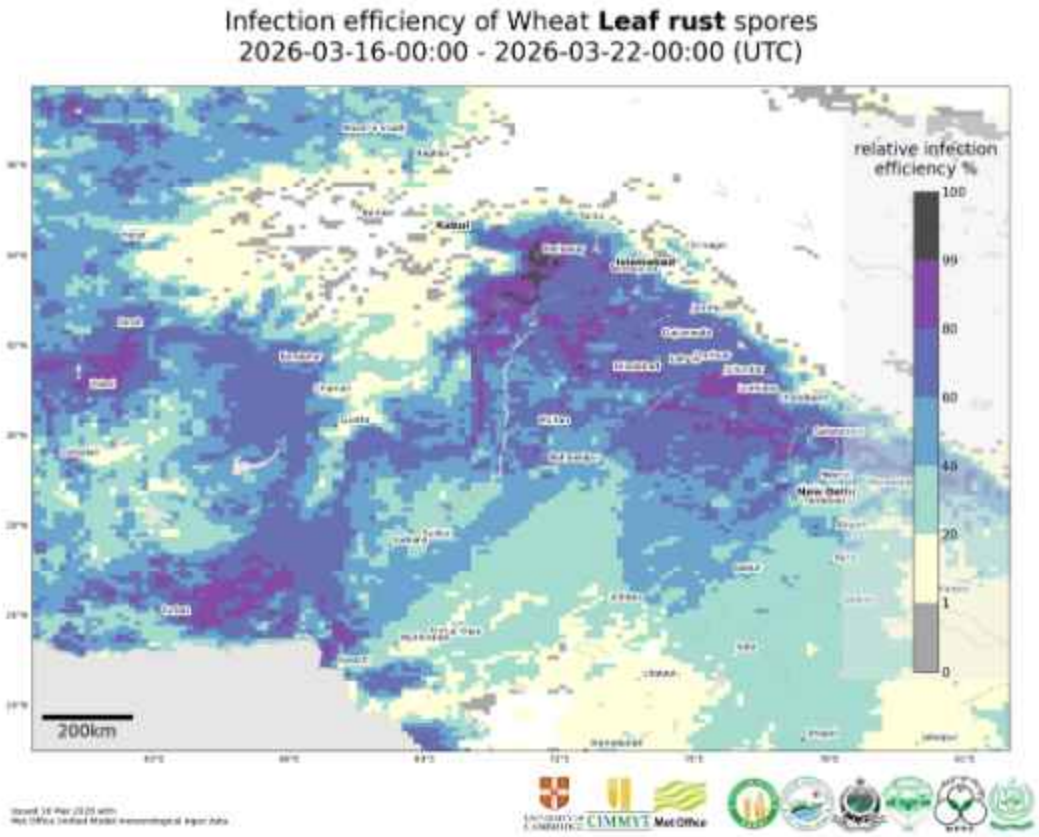
Risk of infection: Current forecast (16– 21 Mar) indicates markedly increased suitability compared to the last advisory. High suitability forecast across virtually all of Pakistan.



Map 5: Leaf rust suitability for infection forecast Pakistan 16 Mar - 21 Mar 2026

The 20 most impacted districts (infection efficiency) per country are presented in the table below.

admin2Name	admin1Name	RIE_leaf_rust_%
Karak	Khyber Pakhtunkhwa	91
Peshawar	Khyber Pakhtunkhwa	91
Charsadda	Khyber Pakhtunkhwa	87
Bannu	Khyber Pakhtunkhwa	87
Kohat	Khyber Pakhtunkhwa	86
Hangu	Khyber Pakhtunkhwa	85
Nowshera	Khyber Pakhtunkhwa	84
Mianwali	Punjab	79
Mardan	Khyber Pakhtunkhwa	79
Lakki Marwat	Khyber Pakhtunkhwa	78
Gujranwala	Punjab	78
Tank	Khyber Pakhtunkhwa	77
Swabi	Khyber Pakhtunkhwa	76
Attock	Punjab	76
Khushab	Punjab	76
Malakand	Khyber Pakhtunkhwa	76
Narowal	Punjab	75
Chakwal	Punjab	75
Chiniot	Punjab	75
Haripur	Khyber Pakhtunkhwa	74

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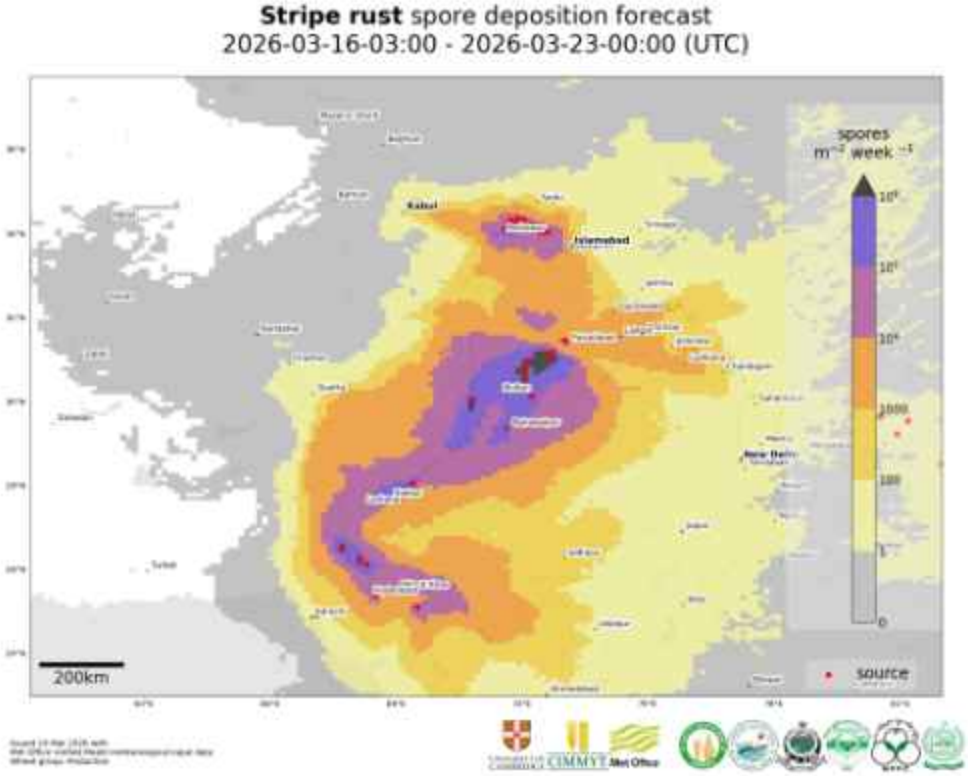
Stripe rust

Dispersal: Current forecast (16 Mar - 22 Mar) indicates complex dispersal - in an easterly direction (southern infected sites), in a southerly direction (central Punjab infected sites) and in westerly or southern direction from infected sites in the north.



Map 6: Stripe rust spore deposition forecast Pakistan 16 Mar - 22 Mar 2026

The 20 most impacted districts (spore deposition) per country are presented in the table below.

admin2Name	admin1Name	Stripe rust spores per m^2 per week
Toba Tek Singh	Punjab	1700000
Jhang	Punjab	630000
Khanewal	Punjab	520000
Muzaffargarh	Punjab	280000
Shaheed Benazir Abad	Sindh	250000
Kashmore	Sindh	200000
Charsadda	Khyber Pakhtunkhwa	190000
Vehari	Punjab	180000
Lodhran	Punjab	160000
Leiah	Punjab	150000
Faisalabad	Punjab	150000
Multan	Punjab	140000
Shikarpur	Sindh	140000
Dera Ghazi Khan	Punjab	140000
Sahiwal	Punjab	130000
Peshawar	Khyber Pakhtunkhwa	120000
Dadu	Sindh	120000
Jamshoro	Sindh	110000
Matiari	Sindh	110000
Ghotki	Sindh	100000

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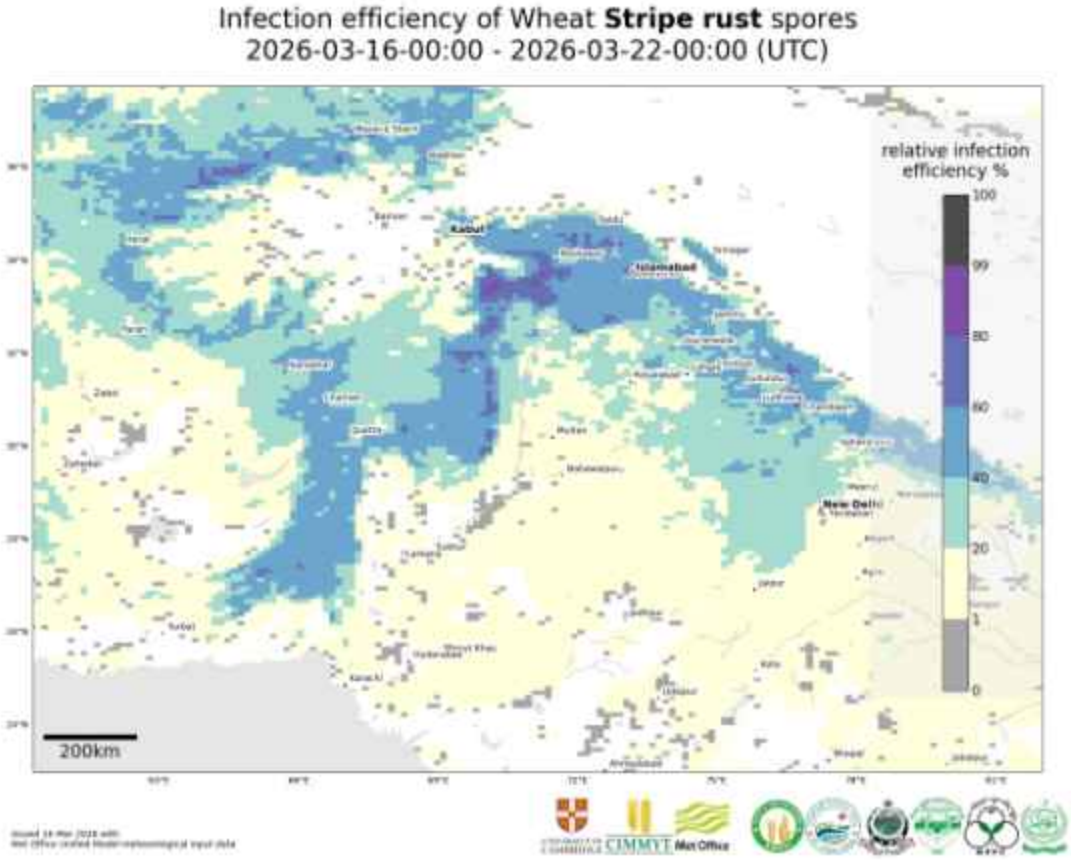
Risk of infection: Current forecast (16 – 21 Mar) indicates a marked increase in suitability compared to the last advisory. High to moderate suitability in the north and western areas.



Map 7: Stripe rust suitability for infection forecast Pakistan 16 Mar - 21 Mar 2026

The 20 most impacted districts (infection efficiency) per country are presented in the table below.

admin2Name	admin1Name	RIE_stripe_rust_%
Hangu	Khyber Pakhtunkhwa	70
Malakand	Khyber Pakhtunkhwa	61
Orakzai	Khyber Pakhtunkhwa	61
Kohat	Khyber Pakhtunkhwa	60
Mardan	Khyber Pakhtunkhwa	58
Buner	Khyber Pakhtunkhwa	56
Musakhel	Balochistan	56
Haripur	Khyber Pakhtunkhwa	55
Karak	Khyber Pakhtunkhwa	55
Sherani	Balochistan	55
Peshawar	Khyber Pakhtunkhwa	55
Swabi	Khyber Pakhtunkhwa	54
Kurram	Khyber Pakhtunkhwa	54
Charsadda	Khyber Pakhtunkhwa	52
Shaheed Sikandarabad	Balochistan	52
Khyber	Khyber Pakhtunkhwa	52
Mohmand	Khyber Pakhtunkhwa	51
Abbottabad	Khyber Pakhtunkhwa	50
Islamabad	Islamabad	50
Duki	Balochistan	50

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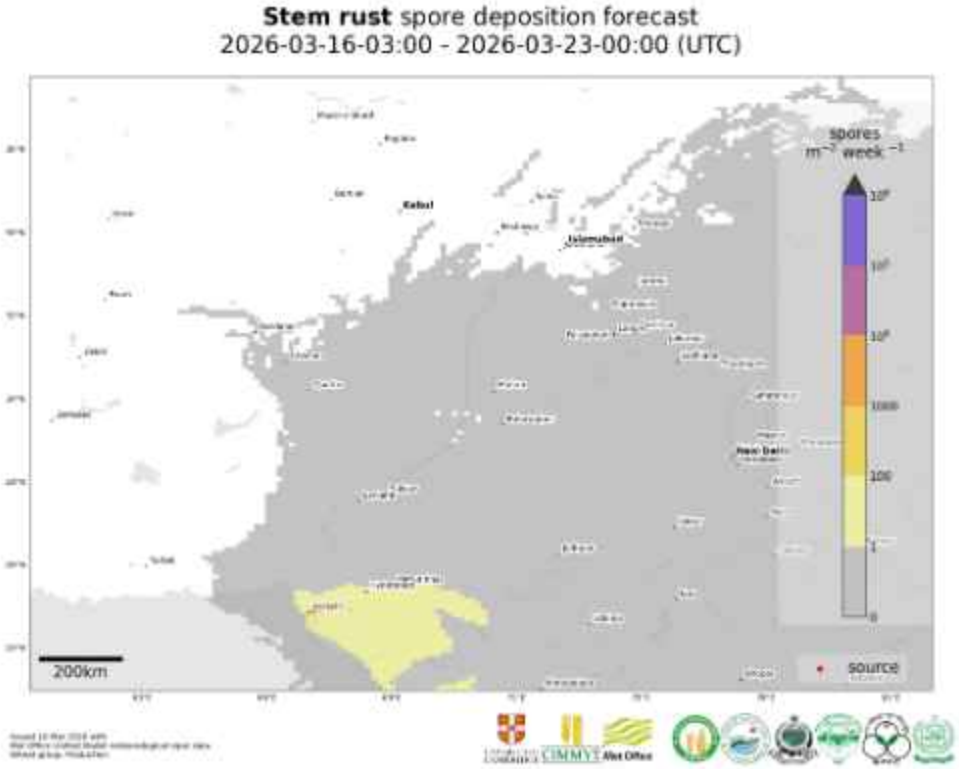
Stem rust

Dispersal: Current forecast (16 Mar - 22 Mar) indicates dispersal in a predominantly easterly direction from the infected site near Karachi.



Map 8: Stem rust spore deposition forecast Pakistan 16 Mar - 22 Mar 2026

The 20 most impacted districts (spore deposition) per country are presented in the table below.

admin2Name	admin1Name	Stem rust spores per m^2 per week
East Karachi	Sindh	260
Central Karachi	Sindh	240
Korangi Karachi	Sindh	160
West Karachi	Sindh	82
Malir Karachi	Sindh	47
South Karachi	Sindh	44
Thatta	Sindh	14
Tando Muhammad Khan	Sindh	6
Sujawal	Sindh	6
Badin	Sindh	5
Hyderabad	Sindh	4
Jamshoro	Sindh	2
Tando Allahyar	Sindh	2
Mirpur Khas	Sindh	2
Tharparkar	Sindh	1
Umer Kot	Sindh	1
Lasbela	Balochistan	1
Matiari	Sindh	0
Sanghar	Sindh	0
Shaheed Benazir Abad	Sindh	0

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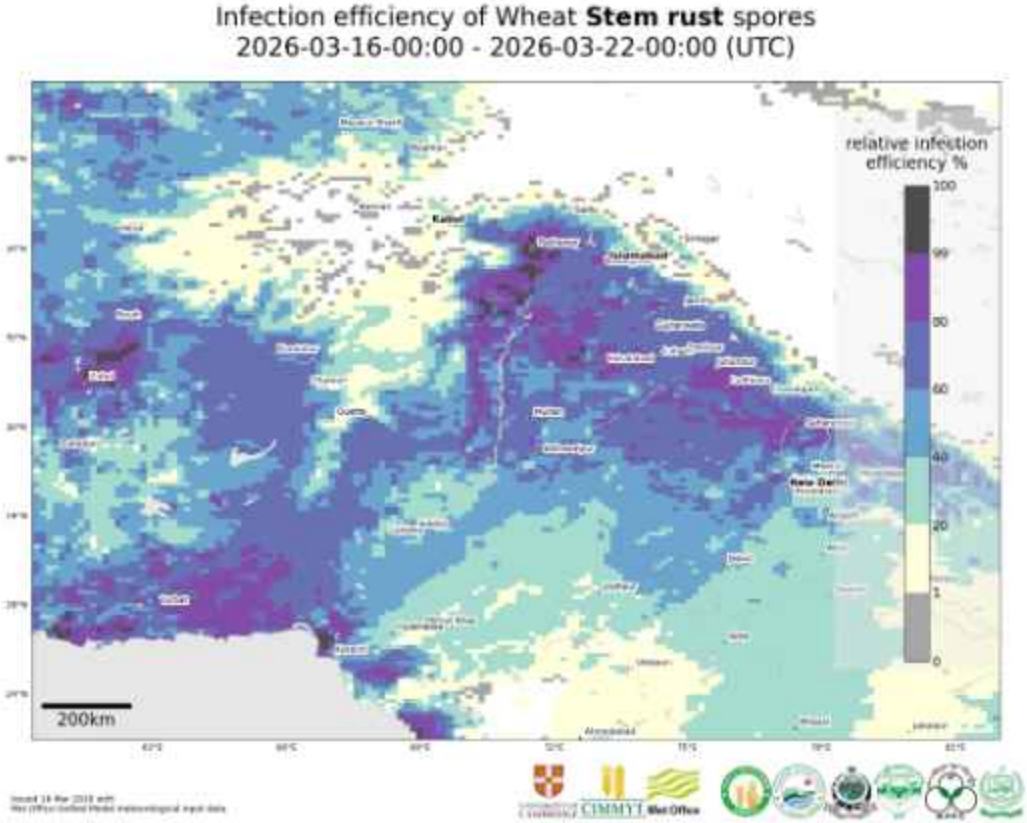
Risk of infection: Current forecast (16 – 21 Mar) indicates markedly increased suitability compared to the last advisory. High suitability across virtually all of Pakistan.



Map 9: Stem rust suitability for infection forecast Pakistan 16 Mar - 21 Mar 2026

The 20 most impacted districts (infection efficiency) per country are presented in the table below.

admin2Name	admin1Name	RIE_stem_rust_%
Bannu	Khyber Pakhtunkhwa	92
Karak	Khyber Pakhtunkhwa	92
Peshawar	Khyber Pakhtunkhwa	92
Charsadda	Khyber Pakhtunkhwa	90
Kohat	Khyber Pakhtunkhwa	88
Nowshera	Khyber Pakhtunkhwa	88
Hangu	Khyber Pakhtunkhwa	85
Sargodha	Punjab	82
Mianwali	Punjab	81
Mandi Bahauddin	Punjab	80
Hafizabad	Punjab	79
Sheikhupura	Punjab	79
Khushab	Punjab	79
Lakki Marwat	Khyber Pakhtunkhwa	78
Chiniot	Punjab	78
Gujranwala	Punjab	78
Sialkot	Punjab	78
Mardan	Khyber Pakhtunkhwa	77
Swabi	Khyber Pakhtunkhwa	77
Lahore	Punjab	76