

**Supplementary:**

**Table S1.** Culture strains, host, country and ITS GenBank accession numbers used as references in this study.

| Species                       | Strain number   | Host                          | Country      | GenBank accession number |          |
|-------------------------------|-----------------|-------------------------------|--------------|--------------------------|----------|
|                               |                 |                               |              | ITS                      | GAPDH    |
| <i>Alternaria alternata</i>   | CBS 916.96      | NA                            | NA           | KF465761                 |          |
| <i>Bipolaris cynodontis</i>   | CBS 109894      | <i>Cynodon dactylon</i>       | Hungary      | KJ909767                 |          |
| <i>B. eleusines</i>           | CBS 274.91      | <i>Eleusine indica</i>        | Australia    | KJ909768                 |          |
| <i>B. maydis</i>              | CBS 137271      | <i>Zea mays</i>               | USA          | AF071325                 | KM034846 |
| <i>B. salviniae</i>           | CBS 308.90      | Not available                 | Australia    | MH873897                 |          |
| <i>B. sorokiniana</i>         | CBS 110.14      | <i>Hordeum</i> sp.            | USA          | KJ922381                 |          |
| <i>B. yamadae</i>             | CBS 202.29      | <i>Panicum miliaceum</i>      | Japan        | KJ909779                 |          |
| <i>B. zeae</i>                | BRIP 11512IsoP* | <i>Zea mays</i>               | Australia    | KJ415538                 |          |
| <i>B. zeicola</i>             | FIP532          | <i>Zea mays</i>               | USA          | KM230398                 | KM034815 |
| <i>Curvularia hawaiiensis</i> | CBS 173.57      | <i>Oryza sativa</i>           | Hawaii       | JN601029                 |          |
| <i>C. inaequalis</i>          | CBS 102.42      | Sand dune soil                | France       | KJ922375                 | KM061787 |
| <i>C. lunata</i>              | CBS730.96       | Human lung biopsy             | USA          | JX256429                 | JX276441 |
| <i>C. papendorffii</i>        | CBS 308.67      | <i>Acacia karroo</i>          | South Africa | KJ909774                 | KM083617 |
| <i>C. richardiae</i>          | BRIP 4371       | <i>Richardia brasiliensis</i> | Australia    | KJ415555                 | KJ415391 |
| <i>C. spicifera</i>           | CBS 274.52      | Soil                          | Spain        | JN192387                 | JN600979 |
| <i>C. trifolii</i>            | ICMP6149        | <i>Setaria glauca</i>         | New Zealand  | JX256434                 | JX276457 |
| <i>C. ellisii</i>             | CBS193.62       | Air                           | Pakistan     | JN192375                 |          |
| <i>C. graminicola</i>         | BRIP 23186      | <i>Aristida ingrata</i>       | Australia    | JN192376                 | JN600964 |
| <i>C. siddiquii</i>           | CBS 142.78      | Unknown                       | Egypt        | MN688824                 | MN688851 |
| <i>C. siddiquii</i>           | CBS 196.62      | Air                           | Pakistan     | MN688823                 | MN688850 |
| <i>Curvularia</i> sp.         | BRIP 61674      | <i>Oryza australiensis</i>    | Australia    |                          | KU552661 |

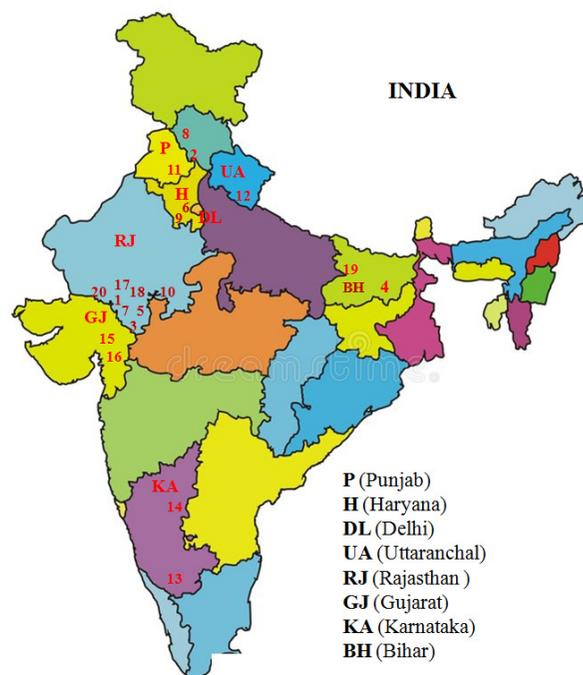
**Table S2.** Distribution of morphological and pathogenic variability in the total population of maize leaf blight isolates sampled from six maize production zones of India.

| S. No | Group   | Hotspots included (Identified species*)  | Morphological and pathological profiles  | Percent composition               |
|-------|---------|--|--|-----------------------------------|
| 1.    | Group-1 | <i>BmPhRj4</i> ( <i>Bipolaris maydis</i> ), <i>BmAmRj4</i> ( <i>Alternaria</i> sp.) and <i>BmLdPj2</i> ( <i>B. maydis</i> )  | Rough colony with no zonation and irregular margins, slow to medium colony growth, mild to moderate virulence on host, conidial dimensions ranging from 9.8 x 3.4 µm to 18.6 x 5.8 µm, 2.5 to 6.0 septate, incubation period 72 h on host and disease severity 1.5 to 4.3 on the rating scale, symptoms ranging from Type-I, -II and -IV | 15+15+34=64<br>(18.28%)           |
| 2.    | Group-2 | <i>BmBjUa1</i> ( <i>B. maydis</i> ), <i>BmCgRj4</i> ( <i>B. maydis</i> ), <i>BmPtUa1</i> ( <i>B. maydis</i> ) and <i>BmGdGj5</i> ( <i>Carvularia papendorffii</i> )  | Rough colony with no zonation and regular margins, medium to fast colony growth, having moderate virulence on host, conidial dimensions 7.6 x 3.1 to 16.9 x 4.1 µm, 1.3 to 5.8 septate, incubation period 48 to 72 h and disease severity 2.6 to 3.3 on the rating scale, symptoms Type-I and -II  | 23+18+18+12=71<br>(20.28%)        |
| 3.    | Group-3 | <i>BmPnDl12</i> ( <i>B. maydis</i> ) and <i>BmLhRj4</i> ( <i>C. sporobolocola</i> )  | Rough colony with zonation and irregular margins, medium colony growth, having moderate to high virulence, conidial dimensions 17.2 x 3.7 to 19.3 x 5.0 µm, 3.7 to 4.8 septate, incubation period 72 h and disease severity of 2.7 to 3.7 on the rating scale, Symptoms Type-III and -IV   | 15+11=26<br>(7.42%)               |
| 4.    | Group-4 | <i>BmBsRj4</i> ( <i>B. maydis</i> ), <i>BmDnRj4</i> ( <i>B. maydis</i> ), <i>BmKgUa1</i> ( <i>B. maydis</i> ), <i>BmKrHr2</i> ( <i>B. maydis</i> ), <i>BmKtRj4</i> ( <i>B. maydis</i> ) and <i>BmSkRj4</i> ( <i>C. siddiquii</i> ) | Smooth appressed colony with no zonation and regular margins, slow to fast colony growth, having mild to high virulence, conidial dimensions 10.1 x 2.6 to 16.8 x 3.1 µm, 2.5 to 4.7 septate, incubation period 48 to 96 h and disease severity 1.9 to 3.6 on the rating scale. Symptoms Type-1, -II, -III and -V                        | 11+19+21+20+23+16=110<br>(31.42%) |

Pathogens 2021

|    |         |   |  |                        |
|----|---------|---|--|------------------------|
| 5. | Group-5 | <i>BmMdKa6</i> ( <i>B. zeicola</i> ),<br><i>BmMyKa6</i> ( <i>B. maydis</i> ),<br>and <i>BmSmBh3</i> ( <i>C. graminicola</i> -like fungus) | Smooth appressed colony with zonation and regular margins, medium to fast colony growth, conidial dimensions 7.8 x 6.1 to 13.1 x 3.8 µm, 2.6-4.2 septate, having mild to high virulence, 72 to 76 h incubation period and disease severity 1.7 to 4.3 on rating, Symptoms Type-I, -IV and -V | 13+9+18=40<br>(11.42%) |
| 6. | Group-6 | <i>BmDhBh3</i> ( <i>B. maydis</i> )<br>and <i>BmAdGj5</i> ( <i>C. papendorffii</i> )  | Rough appressed colony with no zonation and regular margins, medium colony growth, conidial dimensions 12.1 x 4.3 to 14.4 x 4.5 µm, 2.9 to 3.5 septate, having high virulence, 72 h incubation period and disease rating 3.7 to 4.5 on the rating scale. Symptoms Type-I and -VI             | 27+12=39<br>(11.14%)   |

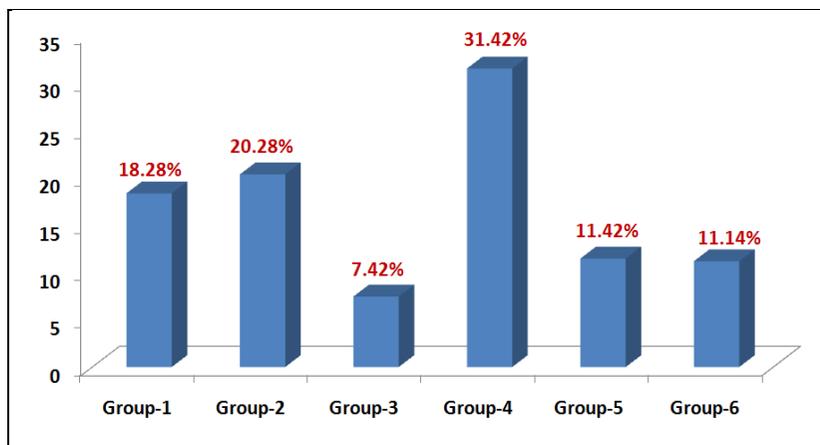
\*Respective species are photogenically identified in Figure 1A, B.



**Figure S1.** Hotspot locations covered under survey and surveillance for monitoring maize leaf blight symptoms: **1** (*Pichola*); **2** (*Bajaura*); **3** (*Banswara*); **4** (*Dholi*); **5** (*Chittorgarh*); **6** (*Patel Nagar*); **7** (*Dungarpur*); **8** (*Kangra*); **9** (*Karnal*); **10** (*Kota*); **11** (*Ludhiana*); **12** (*Pantnagar*); **13** (*Mysore*); **14** (*Mandya*); **15** (*Godhra*); **16** (*Anand*); **17** (*Lakhawali*); **18** (*Sukher*); **19** (*Samastipur*); **20** (*Amberi*).



**Figure S2.** **A.** Inoculation of fungal isolates to the leaf whorl in test plants, *Zea mays* at 7-leaf stage to examine the symptoms and pathogenicity; **B.** Disease rating scale of Payak and Sharma [59].



**Figure S3.** Distribution of morphological and pathogenic variability in the total population of fungal species sampled from six maize production zones of India.