

Supplementary Table 1. Endophytic fungal isolates obtained from different tissues of maize plants under different tillage system across crop seasons

Fungal species	Microhabitat	GenBank accession	Tillage	Season
<i>Alternaria alternata</i>	Leaf	OQ859990	RT	Rabi
<i>Alternaria alternata</i>	Cob	OQ860003	RT	Rabi
<i>Alternaria alternata</i>	Cob	OQ860006	CT	Rabi
<i>Alternaria alternata</i>	Leaf	OQ860007	CT	Rabi
<i>Alternaria alternata</i>	Leaf	OQ860009	CT	Rabi
<i>Alternaria alternata</i>	Cob	OQ860016	RT	Rabi
<i>Alternaria</i> sp.	Leaf	OQ860020	RT	Rabi
<i>Alternaria tenuissima</i>	Cob	OQ863201	RT	Rabi
<i>Aspergillus flavus</i>	Root	OQ732719	CT	Kharif
<i>Aspergillus fumigatus</i>	Root	OQ732717	CT	Kharif
<i>Aspergillus niger</i>	Leaf	OQ859993	RT	Rabi
<i>Aspergillus niger</i>	Leaf	OQ859994	RT	Rabi
<i>Aspergillus niger</i>	Cob	OQ818860	CT	Rabi
<i>Aspergillus niger</i>	Leaf	OQ860000	CT	Rabi
<i>Aspergillus niger</i>	Leaf	OQ860010	CT	Rabi
<i>Aspergillus niger</i>	Root	OQ860012	CT	Rabi
<i>Aspergillus niger</i>	Root	OQ860025	RT	Rabi
<i>Aspergillus</i> sp.	Root	OQ863202	CT	Rabi
<i>Aspergillus terreus</i>	Cob	OQ859985	CT	Rabi
<i>Aspergillus terreus</i>	Root	OQ859986	RT	Rabi
<i>Aspergillus terreus</i>	Root	OQ859987	RT	Rabi
<i>Aspergillus terreus</i>	Cob	OQ859988	RT	Rabi
<i>Aspergillus terreus</i>	Cob	OQ859989	RT	Rabi
<i>Aspergillus terreus</i>	Leaf	OQ859995	CT	Rabi
<i>Aspergillus terreus</i>	Root	OQ860013	CT	Rabi
<i>Aspergillus terreus</i>	Root	OQ860015	RT	Rabi
<i>Aspergillus terreus</i>	Root	OQ860023	RT	Rabi
<i>Aspergillus terreus</i>	Root	OQ860024	RT	Rabi
<i>Aspergillus terreus</i>	Root	OQ860026	RT	Rabi
<i>Cladosporium cladosporioides</i>	Leaf	OQ859984	CT	Rabi
<i>Cladosporium cladosporioides</i>	Leaf	OQ859991	RT	Rabi
<i>Cladosporium oxysporum</i>	Cob	OQ859980	CT	Rabi
<i>Cladosporium</i> sp.	Leaf	OQ859983	CT	Rabi
<i>Cladosporium</i> sp.	Root	OQ860022	RT	Rabi
<i>Cladosporium tenuissimum</i>	Leaf	OQ859982	RT	Rabi
<i>Cladosporium tenuissimum</i>	Leaf	OQ859997	RT	Rabi
<i>Cladosporium xanthochromaticum</i>	Leaf	OQ859992	RT	Rabi
<i>Curvularia lunata</i>	Root	OQ860014	RT	Rabi
<i>Fusarium equiseti</i>	Cob	OQ732710	CT	Kharif
<i>Fusarium equiseti</i>	Leaf	OQ732714	CT	Kharif
<i>Fusarium equiseti</i>	Leaf	OQ732715	CT	Kharif
<i>Fusarium equiseti</i>	Cob	OQ732724	RT	Kharif
<i>Fusarium neocosmosporillum</i>	Root	OQ731788	CT	Rabi
<i>Fusarium proliferatum</i>	Leaf	OQ860004	RT	Rabi
<i>Fusarium verticillioides</i>	Leaf	OQ732729	CT	Kharif
<i>Fusarium fujikuroi</i>	Cob	OQ860017	RT	Rabi

<i>Fusarium incarnatum</i>	Leaf	OQ732727	RT	Kharif
<i>Fusarium incarnatum</i>	Leaf	OQ732725	RT	Kharif
<i>Fusarium odoratissimum</i>	Leaf	OQ859981	RT	Rabi
<i>Fusarium proliferatum</i>	Leaf	OQ860008	CT	Rabi
<i>Kalmusia italic</i>	Cob	OQ860018	RT	Rabi
<i>Mucor fragilis</i>	Cob	OQ859999	RT	Rabi
<i>Penicillium sumatrense</i>	Cob	OQ859979	CT	Rabi
<i>Penicillium chermesinum</i>	Cob	OQ860002	RT	Rabi
<i>Penicillium chermesinum</i>	Cob	OQ860019	RT	Rabi
<i>Penicillium expansum</i>	Leaf	OQ860011	CT	Rabi
<i>Penicillium oxalicum</i>	Cob	OQ732709	CT	Kharif
<i>Penicillium oxalicum</i>	Cob	OQ732711	CT	Kharif
<i>Penicillium oxalicum</i>	Cob	OQ732712	CT	Kharif
<i>Penicillium oxalicum</i>	Leaf	OQ732716	CT	Kharif
<i>Penicillium oxalicum</i>	Root	OQ732718	CT	Kharif
<i>Penicillium oxalicum</i>	Cob	OQ732722	RT	Kharif
<i>Penicillium oxalicum</i>	Cob	OQ732723	RT	Kharif
<i>Penicillium oxalicum</i>	Leaf	OQ732726	RT	Kharif
<i>Penicillium raperi</i>	Root	OQ732720	CT	Kharif
<i>Penicillium sp.</i>	Leaf	OQ860021	RT	Rabi
<i>Penicillium sp.</i>	Leaf	OQ732713	CT	Kharif
<i>Penicillium sp.</i>	Root	OQ732721	RT	Kharif
<i>Purpureocillium lilacinum</i>	Root	OQ732728	RT	Kharif
<i>Sarocladium implicatum</i>	Leaf	OQ860005	CT	Rabi
<i>Sarocladium strictum</i>	Cob	OQ859998	RT	Rabi

Rabi: winter; Kharif: monsoon season; RT: Reduced tillage; CT: Conservation tillage

Supplementary Table 2. Endophytic fungal isolates obtained microhabitat wise

Fungal species	Microhabitat	GenBank accession	Tillage	Season
<i>Alternaria alternata</i>	Cob	OQ860003	RT	Rabi
<i>Alternaria alternata</i>	Cob	OQ860006	CT	Rabi
<i>Alternaria alternata</i>	Cob	OQ860016	RT	Rabi
<i>Alternaria tenuissima</i>	Cob	OQ863201	RT	Rabi
<i>Aspergillus niger</i>	Cob	OQ818860	CT	Rabi
<i>Aspergillus terreus</i>	Cob	OQ859985	CT	Rabi
<i>Aspergillus terreus</i>	Cob	OQ859988	RT	Rabi
<i>Aspergillus terreus</i>	Cob	OQ859989	RT	Rabi
<i>Cladosporium oxysporum</i>	Cob	OQ859980	CT	Rabi
<i>Fusarium equiseti</i>	Cob	OQ732710	CT	Kharif
<i>Fusarium equiseti</i>	Cob	OQ732724	RT	Kharif
<i>Fusarium fujikuroi</i>	Cob	OQ860017	RT	Rabi
<i>Kalmusia italic</i>	Cob	OQ860018	RT	Rabi
<i>Mucor fragilis</i>	Cob	OQ859999	RT	Rabi
<i>Penicillium sumatrense</i>	Cob	OQ859979	CT	Rabi
<i>Penicillium chermesinum</i>	Cob	OQ860002	RT	Rabi
<i>Penicillium chermesinum</i>	Cob	OQ860019	RT	Rabi
<i>Penicillium oxalicum</i>	Cob	OQ732709	CT	Kharif
<i>Penicillium oxalicum</i>	Cob	OQ732711	CT	Kharif
<i>Penicillium oxalicum</i>	Cob	OQ732712	CT	Kharif
<i>Penicillium oxalicum</i>	Cob	OQ732722	RT	Kharif
<i>Penicillium oxalicum</i>	Cob	OQ732723	RT	Kharif
<i>Sarocladium strictum</i>	Cob	OQ859998	RT	Rabi
<i>Alternaria alternata</i>	Leaf	OQ859990	RT	Rabi

<i>Alternaria alternata</i>	Leaf	QQ860007	CT	<i>Rabi</i>
<i>Alternaria alternata</i>	Leaf	QQ860009	CT	<i>Rabi</i>
<i>Alternaria</i> sp.	Leaf	QQ860020	RT	<i>Rabi</i>
<i>Aspergillus niger</i>	Leaf	QQ859993	RT	<i>Rabi</i>
<i>Aspergillus niger</i>	Leaf	QQ859994	RT	<i>Rabi</i>
<i>Aspergillus niger</i>	Leaf	QQ860000	CT	<i>Rabi</i>
<i>Aspergillus niger</i>	Leaf	QQ860010	CT	<i>Rabi</i>
<i>Aspergillus terreus</i>	Leaf	QQ859995	CT	<i>Rabi</i>
<i>Cladosporium</i>	Leaf	QQ859984	CT	<i>Rabi</i>
<i>cladosporioides</i>				
<i>Cladosporium</i>	Leaf	QQ859991	RT	<i>Rabi</i>
<i>cladosporioides</i>				
<i>Cladosporium</i> sp.	Leaf	QQ859983	CT	<i>Rabi</i>
<i>Cladosporium tenuissimum</i>	Leaf	QQ859982	RT	<i>Rabi</i>
<i>Cladosporium tenuissimum</i>	Leaf	QQ859997	RT	<i>Rabi</i>
<i>Cladosporium</i>	Leaf	QQ859992	RT	<i>Rabi</i>
<i>xanthochromaticum</i>				
<i>Fusarium equiseti</i>	Leaf	QQ732714	CT	<i>Kharif</i>
<i>Fusarium equiseti</i>	Leaf	QQ732715	CT	<i>Kharif</i>
<i>Fusarium proliferatum</i>	Leaf	QQ860004	RT	<i>Rabi</i>
<i>Fusarium verticillioides</i>	Leaf	QQ732729	CT	<i>Kharif</i>
<i>Fusarium incarnatum</i>	Leaf	QQ732727	RT	<i>Kharif</i>
<i>Fusarium incarnatum</i>	Leaf	QQ732725	RT	<i>Kharif</i>
<i>Fusarium odoratissimum</i>	Leaf	QQ859981	RT	<i>Rabi</i>
<i>Fusarium proliferatum</i>	Leaf	QQ860008	CT	<i>Rabi</i>
<i>Penicillium expansum</i>	Leaf	QQ860011	CT	<i>Rabi</i>
<i>Penicillium oxalicum</i>	Leaf	QQ732716	CT	<i>Kharif</i>
<i>Penicillium oxalicum</i>	Leaf	QQ732726	RT	<i>Kharif</i>
<i>Penicillium</i> sp.	Leaf	QQ860021	RT	<i>Rabi</i>
<i>Penicillium</i> sp.	Leaf	QQ732713	CT	<i>Kharif</i>
<i>Sarocladium implicatum</i>	Leaf	QQ860005	CT	<i>Rabi</i>
<i>Aspergillus flavus</i>	Root	QQ732719	CT	<i>Kharif</i>
<i>Aspergillus fumigatus</i>	Root	QQ732717	CT	<i>Kharif</i>
<i>Aspergillus niger</i>	Root	QQ860012	CT	<i>Rabi</i>
<i>Aspergillus niger</i>	Root	QQ860025	RT	<i>Rabi</i>
<i>Aspergillus</i> sp.	Root	QQ863202	CT	<i>Rabi</i>
<i>Aspergillus terreus</i>	Root	QQ859986	RT	<i>Rabi</i>
<i>Aspergillus terreus</i>	Root	QQ859987	RT	<i>Rabi</i>
<i>Aspergillus terreus</i>	Root	QQ860013	CT	<i>Rabi</i>
<i>Aspergillus terreus</i>	Root	QQ860015	RT	<i>Rabi</i>
<i>Aspergillus terreus</i>	Root	QQ860023	RT	<i>Rabi</i>
<i>Aspergillus terreus</i>	Root	QQ860024	RT	<i>Rabi</i>
<i>Aspergillus terreus</i>	Root	QQ860026	RT	<i>Rabi</i>
<i>Cladosporium</i> sp.	Root	QQ860022	RT	<i>Rabi</i>
<i>Curvularia lunata</i>	Root	QQ860014	RT	<i>Rabi</i>
<i>Fusarium</i>	Root	QQ731788	CT	<i>Rabi</i>
<i>neocosmosporillum</i>				
<i>Penicillium oxalicum</i>	Root	QQ732718	CT	<i>Kharif</i>
<i>Penicillium raperi</i>	Root	QQ732720	CT	<i>Kharif</i>
<i>Penicillium</i> sp.	Root	QQ732721	RT	<i>Kharif</i>
<i>Purpureocillium lilacinum</i>	Root	QQ732728	RT	<i>Kharif</i>

Rabi: winter season; *Kharif*: monsoon season; RT: Reduced tillage; CT: Conventional Tillage

Supplementary Table 3. Endophytic fungal isolates obtained tillage system

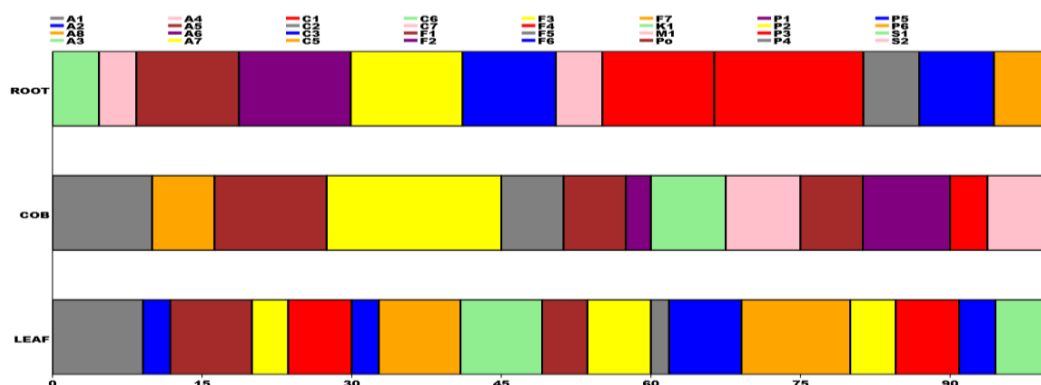
Fungal species	Microhabitat	GenBank accession	Tillage	Season
<i>Alternaria alternata</i>	Cob	OQ860006	Conventional Tillage	<i>Rabi</i>
<i>Aspergillus niger</i>	Cob	OQ818860	Conventional Tillage	<i>Rabi</i>
<i>Aspergillus terreus</i>	Cob	OQ859985	Conventional Tillage	<i>Rabi</i>
<i>Cladosporium oxysporum</i>	Cob	OQ859980	Conventional Tillage	<i>Rabi</i>
<i>Fusarium equiseti</i>	Cob	OQ732710	Conventional Tillage	<i>Kharif</i>
<i>Penicillium sumatrense</i>	Cob	OQ859979	Conventional Tillage	<i>Rabi</i>
<i>Penicillium oxalicum</i>	Cob	OQ732709	Conventional Tillage	<i>Kharif</i>
<i>Penicillium oxalicum</i>	Cob	OQ732711	Conventional Tillage	<i>Kharif</i>
<i>Penicillium oxalicum</i>	Cob	OQ732712	Conventional Tillage	<i>Kharif</i>
<i>Alternaria alternata</i>	Leaf	OQ860007	Conventional Tillage	<i>Rabi</i>
<i>Alternaria alternata</i>	Leaf	OQ860009	Conventional Tillage	<i>Rabi</i>
<i>Aspergillus niger</i>	Leaf	OQ860000	Conventional Tillage	<i>Rabi</i>
<i>Aspergillus niger</i>	Leaf	OQ860010	Conventional Tillage	<i>Rabi</i>
<i>Aspergillus terreus</i>	Leaf	OQ859995	Conventional Tillage	<i>Rabi</i>
<i>Cladosporium cladosporioides</i>	Leaf	OQ859984	Conventional Tillage	<i>Rabi</i>
<i>Cladosporium sp.</i>	Leaf	OQ859983	Conventional Tillage	<i>Rabi</i>
<i>Fusarium equiseti</i>	Leaf	OQ732714	Conventional Tillage	<i>Kharif</i>
<i>Fusarium equiseti</i>	Leaf	OQ732715	Conventional Tillage	<i>Kharif</i>
<i>Fusarium verticillioides</i>	Leaf	OQ732729	Conventional Tillage	<i>Kharif</i>
<i>Fusarium proliferatum</i>	Leaf	OQ860008	Conventional Tillage	<i>Rabi</i>
<i>Penicillium expansum</i>	Leaf	OQ860011	Conventional Tillage	<i>Rabi</i>
<i>Penicillium oxalicum</i>	Leaf	OQ732716	Conventional Tillage	<i>Kharif</i>
<i>Penicillium sp.</i>	Leaf	OQ732713	Conventional Tillage	<i>Kharif</i>
<i>Sarocladium implicatum</i>	Leaf	OQ860005	Conventional Tillage	<i>Rabi</i>
<i>Aspergillus flavus</i>	Root	OQ732719	Conventional Tillage	<i>Kharif</i>
<i>Aspergillus fumigatus</i>	Root	OQ732717	Conventional Tillage	<i>Kharif</i>
<i>Aspergillus niger</i>	Root	OQ860012	Conventional Tillage	<i>Rabi</i>
<i>Aspergillus sp.</i>	Root	OQ863202	Conventional Tillage	<i>Rabi</i>
<i>Aspergillus terreus</i>	Root	OQ860013	Conventional Tillage	<i>Rabi</i>
<i>Fusarium neocosmosporillum</i>	Root	OQ731788	Conventional Tillage	<i>Rabi</i>
<i>Penicillium oxalicum</i>	Root	OQ732718	Conventional Tillage	<i>Kharif</i>
<i>Penicillium raperi</i>	Root	OQ732720	Conventional Tillage	<i>Kharif</i>
<i>Alternaria alternata</i>	Cob	OQ860003	Reduced Tillage	<i>Rabi</i>
<i>Alternaria alternata</i>	Cob	OQ860016	Reduced Tillage	<i>Rabi</i>
<i>Alternaria tenuissima</i>	Cob	OQ863201	Reduced Tillage	<i>Rabi</i>
<i>Aspergillus terreus</i>	Cob	OQ859988	Reduced Tillage	<i>Rabi</i>
<i>Aspergillus terreus</i>	Cob	OQ859989	Reduced Tillage	<i>Rabi</i>
<i>Fusarium equiseti</i>	Cob	OQ732724	Reduced Tillage	<i>Kharif</i>
<i>Fusarium fujikuroi</i>	Cob	OQ860017	Reduced Tillage	<i>Rabi</i>
<i>Kalmusia italic</i>	Cob	OQ860018	Reduced Tillage	<i>Rabi</i>
<i>Mucor fragilis</i>	Cob	OQ859999	Reduced Tillage	<i>Rabi</i>
<i>Penicillium chermesinum</i>	Cob	OQ860002	Reduced Tillage	<i>Rabi</i>
<i>Penicillium chermesinum</i>	Cob	OQ860019	Reduced Tillage	<i>Rabi</i>
<i>Penicillium oxalicum</i>	Cob	OQ732722	Reduced Tillage	<i>Kharif</i>
<i>Penicillium oxalicum</i>	Cob	OQ732723	Reduced Tillage	<i>Kharif</i>
<i>Sarocladium strictum</i>	Cob	OQ859998	Reduced Tillage	<i>Rabi</i>
<i>Alternaria alternata</i>	Leaf	OQ859990	Reduced Tillage	<i>Rabi</i>
<i>Alternaria sp.</i>	Leaf	OQ860020	Reduced Tillage	<i>Rabi</i>
<i>Aspergillus niger</i>	Leaf	OQ859993	Reduced Tillage	<i>Rabi</i>

<i>Aspergillus niger</i>	Leaf	OQ859994	Reduced Tillage	<i>Rabi</i>
<i>Cladosporium cladosporioides</i>	Leaf	OQ859991	Reduced Tillage	<i>Rabi</i>
<i>Cladosporium tenuissimum</i>	Leaf	OQ859982	Reduced Tillage	<i>Rabi</i>
<i>Cladosporium tenuissimum</i>	Leaf	OQ859997	Reduced Tillage	<i>Rabi</i>
<i>Cladosporium xanthochromaticum</i>	Leaf	OQ859992	Reduced Tillage	<i>Rabi</i>
<i>Fusarium proliferatum</i>	Leaf	OQ860004	Reduced Tillage	<i>Rabi</i>
<i>Fusarium incarnatum</i>	Leaf	OQ732727	Reduced Tillage	<i>Kharif</i>
<i>Fusarium incarnatum</i>	Leaf	OQ732725	Reduced Tillage	<i>Kharif</i>
<i>Fusarium odoratissimum</i>	Leaf	OQ859981	Reduced Tillage	<i>Rabi</i>
<i>Penicillium oxalicum</i>	Leaf	OQ732726	Reduced Tillage	<i>Kharif</i>
<i>Penicillium sp.</i>	Leaf	OQ860021	Reduced Tillage	<i>Rabi</i>
<i>Aspergillus niger</i>	Root	OQ860025	Reduced Tillage	<i>Rabi</i>
<i>Aspergillus terreus</i>	Root	OQ859986	Reduced Tillage	<i>Rabi</i>
<i>Aspergillus terreus</i>	Root	OQ859987	Reduced Tillage	<i>Rabi</i>
<i>Aspergillus terreus</i>	Root	OQ860015	Reduced Tillage	<i>Rabi</i>
<i>Aspergillus terreus</i>	Root	OQ860023	Reduced Tillage	<i>Rabi</i>
<i>Aspergillus terreus</i>	Root	OQ860024	Reduced Tillage	<i>Rabi</i>
<i>Aspergillus terreus</i>	Root	OQ860026	Reduced Tillage	<i>Rabi</i>
<i>Cladosporium sp.</i>	Root	OQ860022	Reduced Tillage	<i>Rabi</i>
<i>Curvularia lunata</i>	Root	OQ860014	Reduced Tillage	<i>Rabi</i>
<i>Penicillium sp.</i>	Root	OQ732721	Reduced Tillage	<i>Kharif</i>
<i>Purpureocillium lilacinum</i>	Root	OQ732728	Reduced Tillage	<i>Kharif</i>

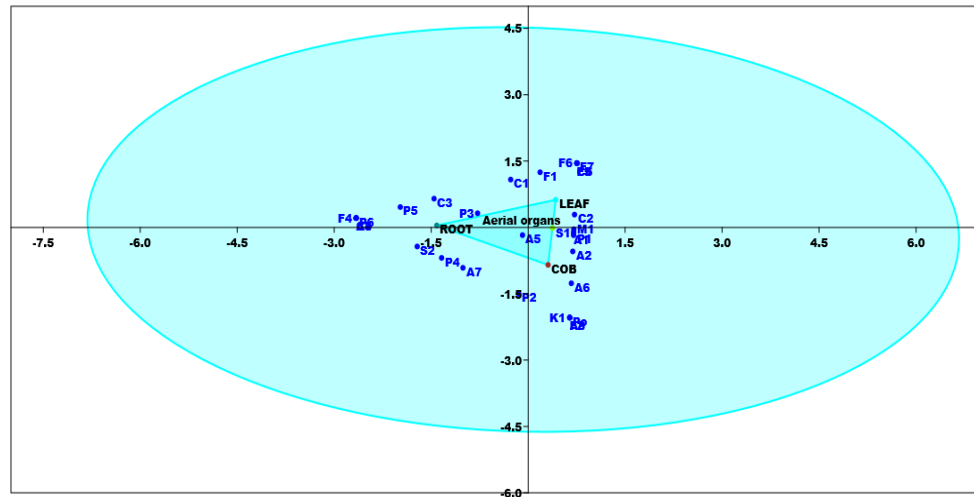
Supplementary Table 4. Endophytic fungal isolates formation matrix table obtained based on dilution of 10^{-4} , 10^{-5} and 10^{-6} in plates from different plant tissue samples of maize

Fungal species	Common code of isolates	CT-LEAF	CT-COB	CT-ROOT	RT-LEAF	RT-COB	RT-ROOT	Total of isolates	Common code of isolates	LEAF	COB
<i>Alternaria alternata</i>	A1	6	3		4	5		18	A1	10	8
<i>Alternaria sp.</i>	A2				3			3	A2	3	
<i>Alternaria tenuissima</i>	A8					5		5	A8		5
<i>Aspergillus flavus</i>	A3			5				5	A3		
<i>Aspergillus fumigatus</i>	A4			4				4	A4		
<i>Aspergillus niger</i>	A5	5	9	3	4		8	29	A5	9	9
<i>Aspergillus sp.</i>	A6			12				12	A6		0
<i>Aspergillus terreus</i>	A7	4	4	3		10	9	30	A7	4	14
<i>Cladosporium cladosporioides</i>	C1	3			4			7	C1	7	0
<i>Cladosporium oxysporum</i>	C2		5					5	C2		5
<i>Cladosporium sp.</i>	C3	3					10	13	C3	3	
<i>Cladosporium tenuissimum</i>	C5				9			9	C5	9	
<i>Cladosporium xanthochromaticum</i>	C6				9			9	C6	9	
<i>Curvularia lunata</i>	C7						5	5	C7		
<i>Fusarium equiseti</i>	F1	5	2			3		10	F1	5	5

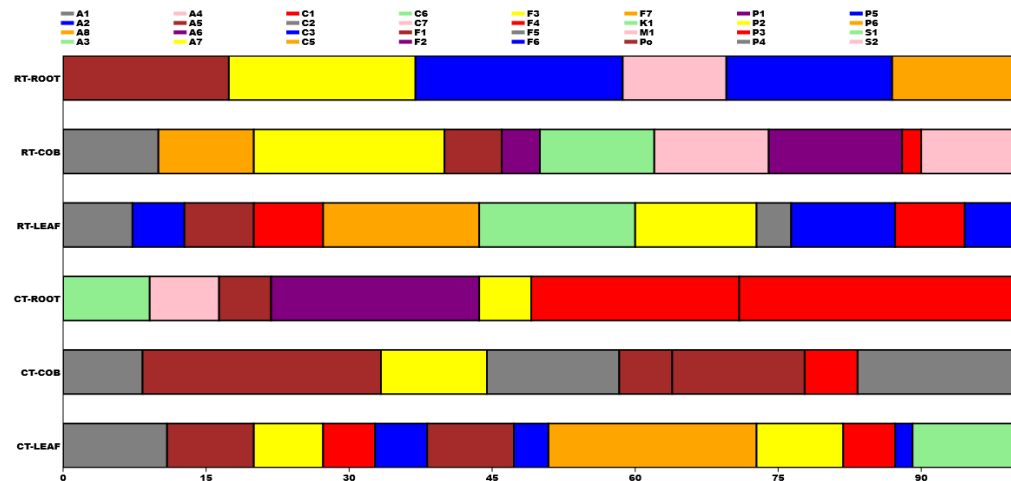
<i>Fusarium fujikuroi</i>	F2					2		2	F2		2
<i>Fusarium incarnatum</i>	F3				7			7	F3	7	
<i>Fusarium neocosmosporillum</i>	F4			12				12	F4		
<i>Fusarium odoratissimum</i>	F5				2			2	F5	2	
<i>Fusarium proliferatum</i>	F6	2			6			8	F6	8	
<i>Fusarium verticillioides</i>	F7	12						12	F7	12	
<i>Kalmusia italica</i>	K1					6		6	K1		6
<i>Mucor fragilis</i>	M1					11		11	M1		11
<i>Pencillium sumatrense</i>	Po		5					5	Po		5
<i>Penicillium chermesinum</i>	P1					7		7	P1		7
<i>Penicillium expansum</i>	P2	5						5	P2	5	
<i>Penicillium oxalicum</i>	P3	3	2	16	4	1		26	P3	7	3
<i>Penicillium raperi</i>	P4		6					6	P4		
<i>Penicillium sp.</i>	P5	1			3		8	12	P5	4	
<i>Purpureocillium lilacinum</i>	P6						6	6	P6		
<i>Sarocladium implicatum</i>	S1	6						6	S1	6	
<i>Sarocladium strictum</i>	S2					5		5	S2		5



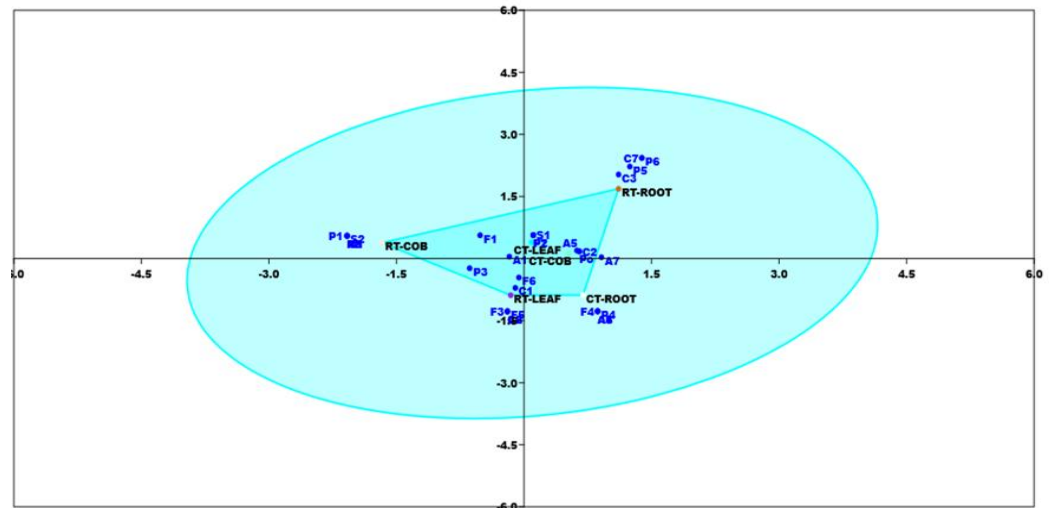
Supplementary Fig. 1. The relative abundance (%) of the most predominant endophytic fungal taxa at the species level across the tissues. Mostly six genera strongly associated with the Phyllosphere possessed the abundance, as follows: *Alternaria* (11.40 %), *Aspergillus* (11.40 %), *Cladosporium* (28.07 %), *Fusarium* (298.2 %), *Penicillium* (14.04 %), and *Sarocladium* (5.26 %) that were structured with [A1:9.09 %, A2:2.73 %, A5:8.18 %, A7:3.64 %, C1:3.64 %, C3:2.73 %, C5: 8.18 %, C6:8.18 %, F1:4.55 %,F3:6.36 %, F5:1.82 %, F6:7.27 %, F7:10.91 %, P2:4.55 %, P3:6.36 %, P5:3.64 % and S1:5.45 %]. The relative abundance of mycobiome in premature cobs is shared by *Alternaria* (18.28 %), *Aspergillus* (31.18 %), *Cladosporium* (2.15 %), *Fusarium* (2.15 %), *Kalmusia* (6.45 %), *Mucor* (6.45 %), *Pencillium* (26.88 %) and *Sarocladium* (6.45 %). More detailed composition of mycobiome [A1:10 %, A8:6.25 %, A5:11.25 %, A7:17.5 %, C2:6.25 %, F1:6.25 %, F2:2.5 %, K1:7.5 %, M1:7.5 %, Po:6.25 %, P1:8.75 %, P3:3.75 % and S2:6.25 %]. The abundance of mycobiome in the root region is structured through *Aspergillus* (29.36 %), *Cladosporium* (15.60 %), *Curvularia* (4.59 %), *Fusarium* (12.85 %), *Penicillium* (32.11 %) and *Purpureocillium* (5.50 %). Detailed structure of mycobiome based on identification by barcode marker [A3:4.67 %, A4:3.74 %, A5:10.28 %, A6:11.21 %, A7:11.21 %, C3:9.35 %, C7:4.67 %, F4:11.21 %, P3:14.95 %, P4:5.61 %, P5:7.48 %, P6:5.61 %].



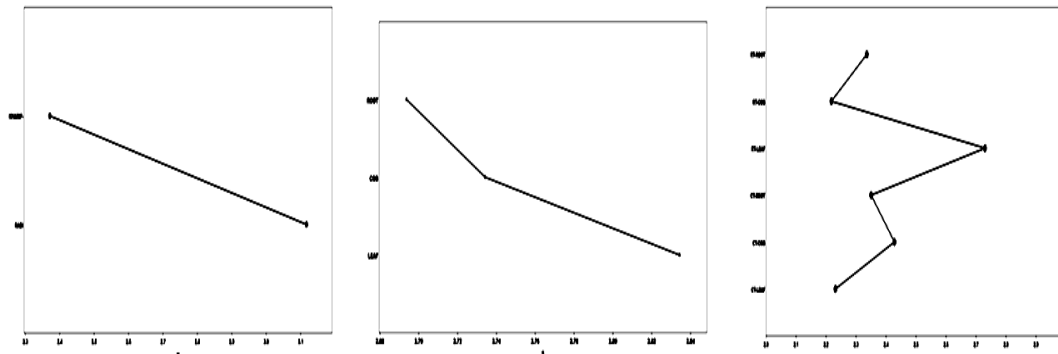
Supplementary Fig. 2. Comparison of microbial assemblages in maize plants across areal (leaf and cob) and subterranean (root) tissues, using correspondence analysis. There were six genera that were closely associated with the phyllosphere and were abundant: *Alternaria* [*Alternaria alternata* (A1), *Alternaria* spp. (A2)], *Aspergillus* [*Aspergillus niger* (A5), *Aspergillus terreus* (A7)], *Cladosporium* [*Cladosporium cladosporioides* (C1), *Cladosporium* spp. (C3), *Cladosporium tenuissimum* (C5), *Cladosporium xanthochromaticum* (C6)], *Fusarium* [*Fusarium equiseti* (F1), *Fusarium proliferatum* (F6), *Fusarium verticillioides* (F7), *Fusarium incarnatum* (F3), *Fusarium odoratissimum* (F5)], *Penicillium* [*Penicillium expansum* (P2), *Penicillium oxalicum* (P3), *Penicillium* spp. (P5)] and *Sarocladium* [*Sarocladium implicatum* (S1)]. The abundance was mostly found in six taxa that are associated with the phyllosphere: *Alternaria* (11.40 %), *Aspergillus* (11.40 %), *Cladosporium* (28.07 %), *Fusarium* (298.2 %), *Penicillium* (14.04 %) and *Sarocladium* (5.26 %). The premature cob of maize was associated with a plethora of endophytic fungi as part of the maize mycobiome, approximately eight genera, including *Alternaria* [*Alternaria alternata* (A1), *Alternaria tenuissima* (A8)], *Aspergillus* [*Aspergillus niger* (A5), *Aspergillus terreus* (A7)], *Cladosporium* [*Cladosporium oxysporum* (C2)], *Fusarium* [*Fusarium equiseti* (F1), *Fusarium fujikuroi* (F2)], *Kalmusia* [*Kalmusia italic* (K1)], *Mucor* [*Mucor fragilis* (M1)], *Penicillium* [*Penicillium sumatrense* (Po), *Penicillium chermesinum* (P1), *Penicillium oxalicum* (P3)] and *Sarocladium* [*Sarocladium strictum* (S2)].



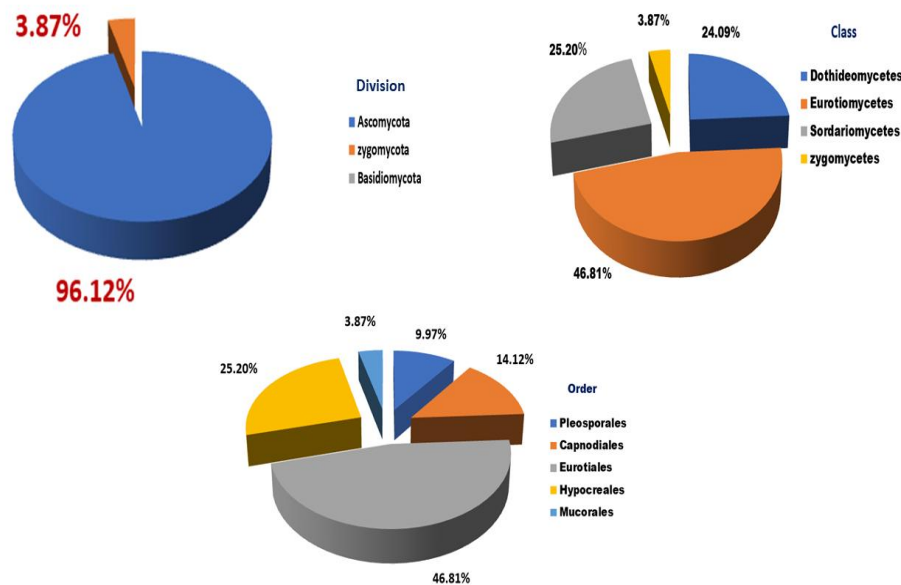
Supplementary Fig. 3. The relative abundance (%) of the most predominant endophytic fungal taxa at the species level across the tillage system (CT and RT). Subsets of the maize mycobiome community's phyllosphere were identified by the field-applied tillage techniques. Under conventional tillage, endophytic fungi in maize are grouped into the following genera: *Alternaria* (10.91 %), *Aspergillus* (16.36 %), *Cladosporium* (10.91 %), *Fusarium* (34.55 %), *Penicillium* (16.36 %) and *Sarocladium* (10.91 %); [A1:10.91 %, A5:9.09 %, A7:7.27 %, C:5.45 %, C3:5.45 %, F1:9.09 %, F6: 3.64 %, F7:21.82 %, P2:9.09 %, P3:5.45 %, P5:1.82 % and S1:10.91 %] and in contrast, *Alternaria* (12.73 %), *Aspergillus* (7.27 %), *Cladosporium* (40.00 %), *Fusarium* (27.27 %) and *Penicillium* (12.73 %) are mostly responsible for the structure of those under reduced tillage; [A1:7.27 %, A2:5.45 %, A5:7.27 %, C1:7.27 %, C5:16.36 %, C6:16.36 %, F3:12.73 %, F5:3.64 %, F6:10.91 %, P3:7.27 % and P5:5.45 %]; Endophytic fungi structured cob under the CT system (CT-Cob) are *Alternaria* (8.33 %), *Aspergillus* (36.11 %), *Cladosporium* (13.89 %), *Fusarium* (5.56 %); [A1:8.33 %, A5:25.00 %, A7:11.11 %, C2:13.89 %, F1:5.56 %, Po:13.89 %, P3:5.56 %, P4:16.67 %] and (RT-Cob): *Penicillium* (36.11 %), while *Alternaria* (19.61 %), *Aspergillus* (19.61 %), *Fusarium* (9.80 %), *Kalmusia* (11.76 %), *Mucor* (13.73 %), *Penicillium* (15.69 %) and *Sarocladium* (9.80 %); [A1:10 %, A8:10.00 %, A7:20 %, F1:6.00 %, F2: 4.00 %, K1:12.00 %, M1:12.00 %, P1:14.00 %, P3:2.00 %, S2:10.00 %]; Endophytic fungi associated with root under CT system are *Aspergillus* (49.09 %), *Fusarium* (21.82 %) and *Penicillium* (29.09 %); [A3:9.09 %, A4:7.27 %, A5:5.45 %, A6:21.82 %, A7:5.45 %, F4:21.82 % and P3:29.09 %] while those under the RT system are *Aspergillus* (36.96 %), *Cladosporium* (21.74 %), *Curvularia* (10.87 %), *Penicillium* (17.39 %) and *Purpureocillium* (13.04 %); [A5:17.39 %, A7:19.57 %, C3:21.74 %, C7:10.87 %, P5:17.39 % and P6:13.04 %].



Supplementary Fig. 4. Comparison of microbial assemblages in maize plants across areal (leaf and cob) and subterranean (root) tissues under the influence of tillage system (CT and RT), using correspondence analysis. Phyllosphere endophytic genera under CT system (CT-Leaf); *Alternaria* [*Alternaria alternata* (A1)] *Aspergillus* [*Aspergillus niger* (A5) and *Aspergillus terreus* (A7)], *Cladosporium* [*Cladosporium cladosporioides* (C1) and *Cladosporium* sp. (C3)] *Fusarium* [*Fusarium equiseti* (F1), *Fusarium proliferatum* (F6) and *Fusarium verticillioides* (F7)] *Penicillium* [*Penicillium expansum* (P2), *Penicillium oxalicum* (P3) and *Penicillium* sp. (P5)] and *Sarocladium* [*Sarocladium implicatum* (S1)] and Phyllosphere endophytic genera under RT system (RT-Leaf); *Alternaria* [*Alternaria alternata* (A1) and *Alternaria* sp. (A2)] *Aspergillus* [*Aspergillus niger* (A5)], *Cladosporium* [*Cladosporium cladosporioides* (C1), *Cladosporium tenuissimum* (C5), *Cladosporium xanthochromaticum* (C6)] *Fusarium* [*Fusarium incarnatum* (F3), *Fusarium odoratissimum* (F5), *Fusarium proliferatum* (F6)], *Penicillium* [*Penicillium oxalicum* (P3) and *Penicillium* sp. (P5)]; Endophytic genera associated with cob under CT system (CT-Cob); *Alternaria* [*Alternaria alternata* (A1)], *Aspergillus* [*Aspergillus niger* (A5) and *Aspergillus terreus* (A7)], *Cladosporium* [*Cladosporium oxysporum* (C2)], *Fusarium* [*Fusarium equiseti* (F1)] and *Penicillium* [*Penicillium sumatrense* (Po), *Penicillium oxalicum* (P3), *Penicillium raperi* (P4)] and endophytic genera associated with cob under RT system (RT-cob); *Alternaria* [*Alternaria alternata* (A1) and *Alternaria tenuissima* (A8)], *Aspergillus* [*Aspergillus terreus* (A7)], *Fusarium* [*Fusarium equiseti* (F1) and *Fusarium fujikuroi* (F2)], *Kalmusia* [*Kalmusia italic* (K1)], *Mucor* [*Mucor fragilis* (M1)], *Penicillium* [*Penicillium chermesinum* (P1) and *Penicillium oxalicum* (P3)] and *Sarocladium* [*Sarocladium strictum* (S2)]; Endophytic genera associated with root under CT system (CT-Root); *Aspergillus* [*Aspergillus flavus* (A3), *Aspergillus fumigatus* (A4), *Aspergillus niger* (A5), *Aspergillus* sp. (A6) and *Aspergillus terreus* (A7)], *Fusarium* [*Fusarium neocosmosporillum* (F4)] *Penicillium* [*Penicillium oxalicum* (P3)] and endophytic genera associated with root under RT system (RT-Root); *Aspergillus* [*Aspergillus niger* (A5), *Aspergillus terreus* (A7), *Cladosporium* [*Cladosporium* sp. (C3)], *Curvularia* [*Curvularia lunata* (C7)] *Penicillium* [*Penicillium* sp. (P5)] and *Purpureocillium* [*Purpureocillium lilacinum* (P6)].



Supplementary Fig. 5. Shannon-Weiner Diversity Index (H') of mycobiome population of maize. (A) the cultivable maize mycobiome from Delhi and Bihar had Shannon-Weiner Diversity Index (H') values of 2.103 and 3.117 respectively. Moreover, (B) the estimated diversity index values for endophytic fungi linked to maize tissues, including leaves, cobs, and roots, were 2.520, 2.220 and 2.054 respectively. (C) The estimated diversity index values for endophytic fungi associated with various maize tissues are further subdivided into subsets based on tillage practices. Under conventional tillage, including leaves, cobs, and roots, were 2.231, 2.428 and 2.350 respectively. Additionally, the numbers should be 2.730, 2.217 and 2.336 under reduced tillage respectively.



Supplementary Fig. 6. Distribution of mycobiome at different taxa of fungi that associated with maize system. The majority (96.12 %) were classified as Ascomycota, with the most prevalent classes being Dothideomycetes (24.09 %), Sordariomycetes (25.20 %) and Eurotiomycetes (46.81 %). Additionally, smaller portions of the identified isolates namely, Zygomycetes (3.87 %) were placed in the division Zygomycota (3.87 %). More than half of the fungal isolates from different parts of the maize plant belonged to the most prevalent orders of endophytic fungi, which were Eurotiales and Hypocreales.