

Table S1. Colonies isolated from plant source in the field.

| Isolation Source | | Harvested Year | Location |
|---------------------------|------|--------------------|---------------------------------|
| Barley seeds ^c | 2022 | Ibaraki prefecture | Colony ^a |
| | | | Species ^b |
| | | | Trichothecene type ^b |
| | | | NIV and 3ADON ^d |
| Wheat head ^c | 2022 | Mie prefecture | Fgc22081301 |
| | | | <i>Fusarium asiaticum</i> |
| | | | Fgc22081401 |
| | | | <i>Fusarium asiaticum</i> |
| | | | Fgc22081501 |
| | | | <i>Fusarium asiaticum</i> |
| | | | Fgc22081601 |
| | | | <i>Fusarium asiaticum</i> |
| | | | Fgc22241701 |
| | | | <i>Fusarium asiaticum</i> |
| | | | Fgc22241801 |
| | | | <i>Fusarium asiaticum</i> |
| | | | Fgc22241901 |
| | | | <i>Fusarium asiaticum</i> |
| | | | Fgc22242001 |
| | | | <i>Fusarium asiaticum</i> |
| | | | Fgc22242101 |
| <i>Fusarium asiaticum</i> | | | |
| Fgc22242201 | | | |
| <i>Fusarium asiaticum</i> | | | |
| Fgc22242301 | | | |
| <i>Fusarium asiaticum</i> | | | |
| Fgc22242401 | | | |
| <i>Fusarium asiaticum</i> | | | |
| Fgc22242501 | | | |
| <i>Fusarium asiaticum</i> | | | |
| Fgc22242601 | | | |
| <i>Fusarium asiaticum</i> | | | |
| Fgc22242701 | | | |
| <i>Fusarium asiaticum</i> | | | |
| Fgc22242801 | | | |
| <i>Fusarium asiaticum</i> | | | |
| Fgc22242901 | | | |
| <i>Fusarium asiaticum</i> | | | |
| Fgc22243001 | | | |
| <i>Fusarium asiaticum</i> | | | |
| Fgc22243101 | | | |
| <i>Fusarium asiaticum</i> | | | |
| Fgc22243201 | | | |
| <i>Fusarium asiaticum</i> | | | |
| Fgc22243301 | | | |
| <i>Fusarium asiaticum</i> | | | |
| Fgc22243401 | | | |
| <i>Fusarium asiaticum</i> | | | |
| Fgc22243501 | | | |
| <i>Fusarium asiaticum</i> | | | |

^a Each colony was obtained from barley seeds equivalent to 30 mL volume from different fields or a wheat head of different fields with the FG21 medium.

^b Species (*Fusarium asiaticum* and *Fusarium graminearum* sensu stricto) and trichothecene types (15-acetyl deoxynivalenol: 15ADON; 3-acetyl deoxynivalenol: 3ADON; and nivalenol: NIV) were identified by dipstick DNA chromatography. The dipstick DNA chromatography assay was performed for sample before and after single colony isolation, and obtained results were the same for all colonies but Fgc22081501.

^c Seeds were collected from fields where *Fusarium* head blight symptoms were observed.

^d The dipstick DNA chromatography assay showed a positive line for NIV and 3ADON with the sample before single-colony isolation. The dipstick DNA chromatography assay with the sample after single-colony isolation showed a positive line only for NIV.

^e Wheat head with *Fusarium* head blight symptoms.