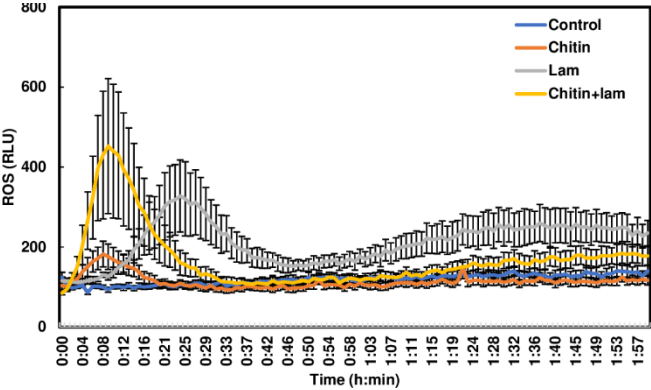
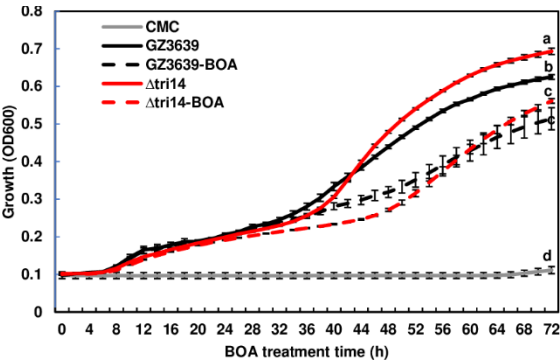


Supplementary

**Figure S1.** Reactive oxygen species (ROS) induced in wheat coleoptiles treated with chitin, laminarin (Lam) and chitin plus laminarin. Coleoptiles fragments were collected from 5-day-old seedlings. All tissues were treated with 200 µg/ml crab chitin, 3 mg/mL lam or 200 µg/ml crab chitin plus 3 mg/mL lam. Production of ROS was measured using luminol-based chemiluminescence with L012 as a substrate. The plates were run on a 96-well plate reader (Synergy HT) and the signals (RLU, relative light unit) were recorded for about 120 min. The data represent means of replicates with standard error (n = 12). Experiments were repeated at least three times with similar results.



**Figure S2.** BOA has no effect on conidiation and growth of  $\Delta tri14$  mutant. Comparison of the conidiation and growth of GZ3639 and  $\Delta tri14$  in CMC media containing 0.5 mg/mL BOA. Values are averages from 12 biological replicates. One-way ANOVA and Tukey-Kramer HSD tests of means were conducted in JMP. Different letters indicate significant difference with  $p < 0.05$  confidence.



**Table S1.** Percent identity of *TRI* genes in *F. graminearum* to their orthologs in other selected fungi with *TRI* clusters. The percent identity values are for predicted amino acid sequences and were determined using the “Align two or more sequences” option of the BLASTp analysis in the GenBank database of the National Center for Biotechnology Information and selecting.

Species	TRI Custer Genes										Other <i>TRI</i> Loci <sup>b</sup>	
	<i>TRI3</i>	<i>TRI4</i>	<i>TRI5</i>	<i>TRI6</i>	<i>TRI8</i>	<i>TRI9</i>	<i>TRI10</i>	<i>TRI11</i>	<i>TRI12</i>	<i>TRI14</i>	<i>TRI1</i>	<i>TRI101</i>
<i>Trichoderma arundinaceum</i> <sup>a</sup>	48.1	72.6	59.5	46.5	NA	NA	57.6	NA	58.3	63.9	NA	NA
<i>Trichoderma brevicompactum</i> <sup>a</sup>	48.3	72.4	59.5	46.5	NA	NA	57.3	NA	58.3	63.9	NA	NA
<i>Beauveria bassiana</i>	59.5	70.9	74.1	NA	NA	NA	NA	67.5	NA	62.5	NA	18.3 <sup>c</sup>
<i>Akanthomyces lecanii</i>	61.2	68.4	77.9	NA	NA	NA	NA	68.2	NA	62.6	NA	15.6 <sup>c</sup>
<i>Stachybotrys chlorohalonata</i> <sup>a</sup>	44.2	67.1	77.1	40.9	NA	NA	53.7	NA	NA	64.4	NA	NA
<i>Stachybotrys chartarum</i> <sup>a</sup>	44.8	67.1	79.4	66.1	NA	NA	53.7	NA	NA	64.7	NA	NA
<i>Memnoniella echinata</i> <sup>a</sup>	44	69	75.1	45.5	NA	NA	51.8	NA	56.2	66.2	NA	NA
<i>Paramyrothecium roridum</i> <sup>a</sup>	45.8	65.2	75.9	67.5	NA	50	53	NA	58.7	66.9	NA	NA
<i>Fusarium sporotrichioides</i> <sup>a</sup>	85.5	87.7	91	85.8	59.2	97.7	88.6	90.9	79.2	89.3	64.5	65.4

<i>Fusarium flagelliforme</i> <sup>a</sup>	74.2	86.8	85.9	66.5	56.4	81.8	76.5	83.7	NA	84.5	67.9	67.9
<i>Calonectria fujianensis</i>	72.9	85.8	62.9	65.4	58.9	63.4	74	84.8	74.7	82.9	58.7	58.7
<i>Calonectria aciculata</i>	73.3	85.8	63	65.4	59.4	66.7	74	85	75	82.9	58.7	58.7
<i>Trichothecium ovalisporum</i>	45.2	NA	73.6	48.8	NA	NA	56.9	NA	54.3	64.1	NA	NA
<i>Trichothecium sympodiale</i> <sup>a</sup>	45.2	NA	73.6	48.8	NA	NA	56.9	NA	54.3	64.1	NA	NA
<i>Trichothecium roseum</i> <sup>a</sup>	45.8	70.8	75.7	64.7	NA	NA	58.8	NA	51.9	64.1	NA	NA
<i>Monosporascus can-nonballus</i>	48.3	69.1	78	67.8	NA	NA	53.4	NA	NA	64.4	NA	NA
<i>Monosporascus ibericus</i>	48.6	68.8	75	42.4	NA	NA	53.4	NA	NA	65.8	NA	NA
<i>Aspergillus alliaceus</i>	45.7	73.9	66.9	67.3	NA	NA	51.4	NA	53.4	62.9	NA	NA
<i>Aspergillus hancockii</i> <sup>a</sup>	46.5	73.4	65.7	68.3	NA	NA	50.8	NA	53.7	60.9	NA	NA
<i>Endocarpon pusillum</i>	42.3	56.2	66.7	NA	NA	NA	NA	NA	NA	54.5	NA	NA
<i>Microcyclospora tardicrescens</i> <sup>a</sup>	42.2	69.4	71.9	63.7	NA	NA	42.8	NA	56.4	58	NA	NA
Mean	52.9	72.7	72.8	59.3	57.8	63.6	59.2	80	60.3	67.3	66.2	68.1

<sup>a</sup> Species have been previously reported to produce trichothecenes.

<sup>b</sup> *TRI1* and *TRI101* are located outside the *TRI* cluster in some fungi but in the cluster in other fungi. In *F. graminearum*, *F. sporotrichioides* and most other *Fusarium* species that have been examined, *TRI1* and *TRI101* are at loci that are distinct from one another and the *TRI* cluster. Likewise, *TRI1* is located at a locus that is distinct from the *TRI* cluster in the two *Calonectria* species, but *TRI1* is in the *TRI* cluster in *F. flagelliforme*. *TRI101* is also in the *TRI* cluster in *F. flagelliforme*, *A. lacanii*, *B. bassiana* and the two *Calonectria* species.

<sup>c</sup> Although the *B. bassiana* and *A. lacanii* *TRI101* orthologs share low percent identity levels with the *F. graminearum* ortholog, the *B. bassiana* and *F. graminearum* *TRI101*-encoded enzymes have the same function in trichothecene biosynthesis (i.e., trichothecene-3-O-acetyltransferase activity) (Proctor et al., 2018). It is presumed that the *A. lacanii* ortholog has this same function because it shares 79.6% amino acid sequence identity with the *B. bassiana* ortholog, and both orthologs are at the same location in their respective *TRI* clusters.

**Table S2.** Primers used in this study.

Gene name	Primer sequence (5'-3')
<b>For gene expression</b>	
<i>TRI3</i> -RT-F	CTTGCAGGGATATCAAGAAATGTTACGA
<i>TRI3</i> -RT-R	CTCGCCTGTTGTAGTTCGCTTGATT
<i>TRI4</i> -RT-F	TCGAGGCACAACAGAAGGGTATCC
<i>TRI4</i> -RT-R	AATGTCGGCCTTGGTGGTGTC
<i>TRI5</i> -RT-F	TCTATGGCCCAAGGACCTGT
<i>TRI5</i> -RT-R	ACGCTCATCGTCGAATTCCT
<i>TRI6</i> -RT-F	TAACCACATCGTCGGGACTG
<i>TRI6</i> -RT-R	GCCGACTTCTTGCAGGTCTT

<i>TRI8-RT-F</i>	GCTACTTTGGACTCAATTCG
<i>TRI8-RT-R</i>	CATACTGTACYGCAAGTTCTG
<i>TRI10-RT-F</i>	GTGGCCGGGACGCTTCAAT
<i>TRI10-RT-R</i>	ATCCGTCAAGTCTTCCCATCTCAT
<i>TRI11-RT-F</i>	AAGTACTTCACCCGACCAAACGAC
<i>TRI11-RT-R</i>	CGGCAAGGCGAATGTCAAAC
<i>TRI12-RT-F</i>	TCCACAGTCATCTTTCCCCAGTCT
<i>TRI12-RT-R</i>	CTCCCAGTGCCATAGCGAAGTAGT
<i>TRI14-RT-F</i>	CTGGGAACCTACGCATCAAAC
<i>TRI14-RT-R</i>	CGAATGAGCTGCCCAATGATGT
<i>β-Tubulin-RT-F</i>	CTTCGTCGAGTGGATTCTAAC
<i>β-Tubulin-RT-R</i>	TCCTGGATAGAGGTGGAGTTT

**For biomass**

<i>FgTRI6-RT-F</i>	TAACCACATCGTCGGGACTG
<i>FgTRI6-RT-R</i>	GCCGACTTCTTGCAAGGTCTT
<i>Ta_GAPDH_F</i>	TTGCTCTGAACGACCATTTTC
<i>Ta_GAPDH_R</i>	GACACCATCCACATTIATTCTTC

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