

Mycotoxin Occurrence in 2021 US Corn Ingredients



MAY 2022

MYCOTOXIN *monthly*



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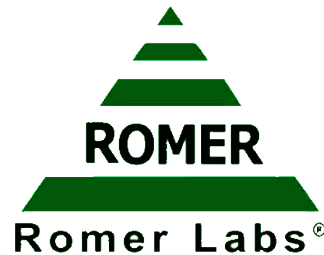
DSM

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Mycotoxins & Analysis



LC-MS/MS



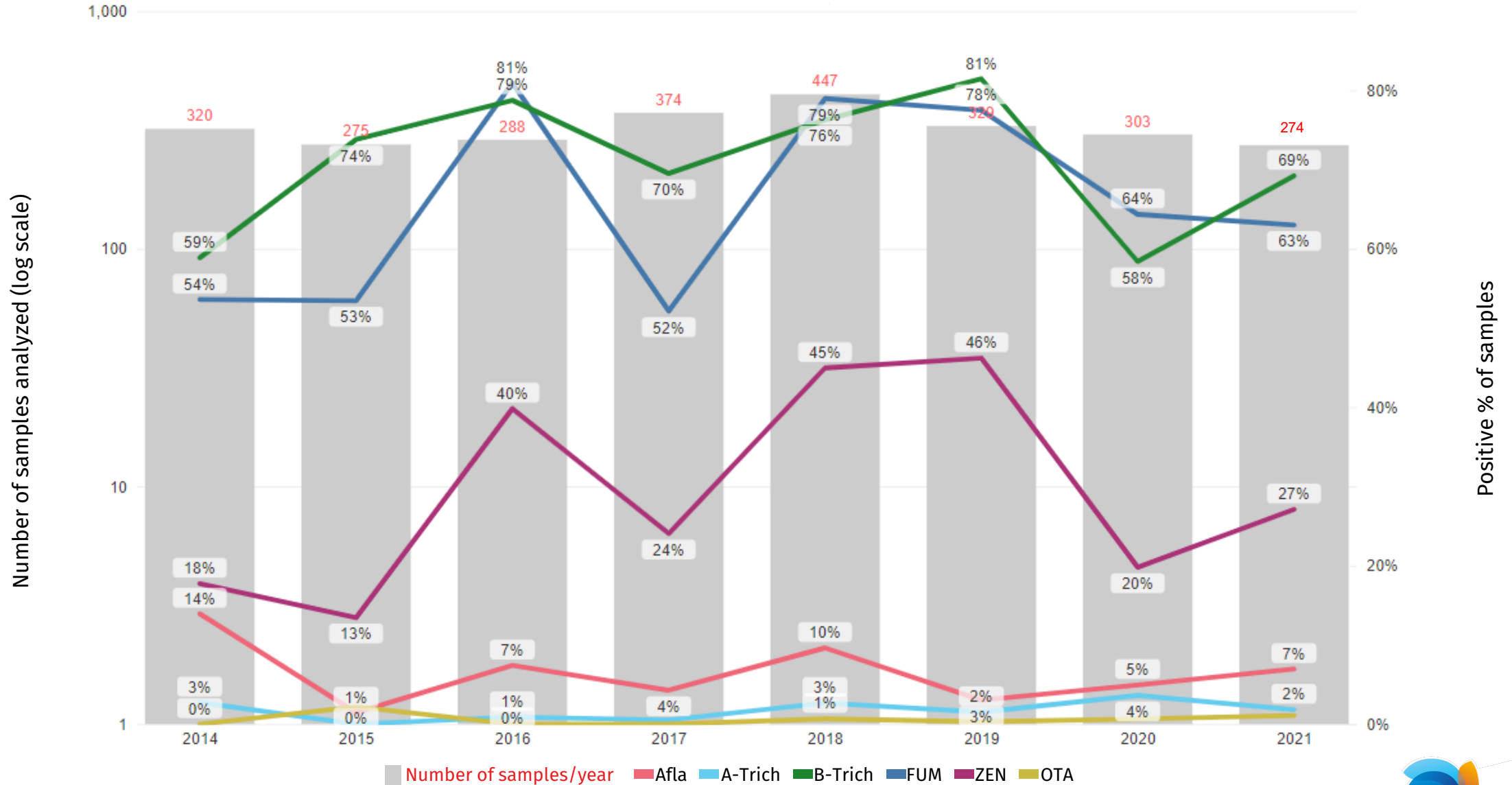
The survey results represent samples sent in for surveillance testing only and does not include any sample submitted following clinical signs.

Mycotoxin Group*	Mycotoxins	Limit of Detection (ppb)
Aflatoxins (Afla)	Aflatoxin B1	1.3
	Aflatoxin B2	1.2
	Aflatoxin G1	1.1
	Aflatoxin G2	1.6
A-Trichothecenes (A-Trich)	T-2 Toxin	100.0
	HT-2 Toxin	100.0
	Neosolaniol	100.0
	Diacetoxyscirpenol (DAS)	100.0
B-Trichothecenes (B-Trich)	Deoxynivalenol (DON/Vomitoxin)	100.0
	Acetyldeoxynivalenol (AcDON)	100.0
	Nivalenol (NIV)	100.0
	Fusarenon X (FusX)	100.0
Fumonisin (FUM)	Fumonisin B1	100.0
	Fumonisin B2	100.0
	Fumonisin B3	100.0
Zearalenone (ZEN)	Zearalenone (ZEN)	51.7
Ochratoxin A (OTA)	Ochratoxin A (OTA)	1.1

*Results are reported as the summation of mycotoxin levels detected per Mycotoxin Group. (For example, B-Trich represents total contamination detected for DON + AcDON + NIV + FusX)

2021 US Corn (as-fed basis)

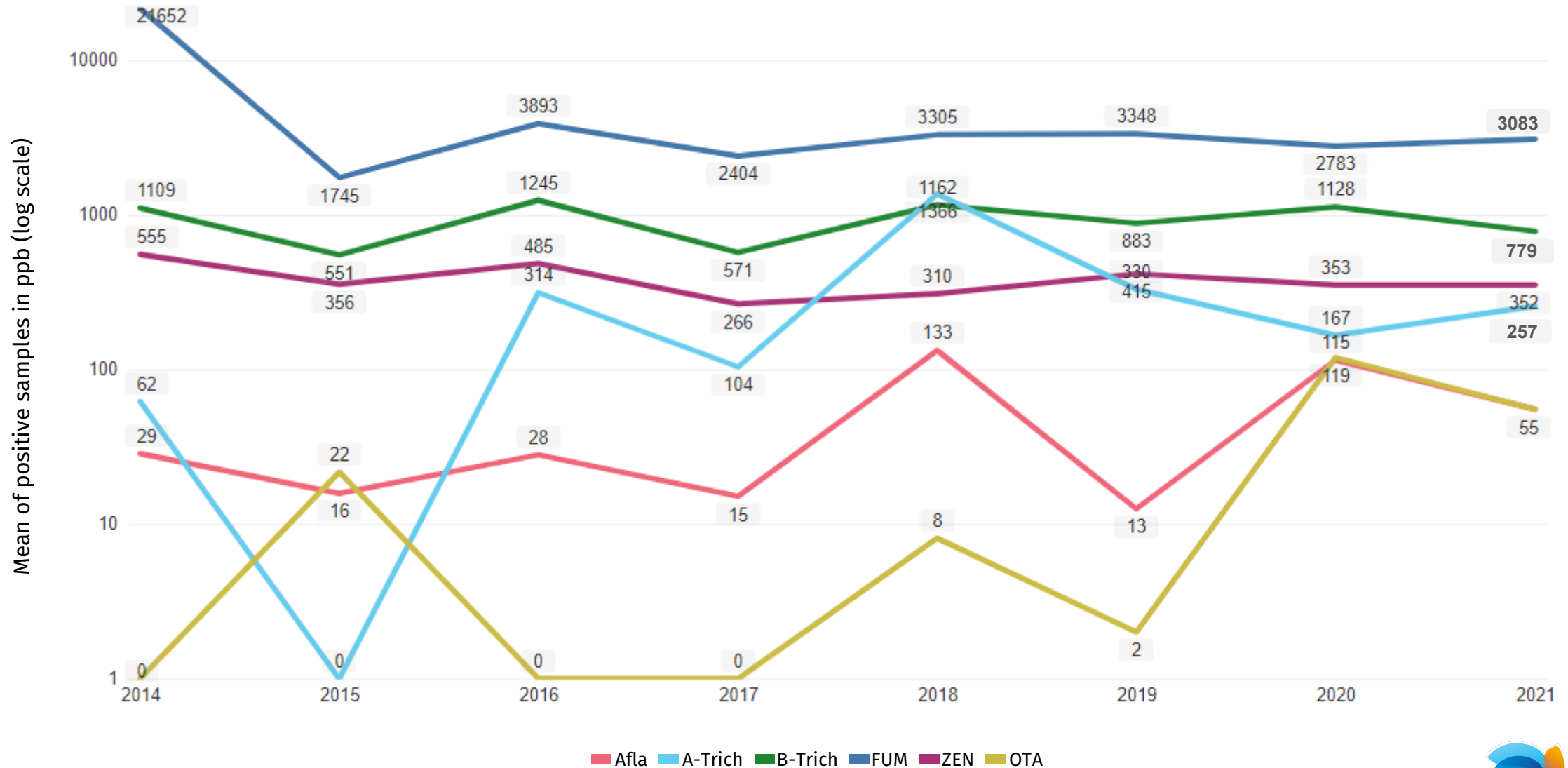
Occurrence Trend in 2021 US Corn



Based on the samples analyzed.



Mean of Positives Trend in 2021 US Corn

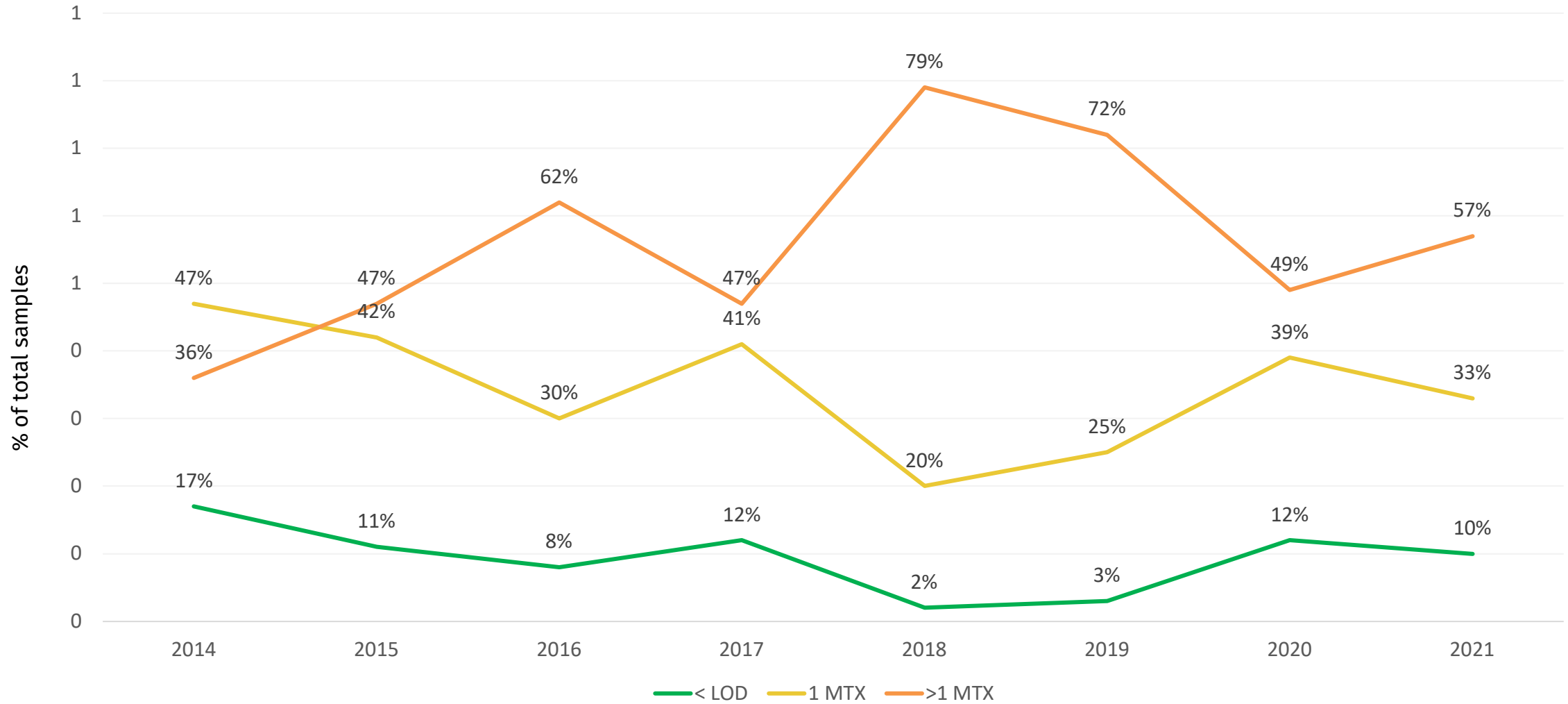


— Afla — A-Trich — B-Trich — FUM — ZEN — OTA

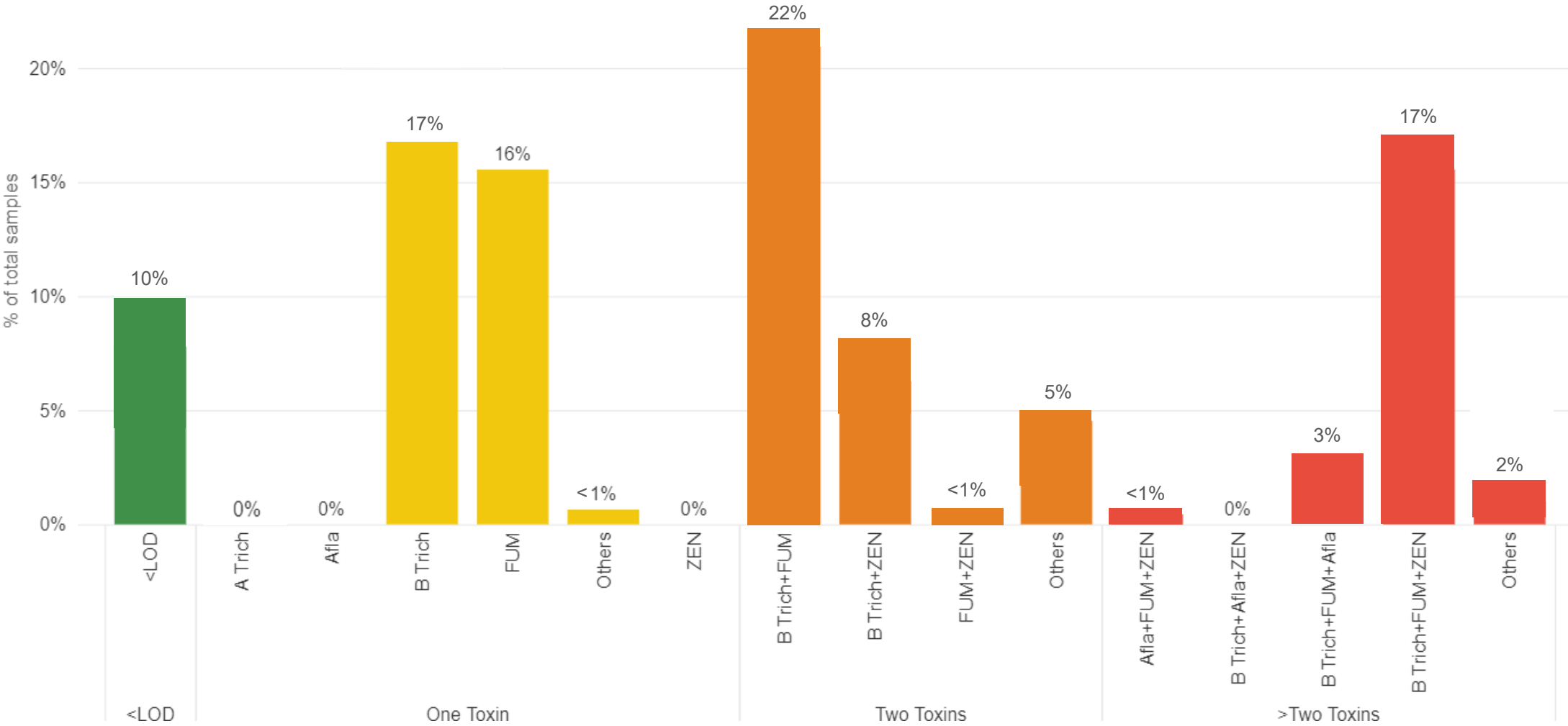
Based on the samples analyzed.



Co-occurrence Trend in 2021 US Corn



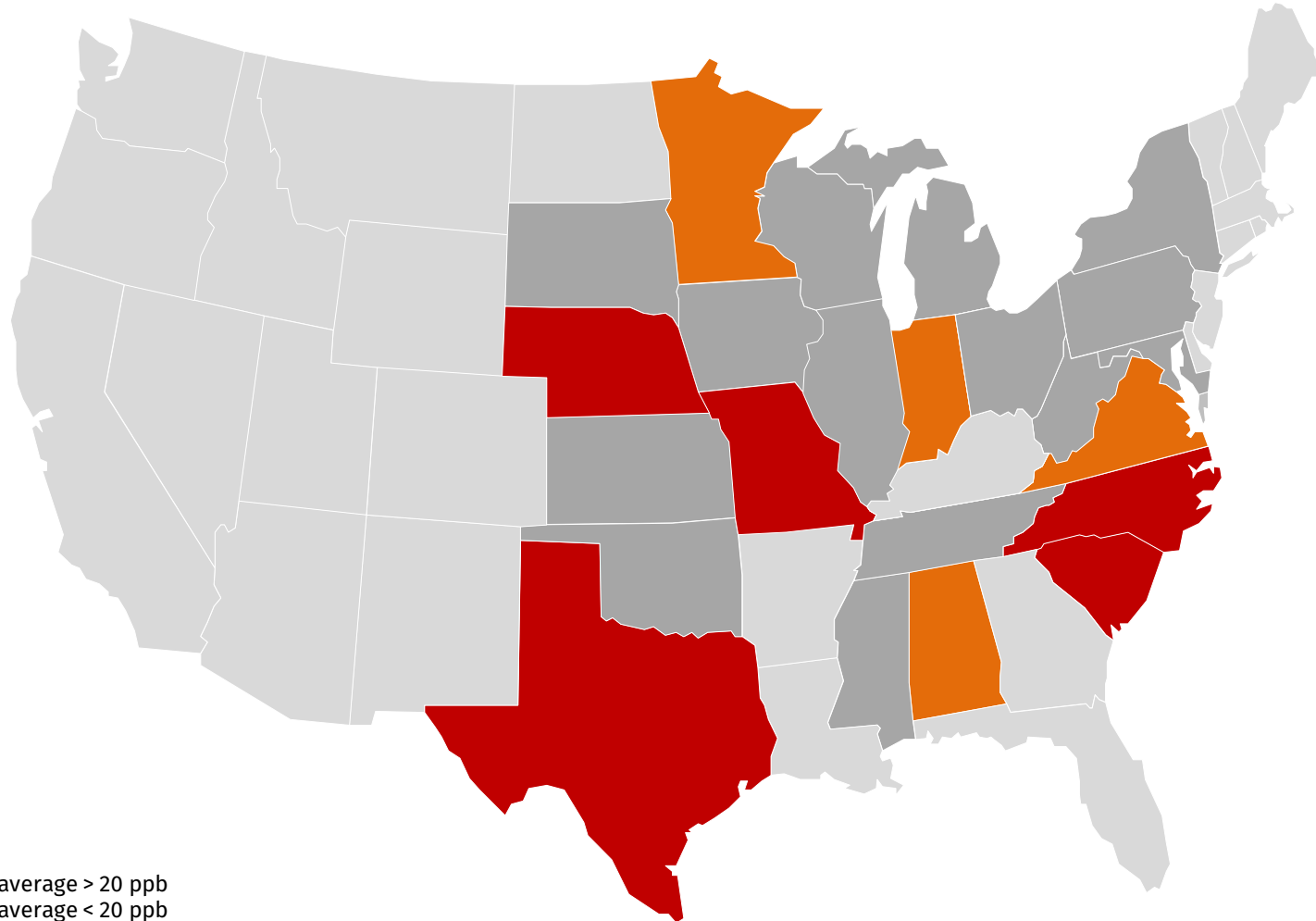
Co-occurrence Profile in 2021 US Corn



Based on the samples analyzed.



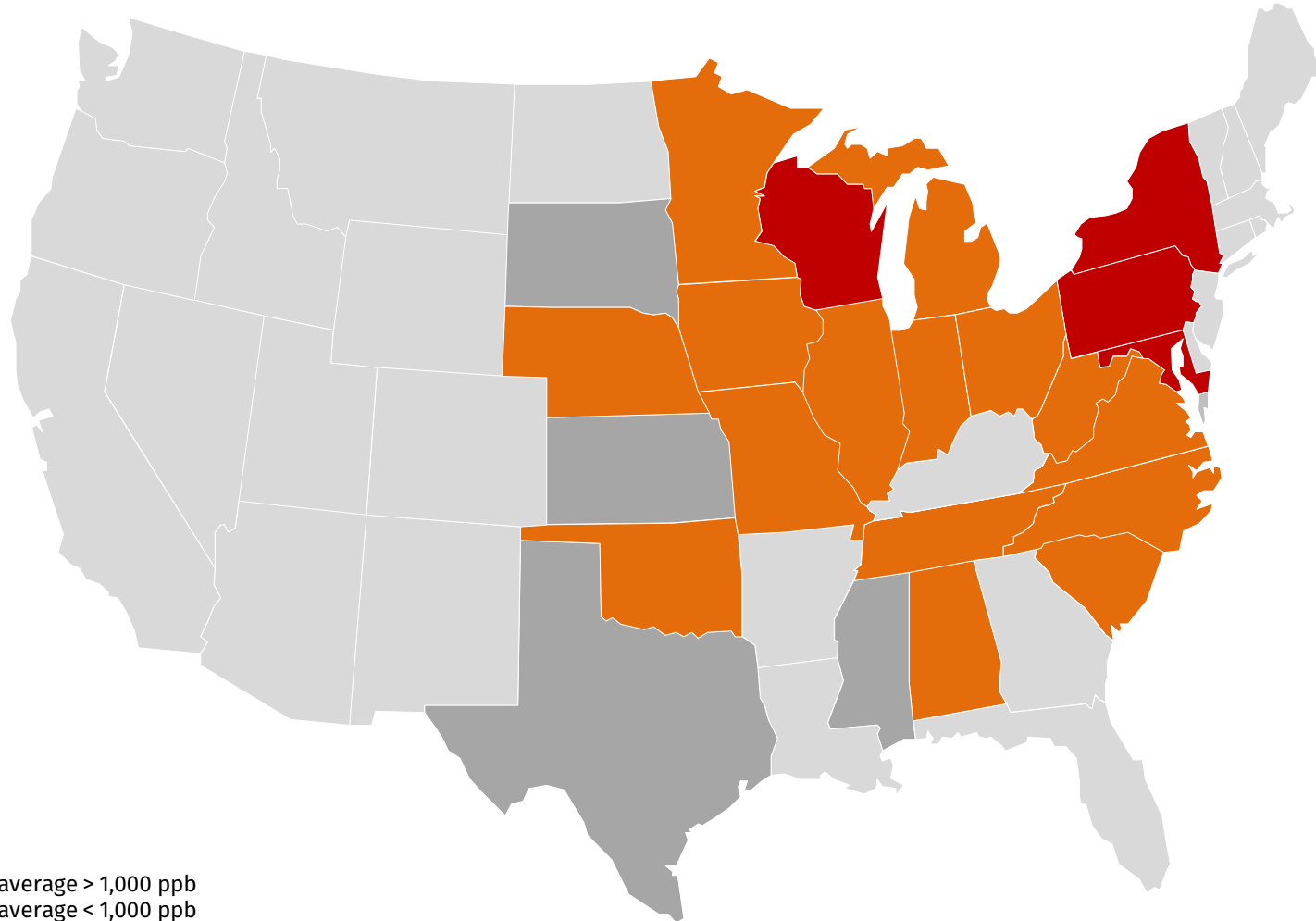
2021 Corn Risk by State – Afla



- State with average > 20 ppb
- State with average < 20 ppb
- State with samples < LOD (1 ppb)
- No sample submitted

State	Number of Samples	% Positive Samples	Avg of Positive Samples
NC	23	35	110
NE	14	7	37
SC	6	33	28
MO	20	5	25
TX	4	25	21
AL	22	9	12
IN	15	7	4
VA	9	22	2
MN	23	4	2
IA	21	0	0
IL	21	0	0
KS	3	0	0
MD	3	0	0
MI	15	0	0
MS	3	0	0
NY	1	0	0
OH	20	0	0
OK	3	0	0
PA	3	0	0
SD	5	0	0
TN	5	0	0
WI	34	0	0
WV	1	0	0

2021 Corn Risk by State – B-Trich

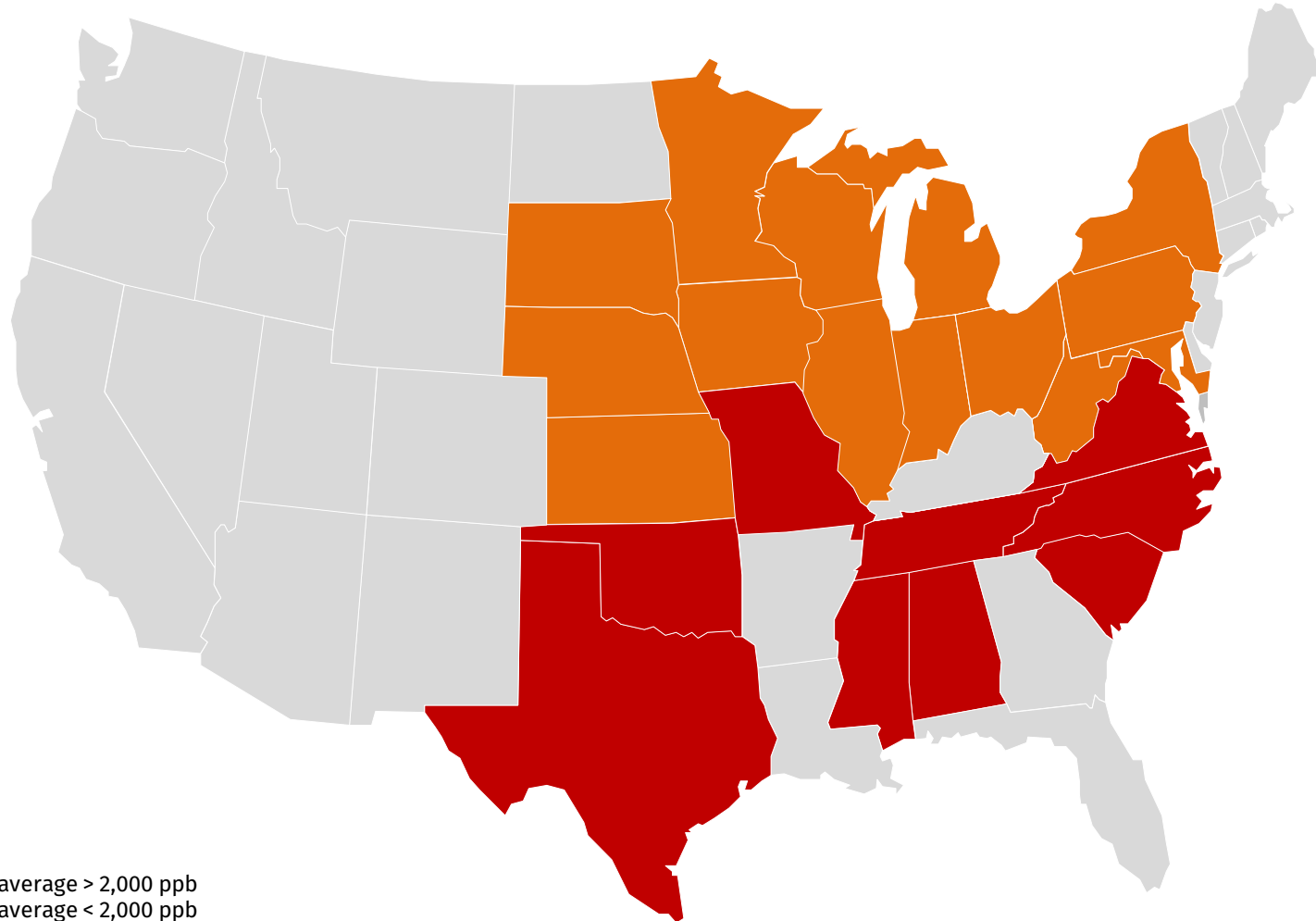


- State with average > 1,000 ppb
- State with average < 1,000 ppb
- State with samples < LOD (100 ppb)
- No sample submitted

State	Number of Samples	% Positive Samples	Avg of Positive Samples
PA	3	100	2624
NY	1	100	1726
WI	34	91	1447
MD	3	100	1193
OH	20	85	999
MI	15	100	995
IN	15	87	672
NC	23	48	669
IL	21	90	559
IA	21	95	523
VA	9	89	508
TN	5	100	475
MO	20	60	403
NE	14	79	371
MN	23	22	312
AL	22	45	249
SC	6	50	246
WV	1	100	167
OK	3	33	117
KS	3	0	0
MS	3	0	0
SD	5	0	0
TX	4	0	0



2021 Corn Risk by State – FUM

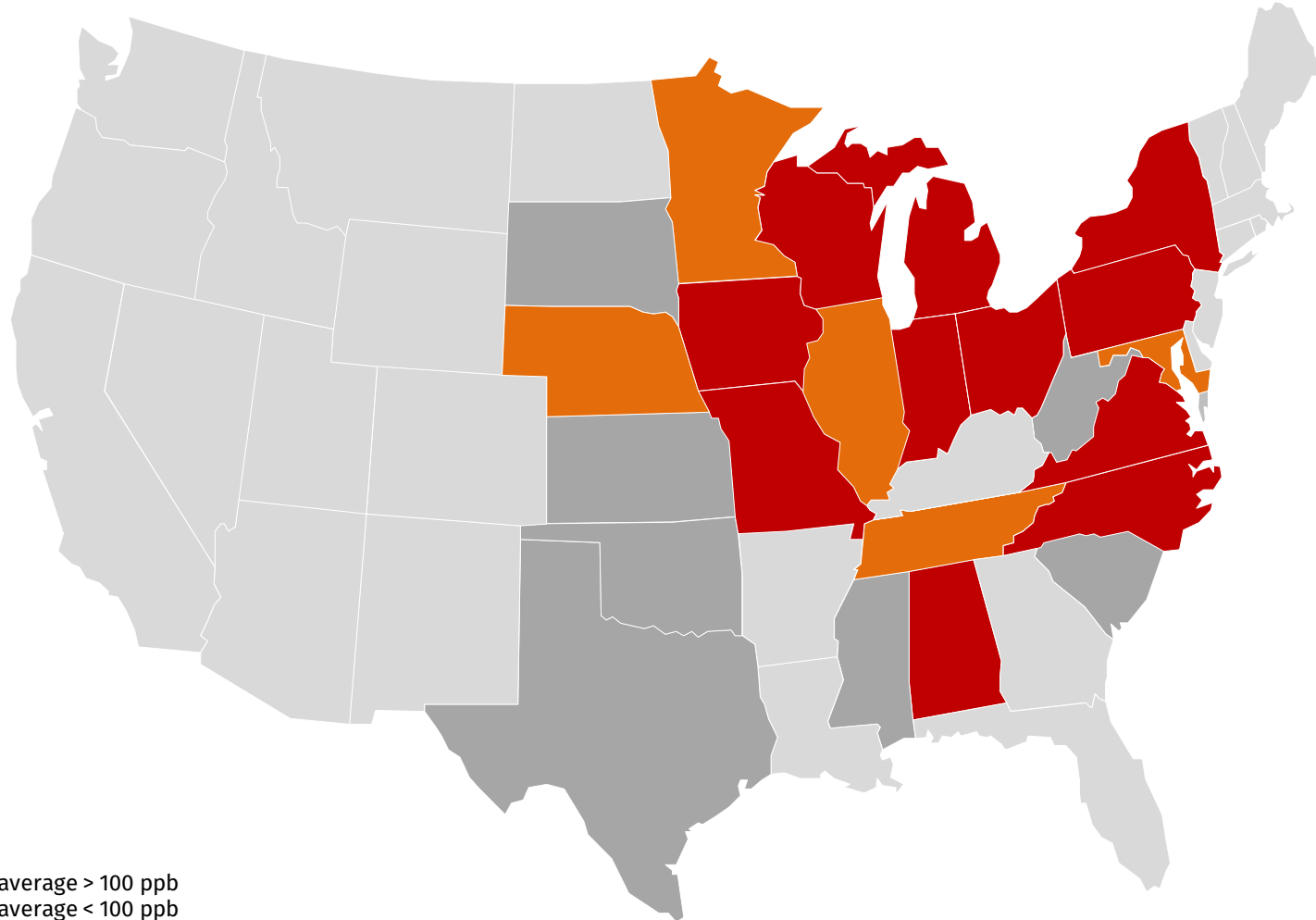


- State with average > 2,000 ppb
- State with average < 2,000 ppb
- State with samples < LOD (100 ppb)
- No sample submitted

State	Number of Samples	% Positive Samples	Avg of Positive Samples
MO	20	95	8558
NC	23	87	7470
TN	5	100	5840
MS	3	100	5667
OK	3	100	4200
TX	4	100	3000
VA	9	100	2844
SC	6	100	2467
AL	22	91	2455
IN	15	53	1525
KS	3	100	1467
NE	14	79	1091
MN	23	22	1060
WV	1	100	700
MD	3	67	650
IL	21	57	633
MI	15	47	629
NY	1	100	600
IA	21	43	567
OH	20	55	364
PA	3	33	300
WI	34	35	258
SD	5	20	100



2021 Corn Risk by State – ZEN



- State with average > 100 ppb
- State with average < 100 ppb
- State with samples < LOD (51.7 ppb)
- No sample submitted

State	Number of Samples	% Positive Samples	Avg of Positive Samples
MI	15	53	1620
NY	1	100	522
AL	22	18	336
WI	34	38	306
PA	3	67	278
IN	15	40	247
OH	20	45	197
MO	20	5	182
VA	9	33	166
NC	23	30	125
IA	21	33	123
IL	21	24	97
MD	3	33	88
MN	23	4	77
TN	5	60	69
NE	14	21	64
KS	3	0	0
MS	3	0	0
OK	3	0	0
SC	6	0	0
SD	5	0	0
TX	4	0	0
WV	1	0	0

Mycotoxin Survey Summary – 2021 US Corn



90% positive vs.
88% in 2020



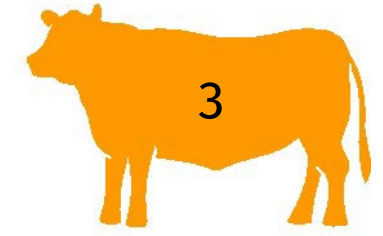
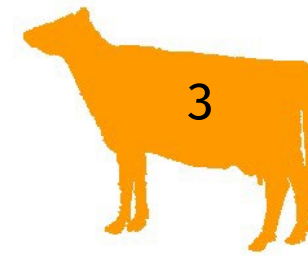
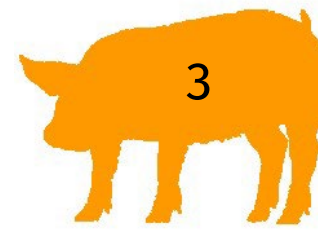
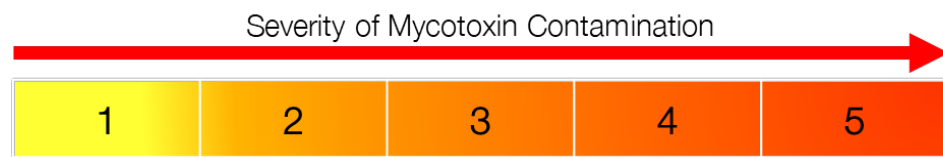
57% >1 MTX vs.
49% in 2020

B-Trich: 69% vs. 58%

FUM: 63% vs. 64%

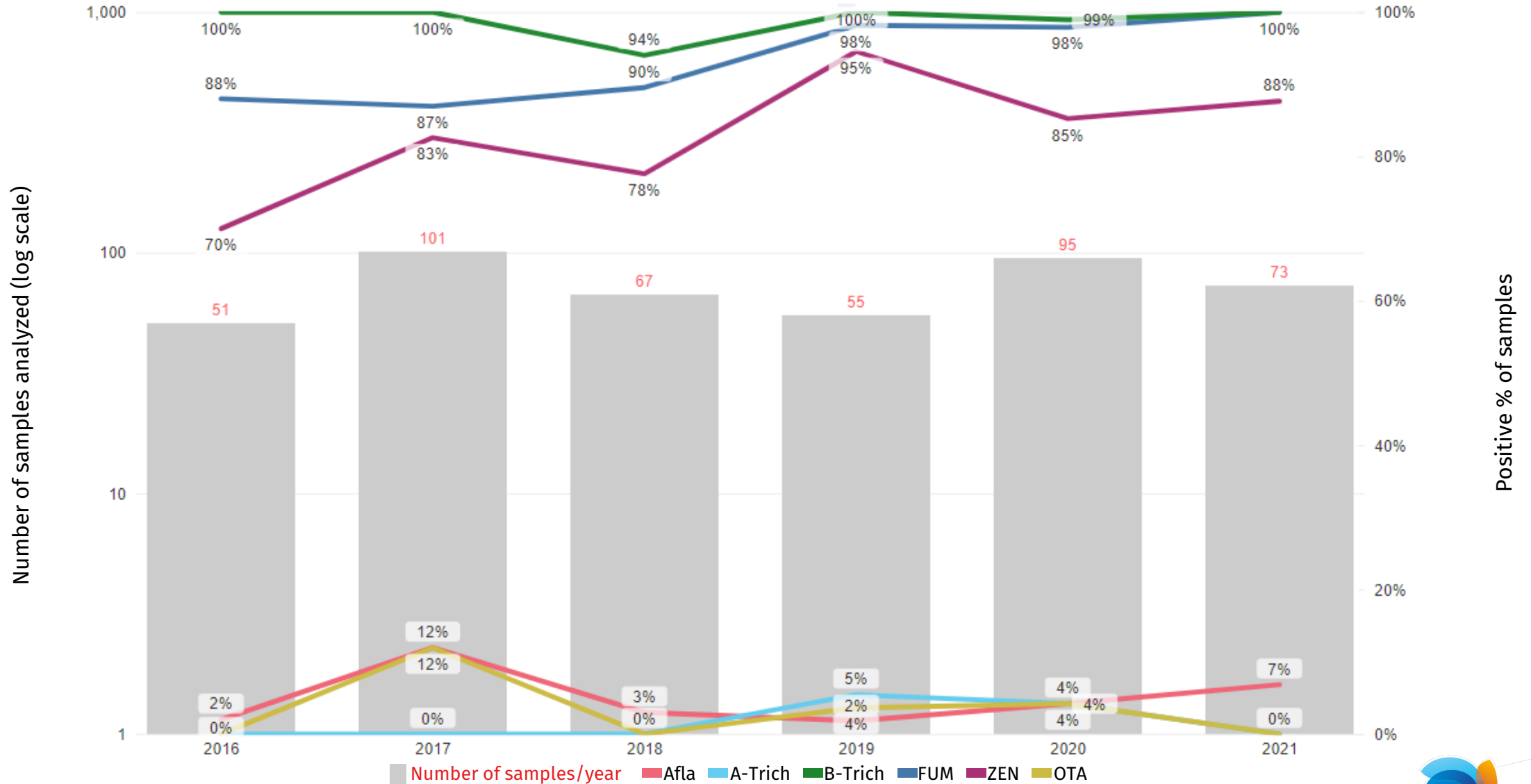
ZEN: 27% vs. 20%

Forecasted potential risk for livestock production*:

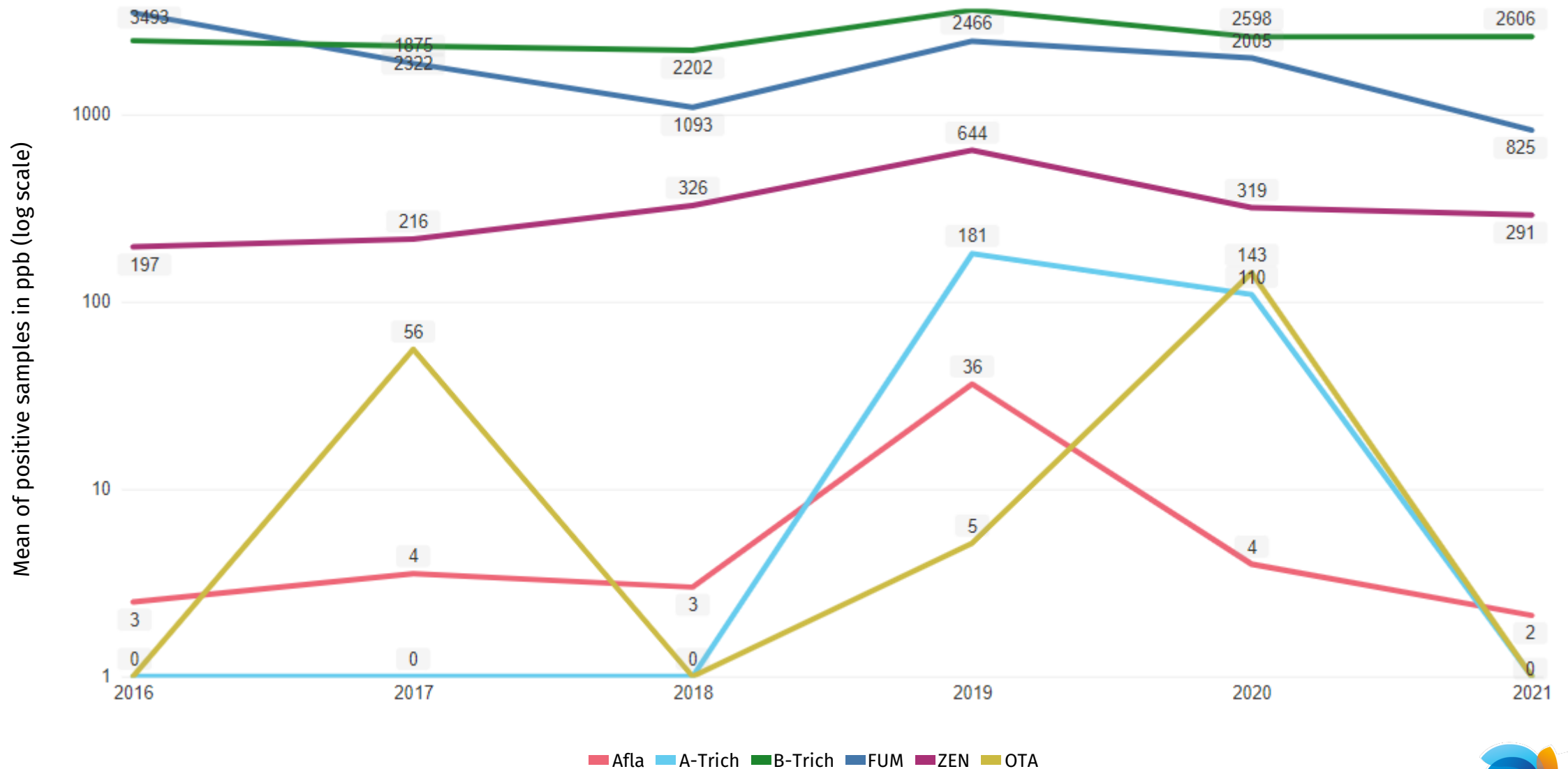


2021 US Corn By-Products (as-fed basis)

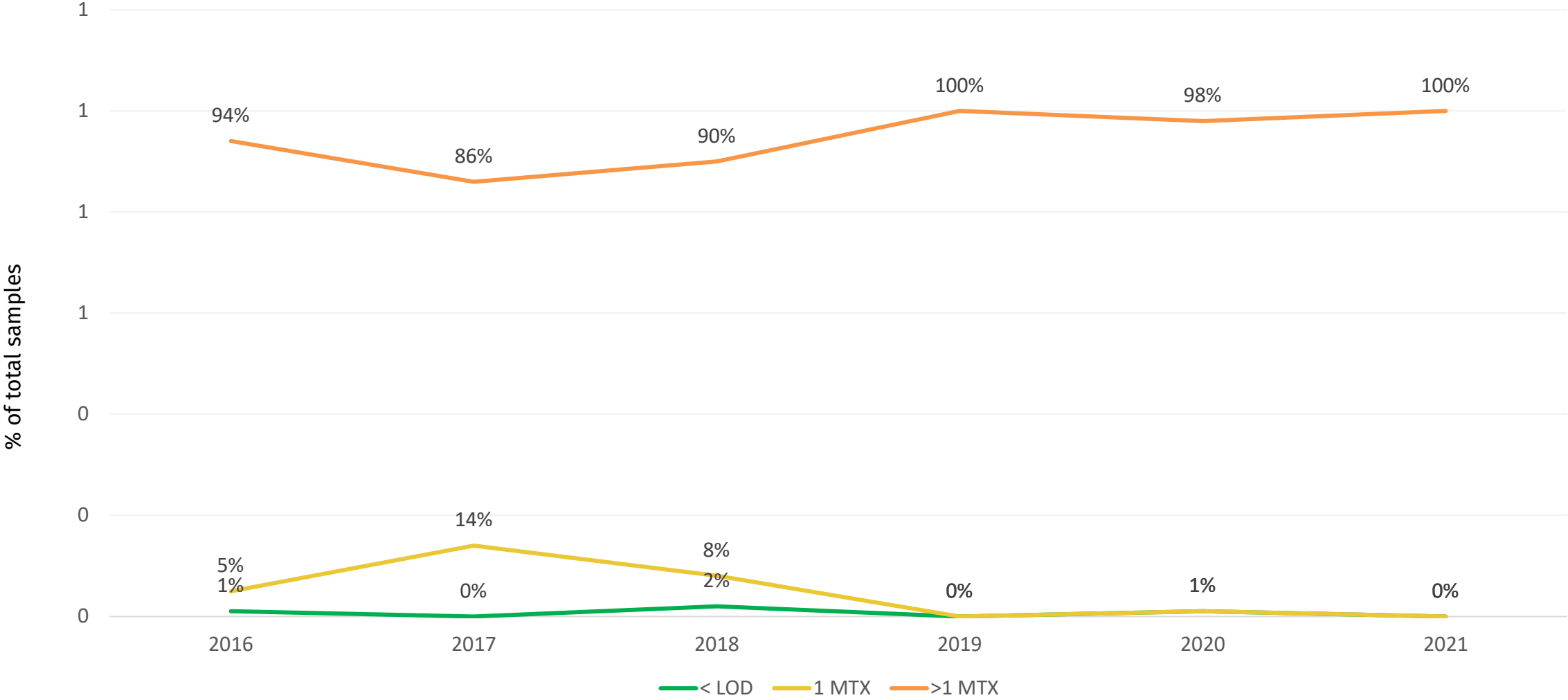
Occurrence Trend in 2021 US Corn By-Products



Mean of Positives Trend in 2021 US Corn By-Products



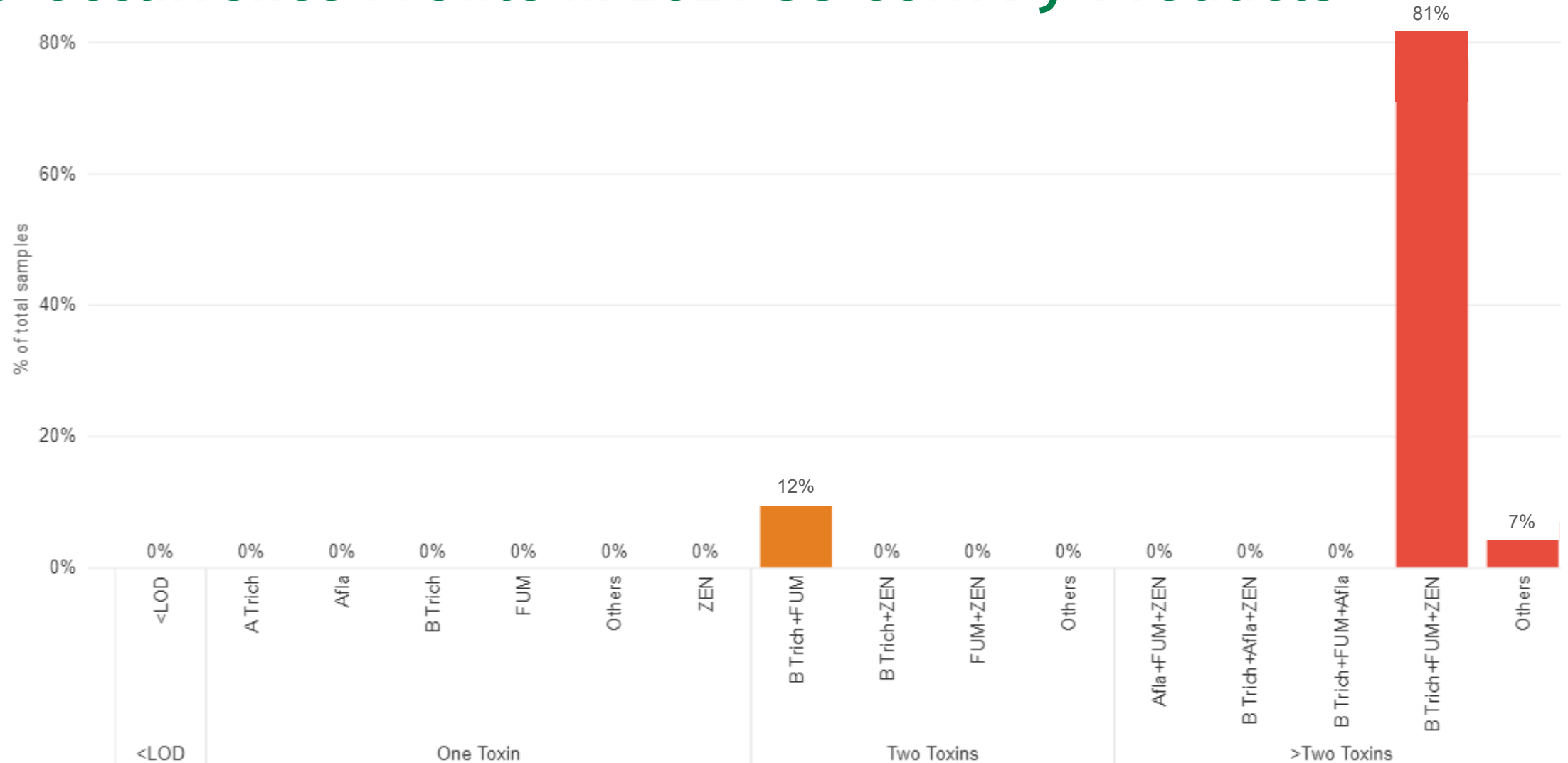
Co-occurrence Trend in 2021 US Corn By-Products



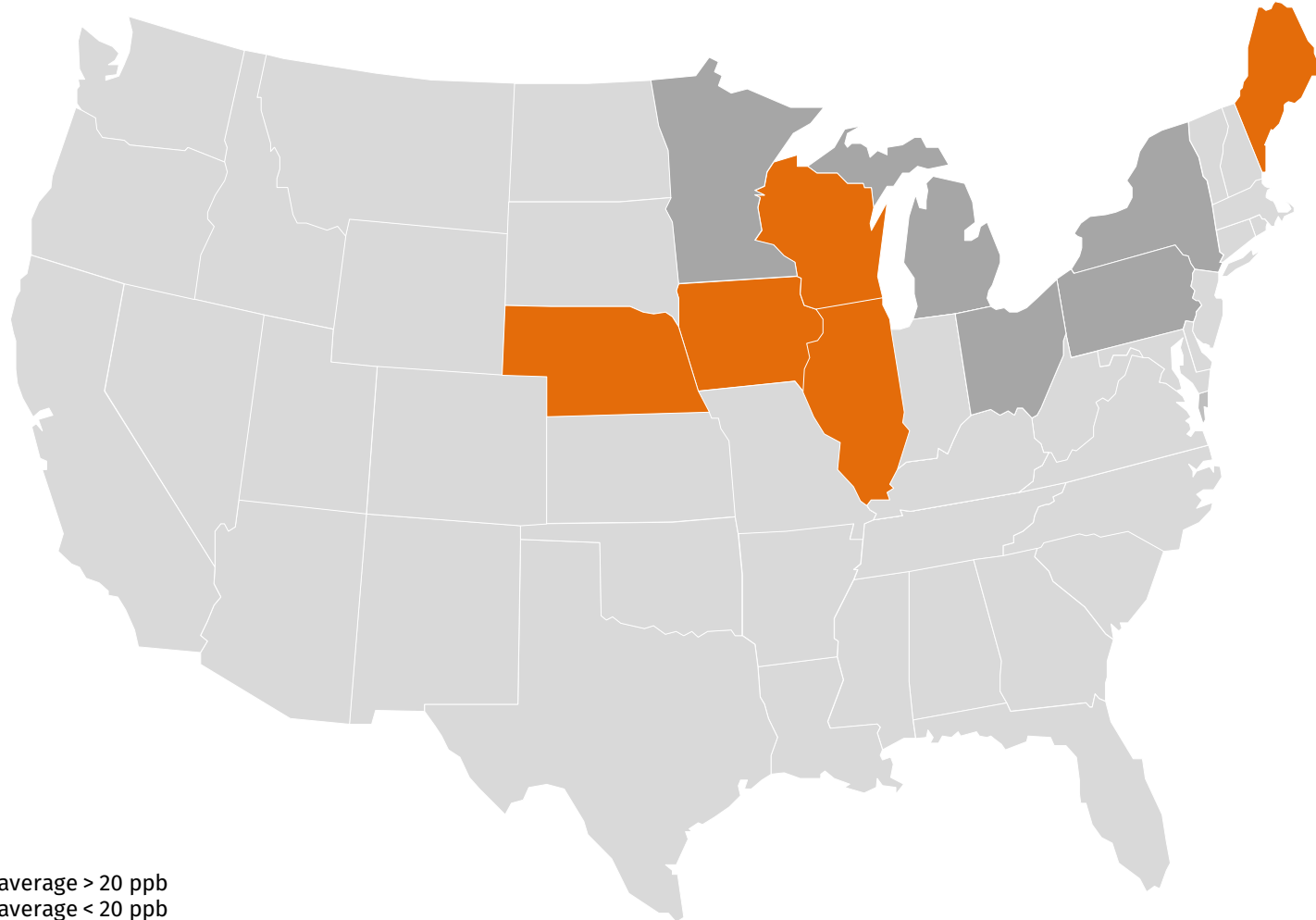
Based on the samples analyzed.



Co-occurrence Profile in 2021 US Corn By-Products



2021 Corn By-Products Risk by State – Afla

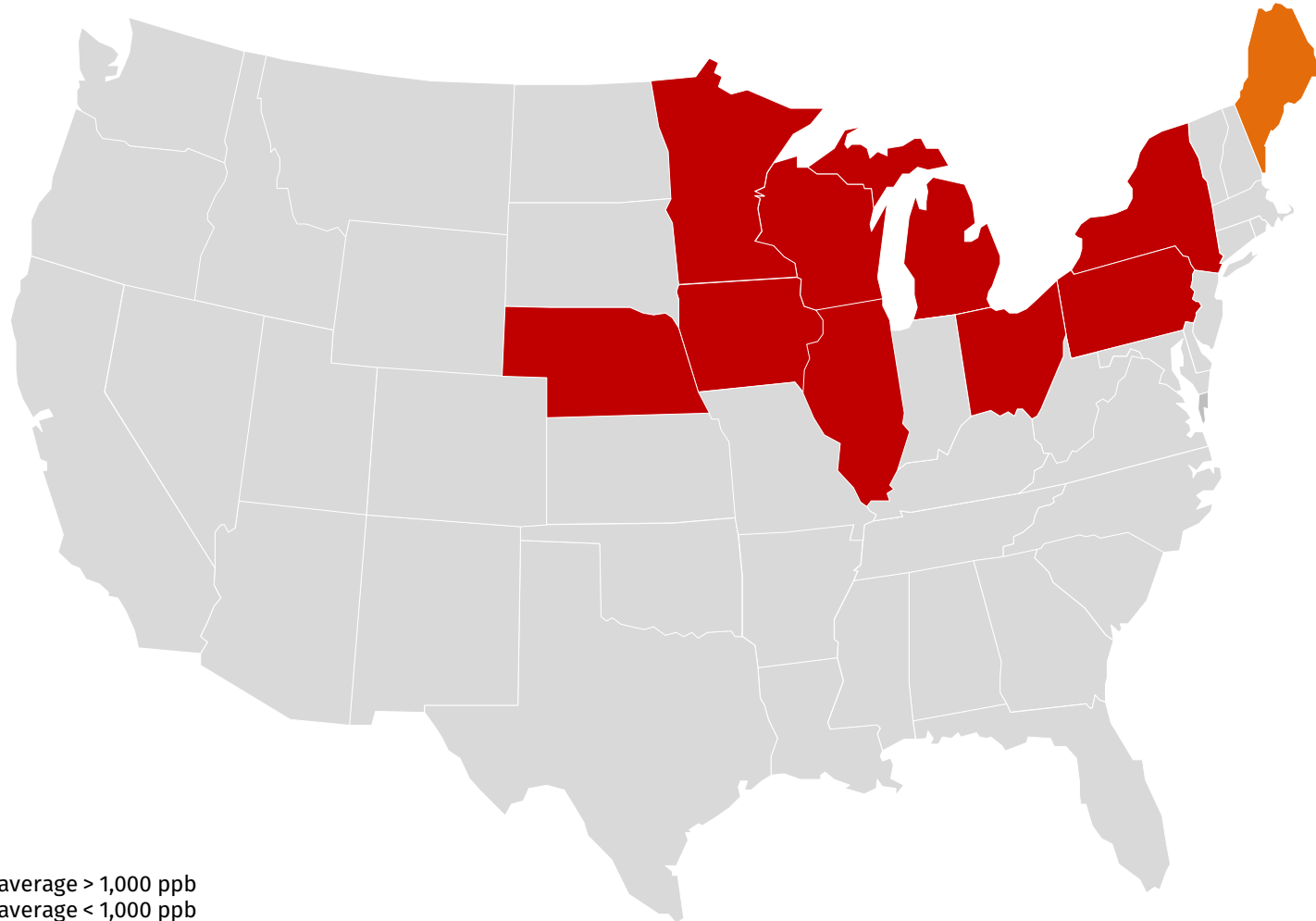


State	Number of Samples	% Positive Samples	Avg of Positive Samples
NE	3	33%	4
IA	23	4%	2
IL	12	8%	2
ME	1	100%	2
WI	21	5%	1
MI	3	0%	0
MN	2	0%	0
NY	2	0%	0
OH	4	0%	0
PA	2	0%	0

- State with average > 20 ppb
- State with average < 20 ppb
- State with samples < LOD (1 ppb)
- No sample submitted



2021 Corn By-Products Risk by State – B-Trich

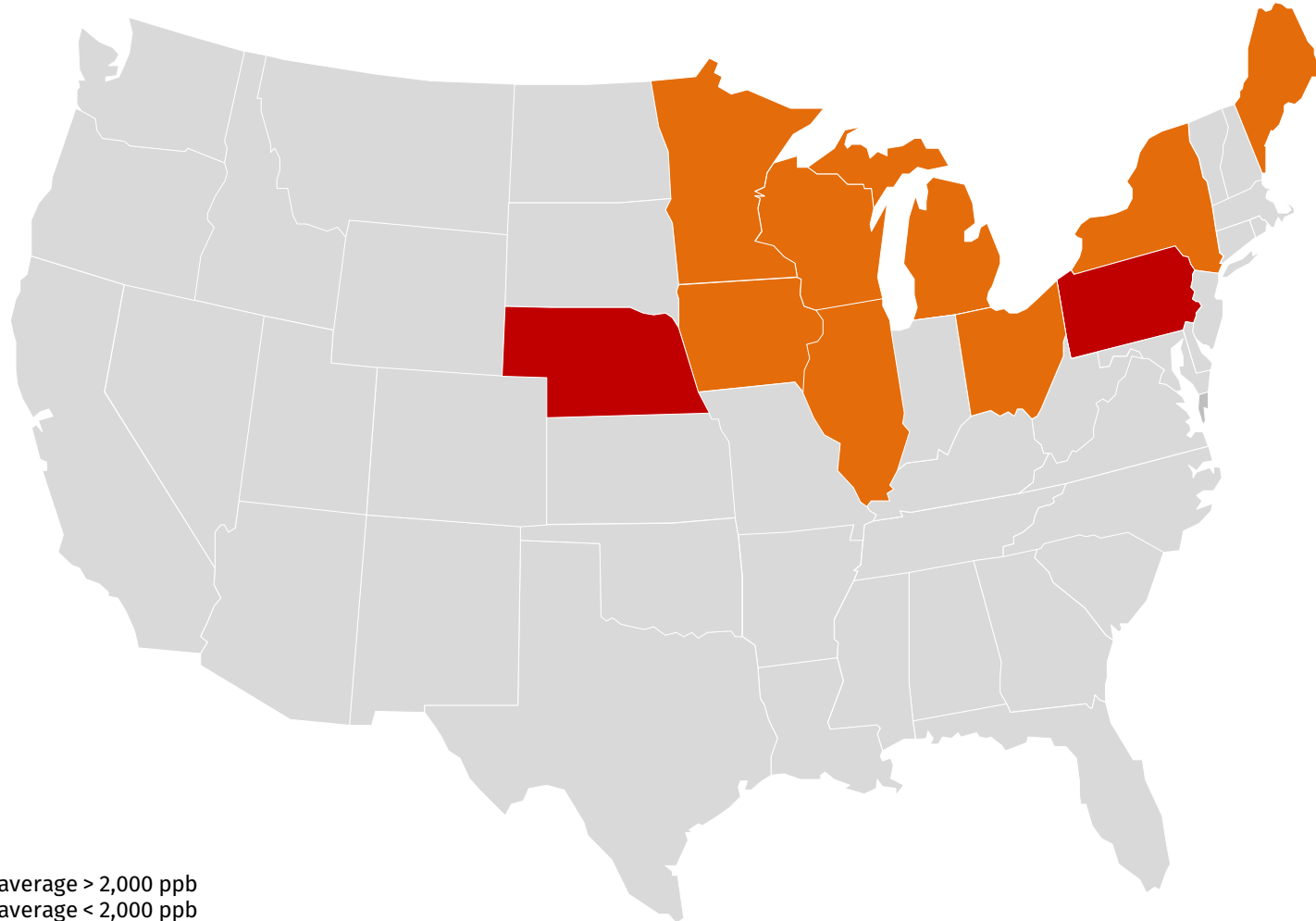


State	Number of Samples	% Positive Samples	Avg of Positive Samples
PA	2	100%	8251
OH	4	100%	5365
MI	3	100%	4109
NY	2	100%	3745
WI	21	100%	3254
NE	3	100%	2431
IL	12	100%	1560
IA	23	100%	1509
MN	2	100%	1383
ME	1	100%	662

- State with average > 1,000 ppb
- State with average < 1,000 ppb
- State with samples < LOD (100 ppb)
- No sample submitted



2021 Corn By-Products Risk by State – FUM

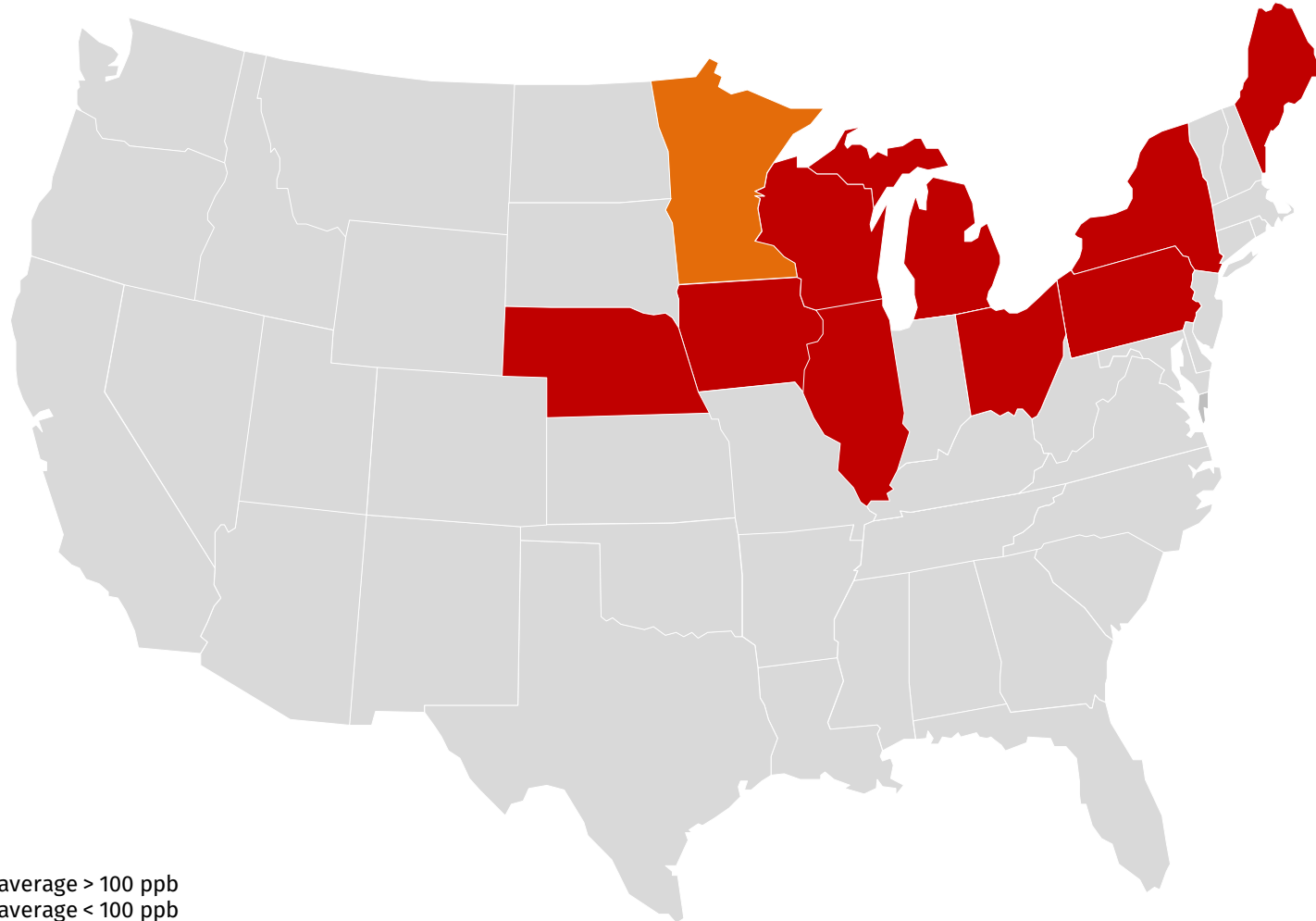


State	Number of Samples	% Positive Samples	Avg of Positive Samples
PA	2	100%	4600
NE	3	100%	2567
MI	3	100%	1167
OH	4	100%	1050
WI	21	100%	729
IL	12	100%	683
IA	23	100%	474
MN	2	100%	300
NY	2	100%	250
ME	1	100%	100

- State with average > 2,000 ppb
- State with average < 2,000 ppb
- State with samples < LOD (100 ppb)
- No sample submitted



2021 Corn By-Products Risk by State – ZEN



- State with average > 100 ppb
- State with average < 100 ppb
- State with samples < LOD (51.7 ppb)
- No sample submitted

State	Number of Samples	% Positive Samples	Avg of Positive Samples
NY	2	100%	1766
PA	2	100%	1496
MI	3	100%	367
WI	21	90%	322
OH	4	100%	230
NE	3	100%	175
IL	12	92%	119
ME	1	100%	110
IA	23	74%	106
MN	2	100%	90



Mycotoxin Survey Summary – 2021 US Corn By-Products



100% positive vs. 99% in 2020



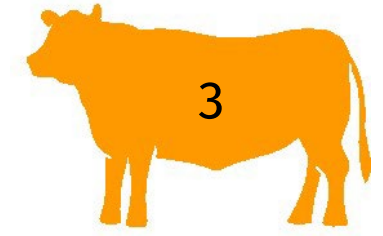
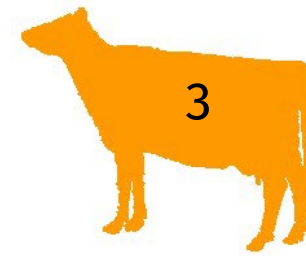
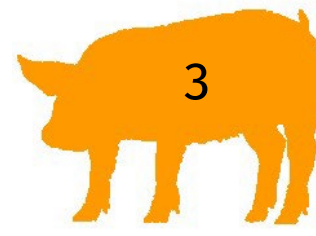
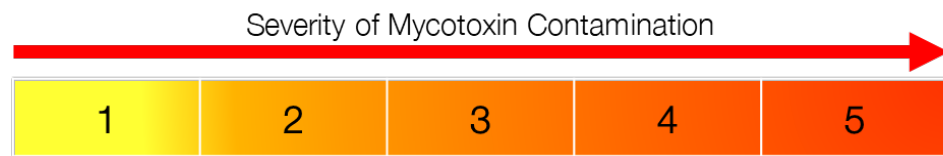
100% >1 MTX vs. 98% in 2020

B-Trich: 100% vs. 99%

FUM: 100% vs. 98%

ZEN: 88% vs. 85%

Forecasted potential risk for livestock production*:



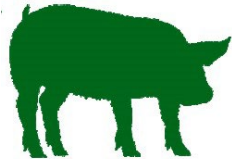
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