

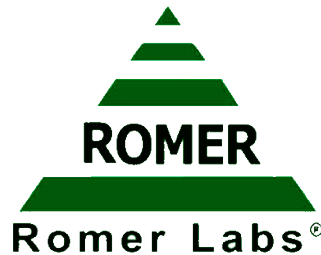
# Mycotoxin Occurrence in 2021 US Corn Ingredients



# Mycotoxins & Analysis



**LC-MS/MS**

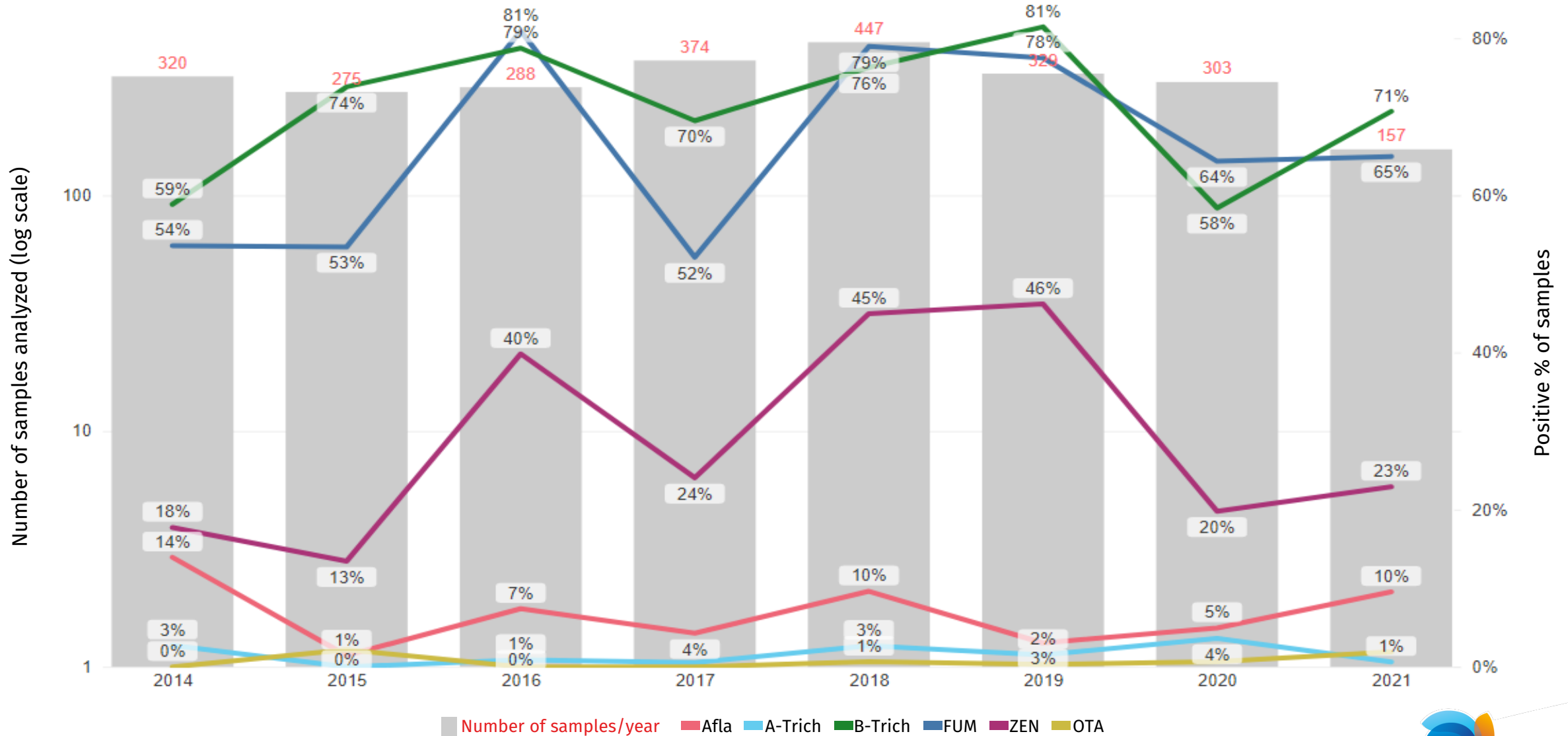


The survey results represent samples sent in for surveillance testing only and does not include any sample submitted following clinical signs.

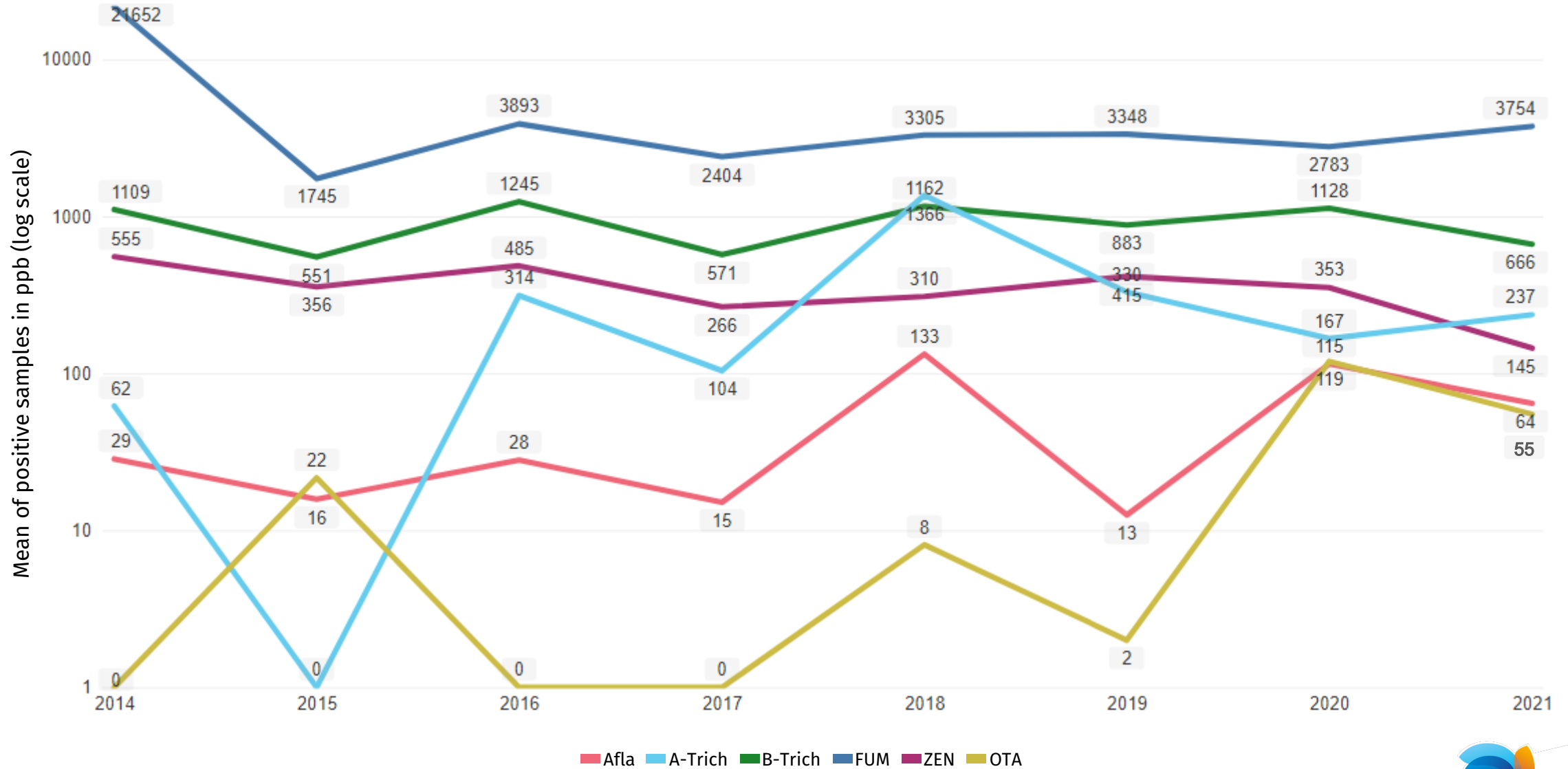
Mycotoxin Group	Mycotoxins	Limit of Detection (ppb)
Aflatoxins (Afla)	Aflatoxin B1	1.3
	Aflatoxin B2	1.2
	Aflatoxin G1	1.1
	Aflatoxin G2	1.6
A-Trichothecenes (A-Trich)	T-2 Toxin	100.0
	HT-2 Toxin	100.0
	Neosolaniol	100.0
	Diacetoxyscirpenol (DAS)	100.0
B-Trichothecenes (B-Trich)	Deoxynivalenol (DON/Vomitoxin)	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

# 2021 US Corn (as-fed basis)

# Occurrence Trend in 2021 US Corn



# Mean of Positives Trend in 2021 US Corn

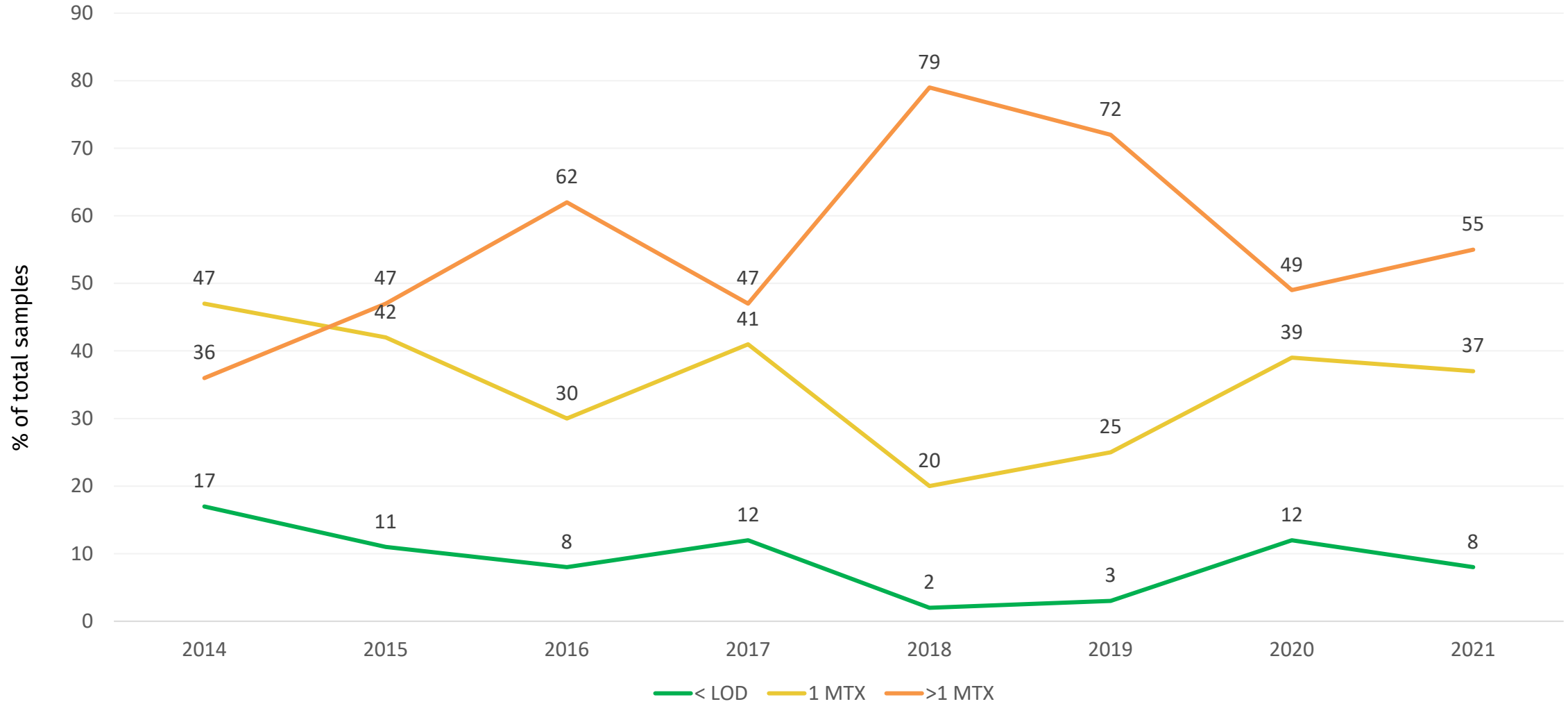


— Afla — A-Trich — B-Trich — FUM — ZEN — OTA

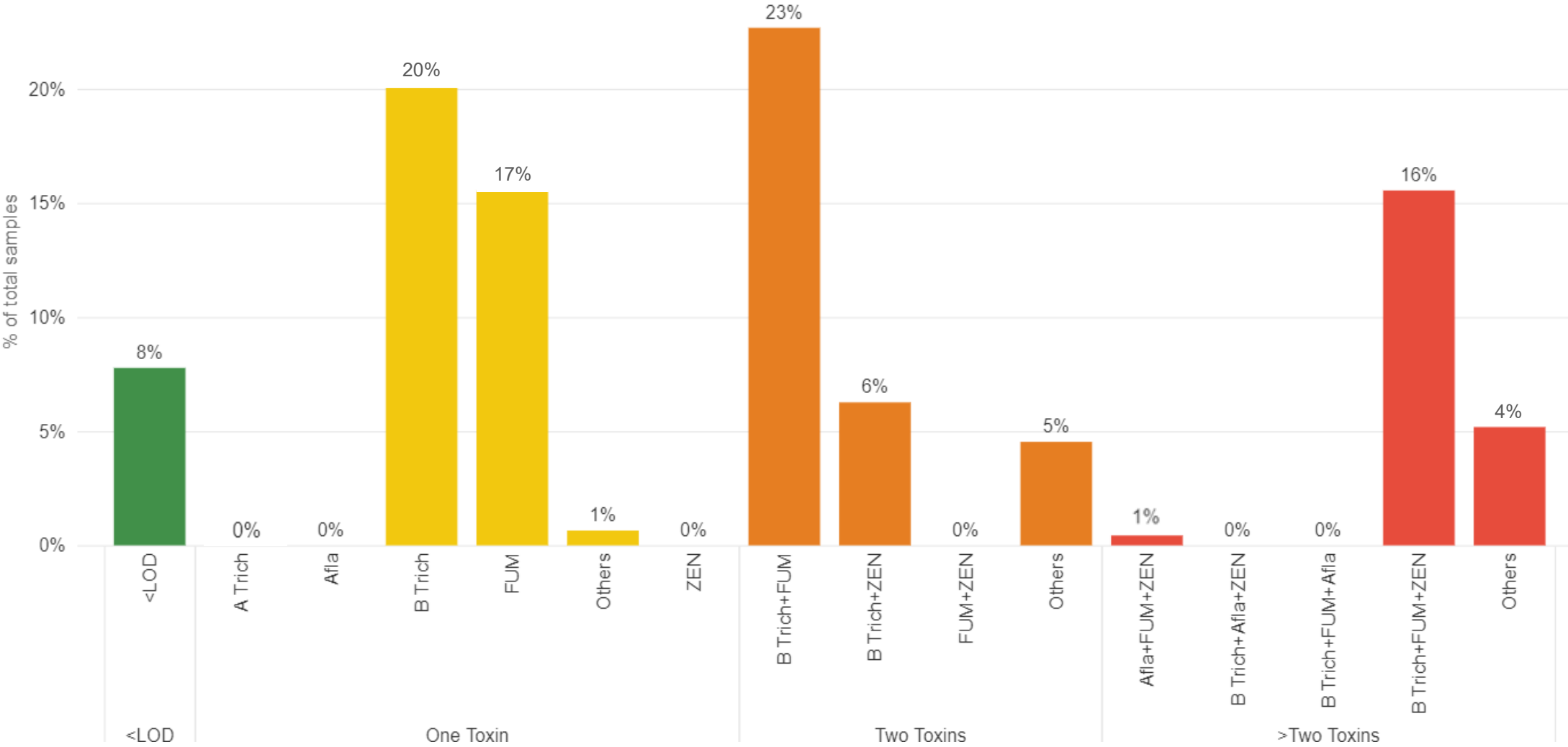
Based on the samples analyzed.



# Co-occurrence Trend in 2021 US Corn



# Co-occurrence Profile in 2021 US Corn



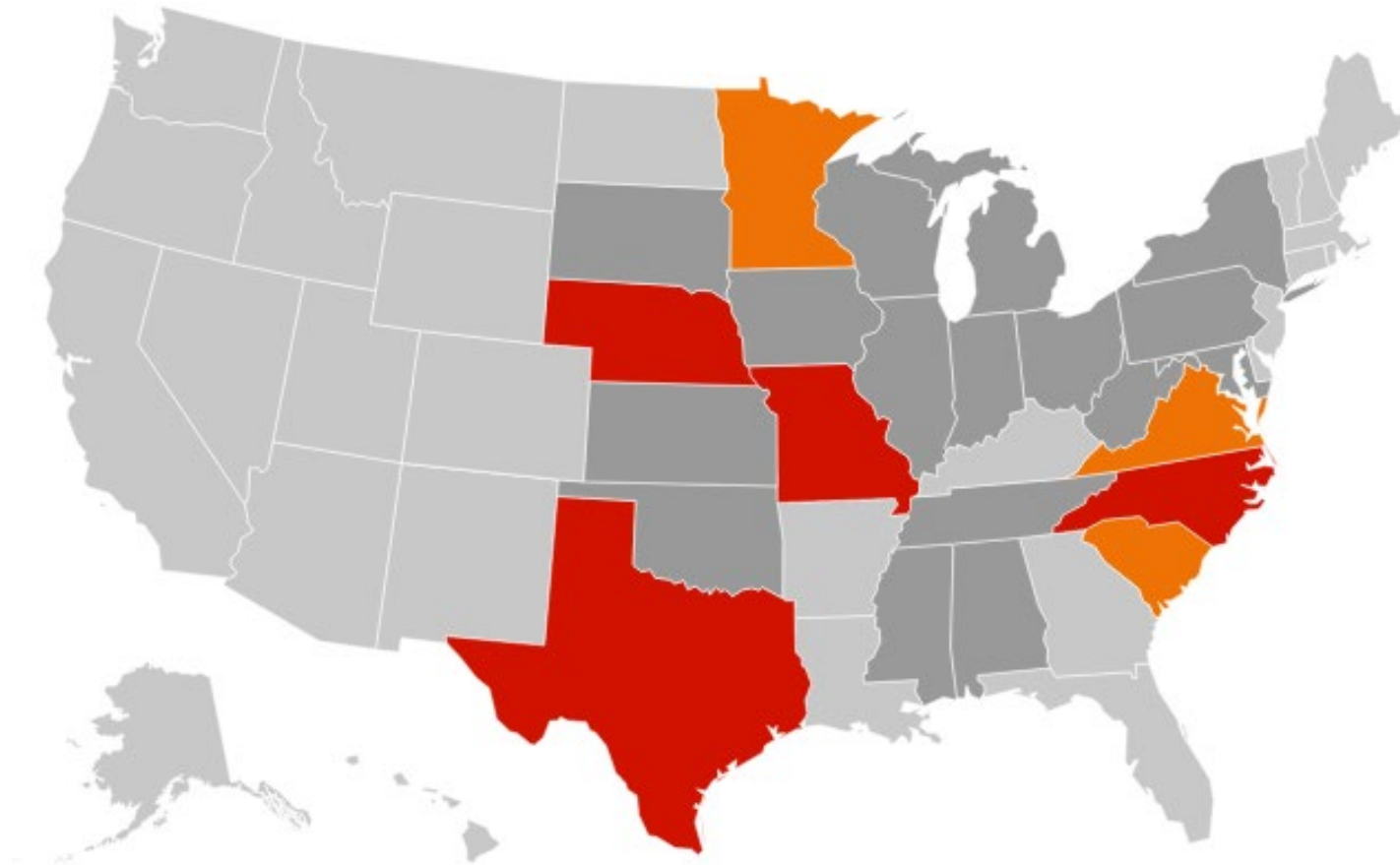
Based on the samples analyzed.



# 2021 Corn Risk by State – Afla



State	Number of Samples	% Positive Samples	Avg of Positive Samples
AL	6	0%	0
IA	16	0%	0
IL	14	0%	0
IN	9	0%	0
KS	2	0%	0
MD	1	0%	0
MI	6	0%	0
MN	10	10%	2
MO	17	6%	25
MS	1	0%	0
NC	23	35%	110
NE	12	8%	37
NY	1	0%	0
OH	3	0%	0
OK	3	0%	0
PA	2	0%	0
SC	1	100%	3
SD	1	0%	0
TN	3	0%	0
TX	4	25%	21
VA	3	67%	2
WI	18	0%	0
WV	1	0%	0



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

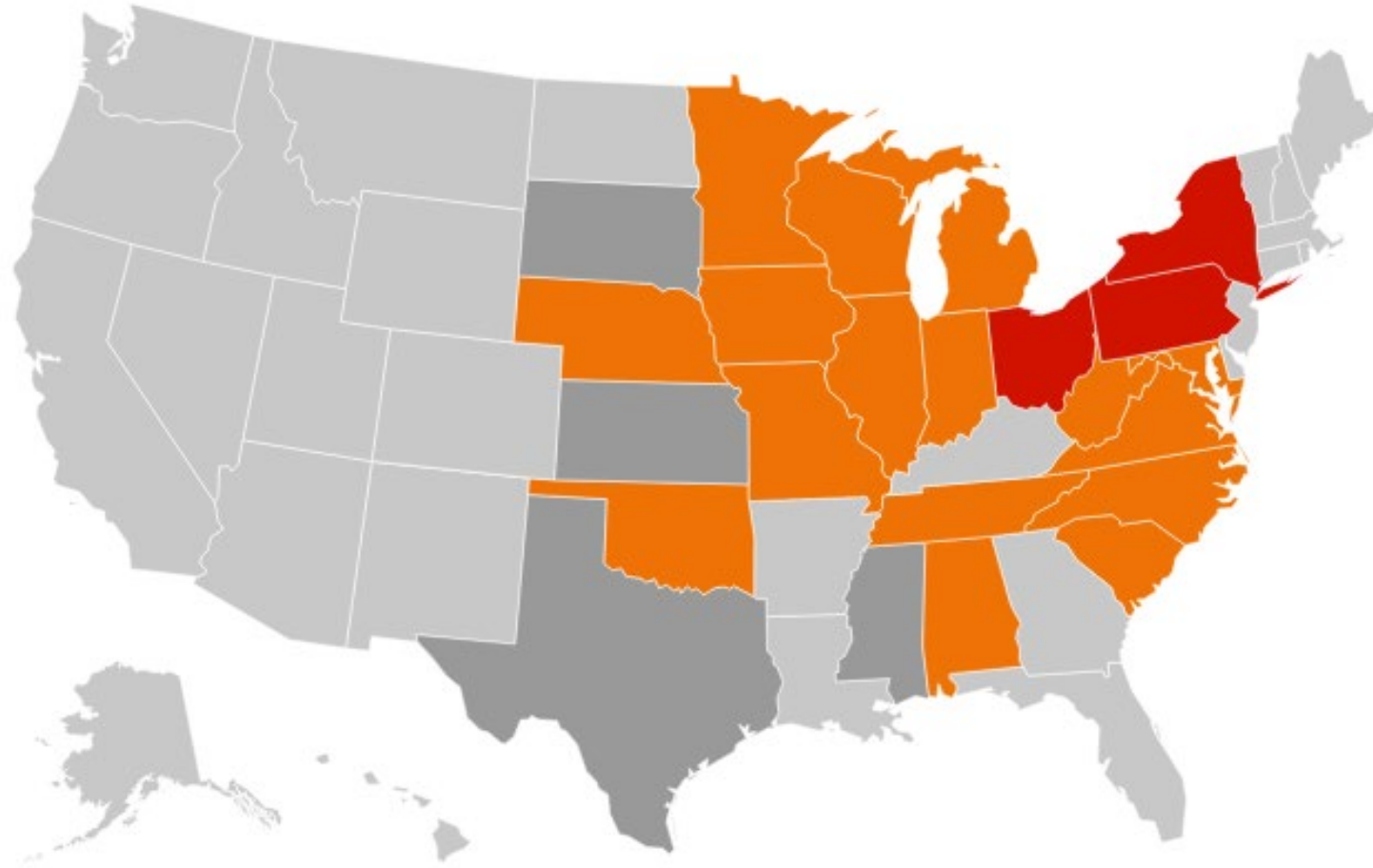




# 2021 Corn Risk by State – B-Trich



State	Number of Samples	% Positive Samples	Avg of Positive Samples
AL	6	83%	171
IA	16	94%	475
IL	14	86%	628
IN	9	100%	741
KS	2	0%	0
MD	1	100%	727
MI	6	100%	715
MN	10	10%	163
MO	17	59%	437
MS	1	0%	0
NC	23	48%	669
NE	12	83%	372
NY	1	100%	1726
OH	3	100%	2053
OK	3	33%	117
PA	2	100%	2824
SC	1	100%	307
SD	1	0%	0
TN	3	100%	531
TX	4	0%	0
VA	3	100%	194
WI	18	89%	927
WV	1	100%	167



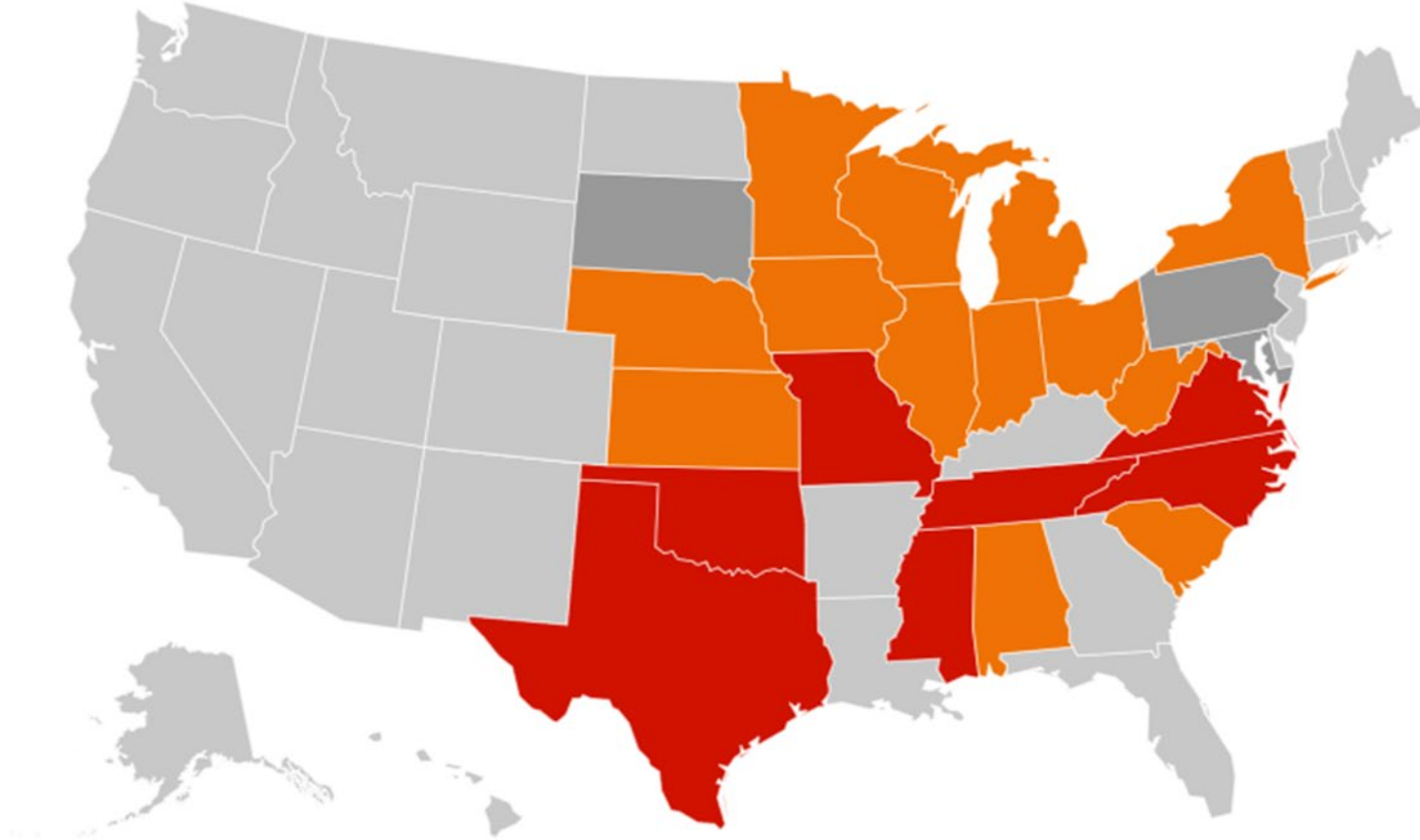
- State with average > 1,000 ppb
- State with average < 1,000 ppb
- State with samples < LOD (100 ppb)
- No sample submitted



# 2021 Corn Risk by State – FUM



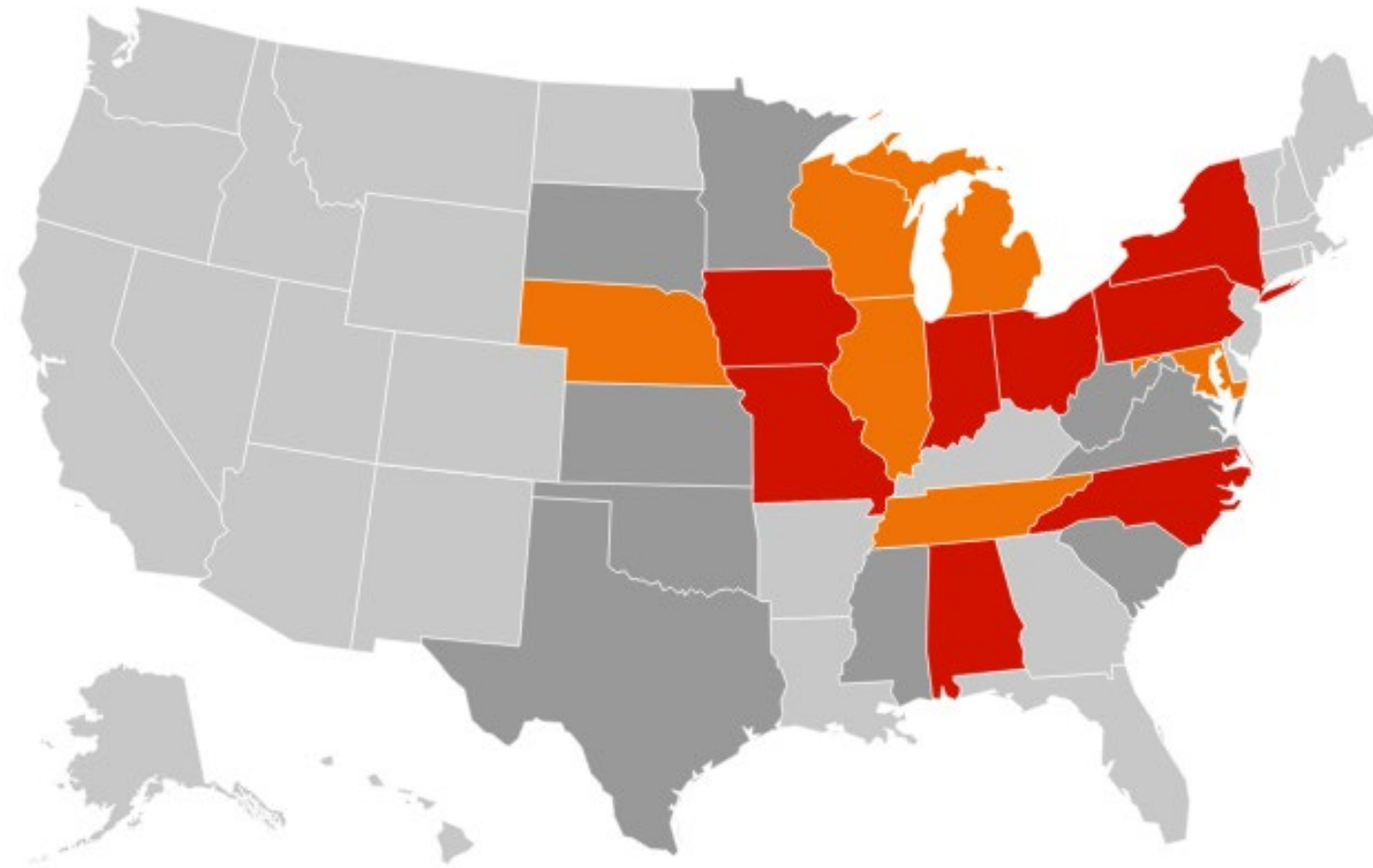
State	Number of Samples	% Positive Samples	Avg of Positive Samples
WV	1	100%	700
WI	18	39%	329
VA	3	100%	2300
TX	4	100%	3000
TN	3	100%	3533
SD	1	0%	0
SC	1	100%	1800
PA	2	0%	0
OK	3	100%	4200
OH	3	67%	350
NY	1	100%	600
NE	12	83%	1070
NC	23	87%	7470
MS	1	100%	9900
MO	17	94%	8694
MN	10	30%	700
MI	6	67%	300
MD	1	0%	0
KS	2	100%	1600
IN	9	44%	775
IL	14	43%	1067
IA	16	38%	483
AL	6	83%	1340



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



# 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
AL	6	17%	299
IA	16	31%	138
IL	14	29%	96
IN	9	44%	290
KS	2	0%	0
MD	1	100%	88
MI	6	33%	57
MN	10	0%	0
MO	17	6%	182
MS	1	0%	0
NC	23	30%	125
NE	12	17%	69
NY	1	100%	522
OH	3	67%	135
OK	3	0%	0
PA	2	50%	123
SC	1	0%	0
SD	1	0%	0
TN	3	67%	61
TX	4	0%	0
VA	3	0%	0
WI	18	17%	85
WV	1	0%	0



# Mycotoxin Survey Summary – 2021 US Corn



**92%** positive vs.  
88% in 2020



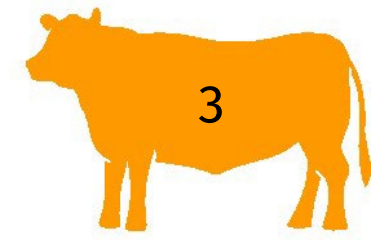
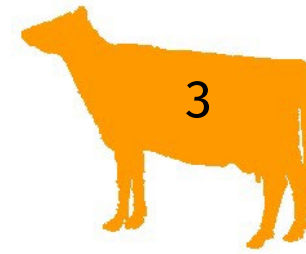
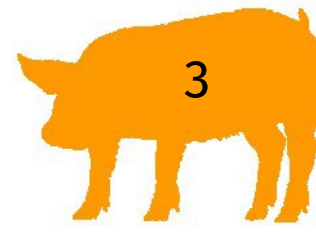
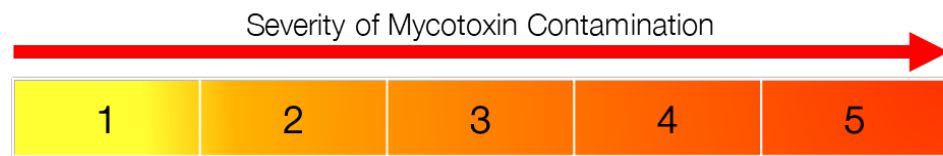
**55%** >1 MTX vs.  
49% in 2020

**B-Trich:** 71% vs. 58%

**FUM:** 65% vs. 64%

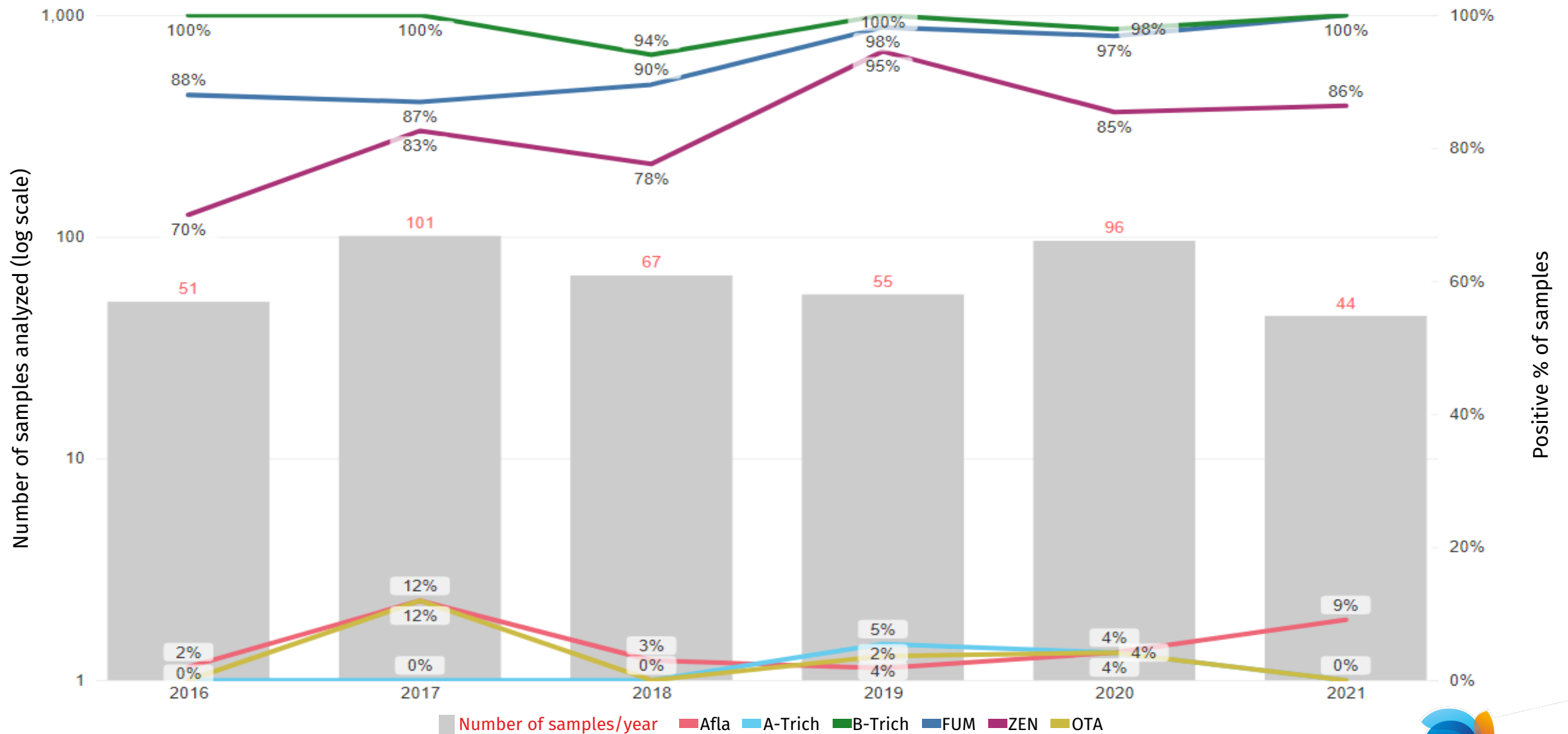
**ZEN:** 23% vs. 20%

## Forecasted potential risk for livestock production\*:

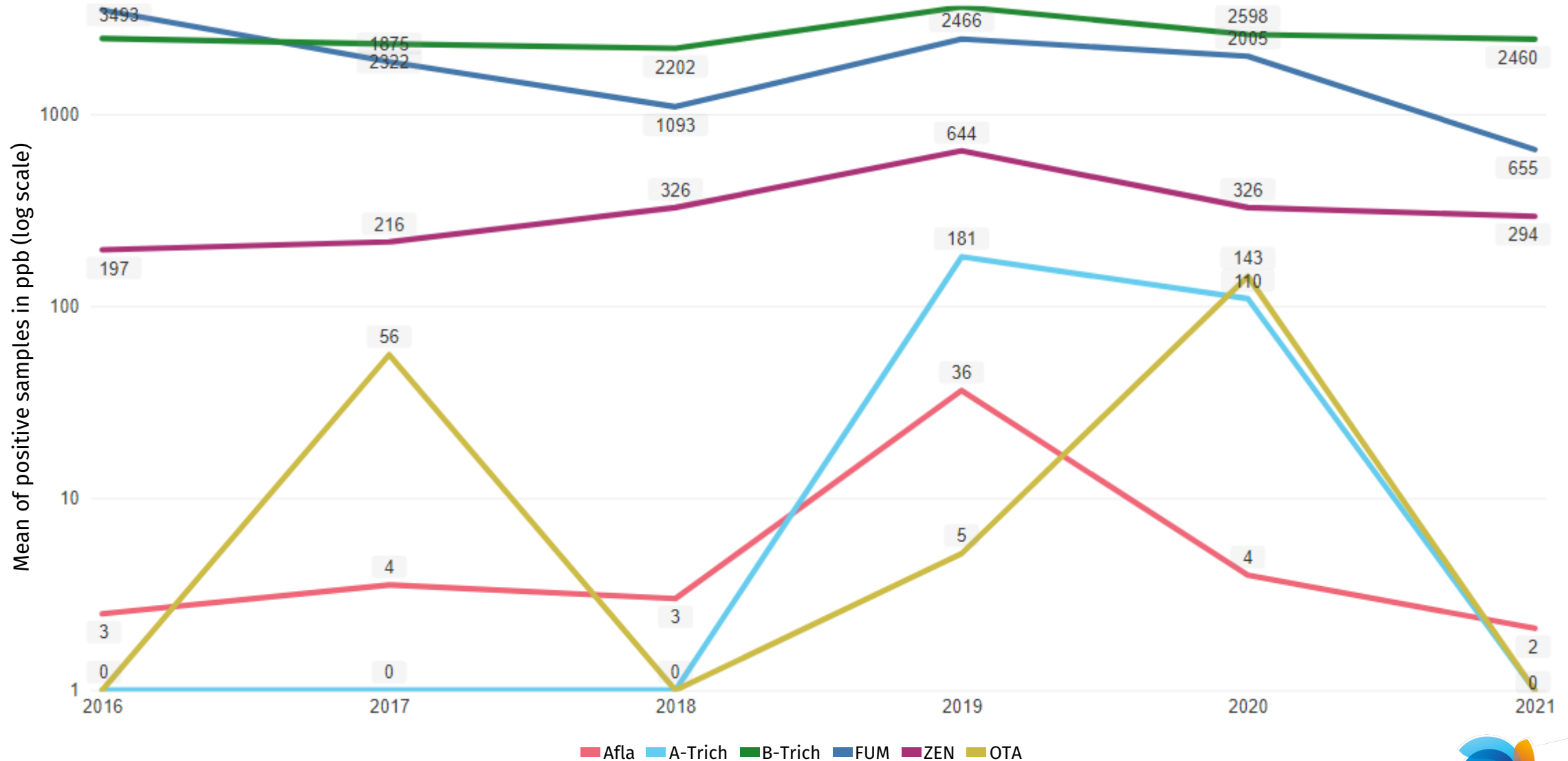


# 2021 US Corn By-Products (as-fed basis)

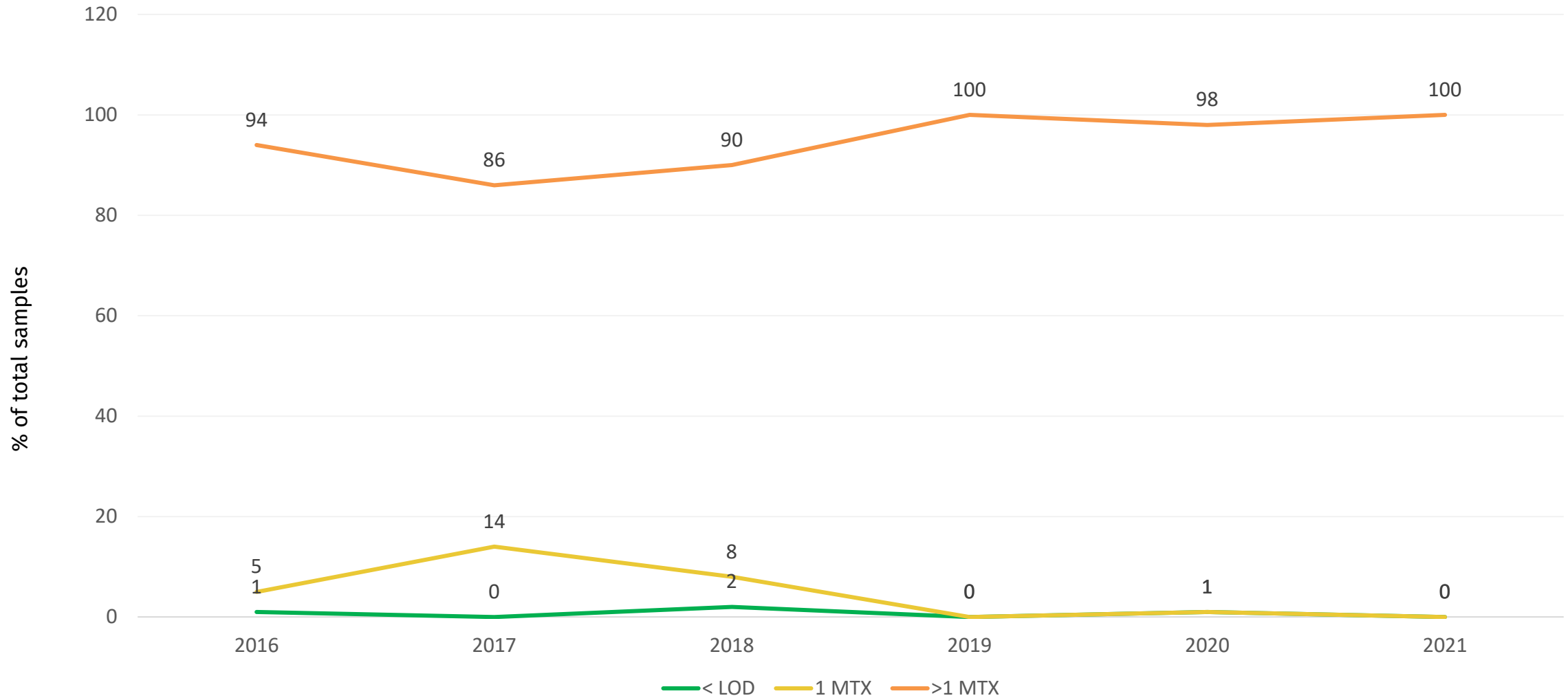
# Occurrence Trend in 2021 US Corn By-Products



# Mean of Positives Trend in 2021 US Corn By-Products

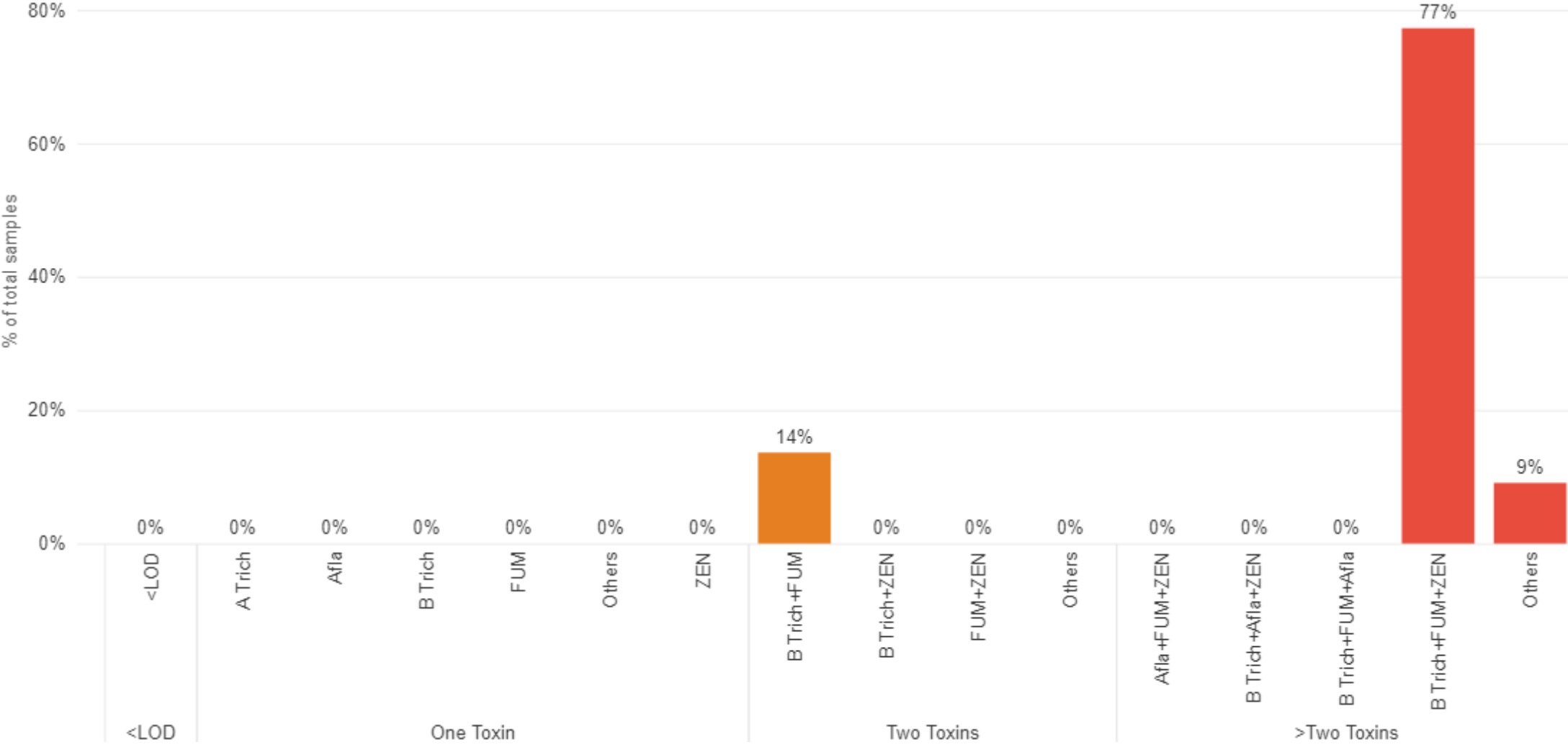


# Co-occurrence Trend in 2021 US Corn By-Products





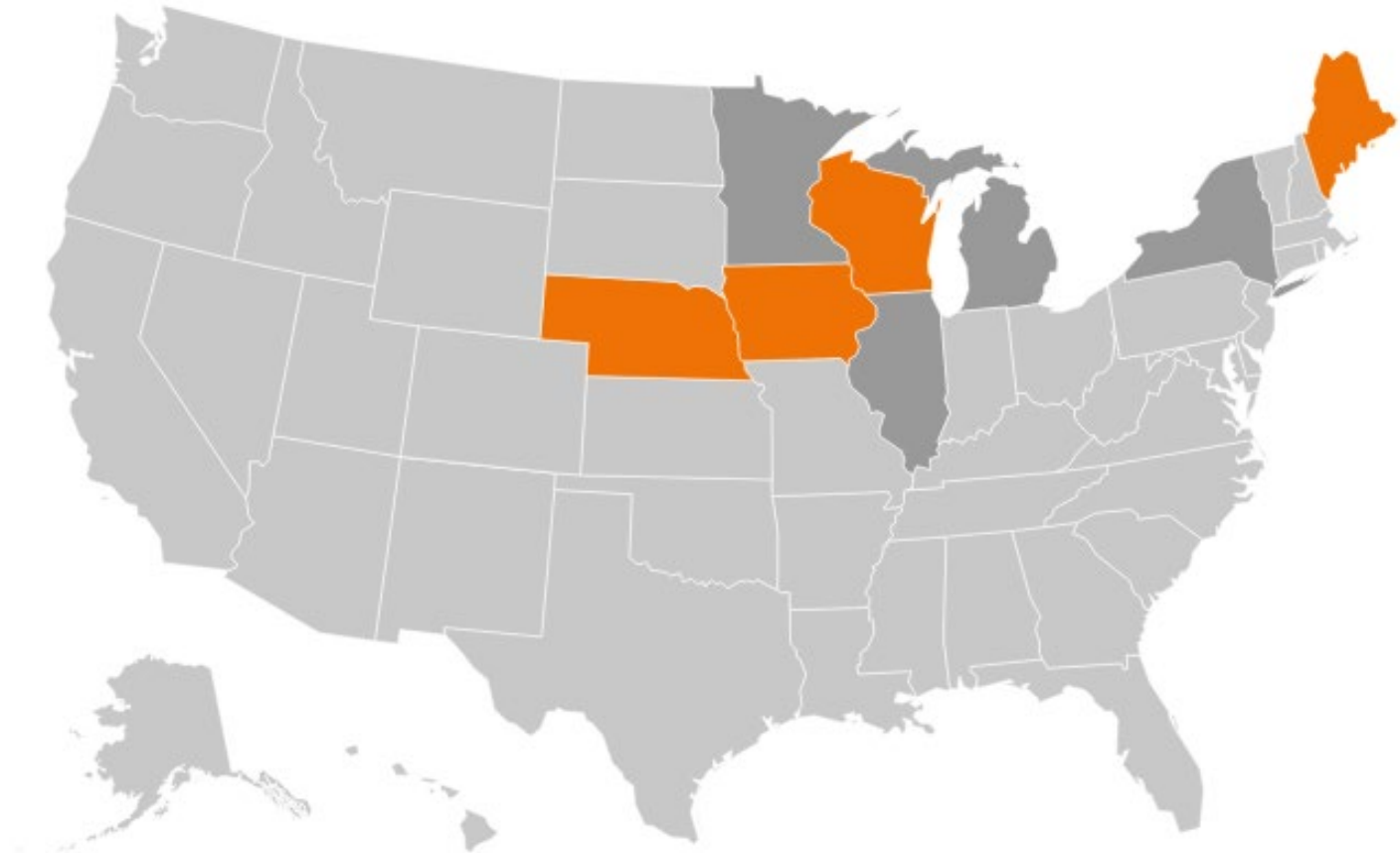
# Co-occurrence Profile in 2021 US Corn By-Products



Based on the samples analyzed.



# 2021 Corn By-Products Risk by State – Afla

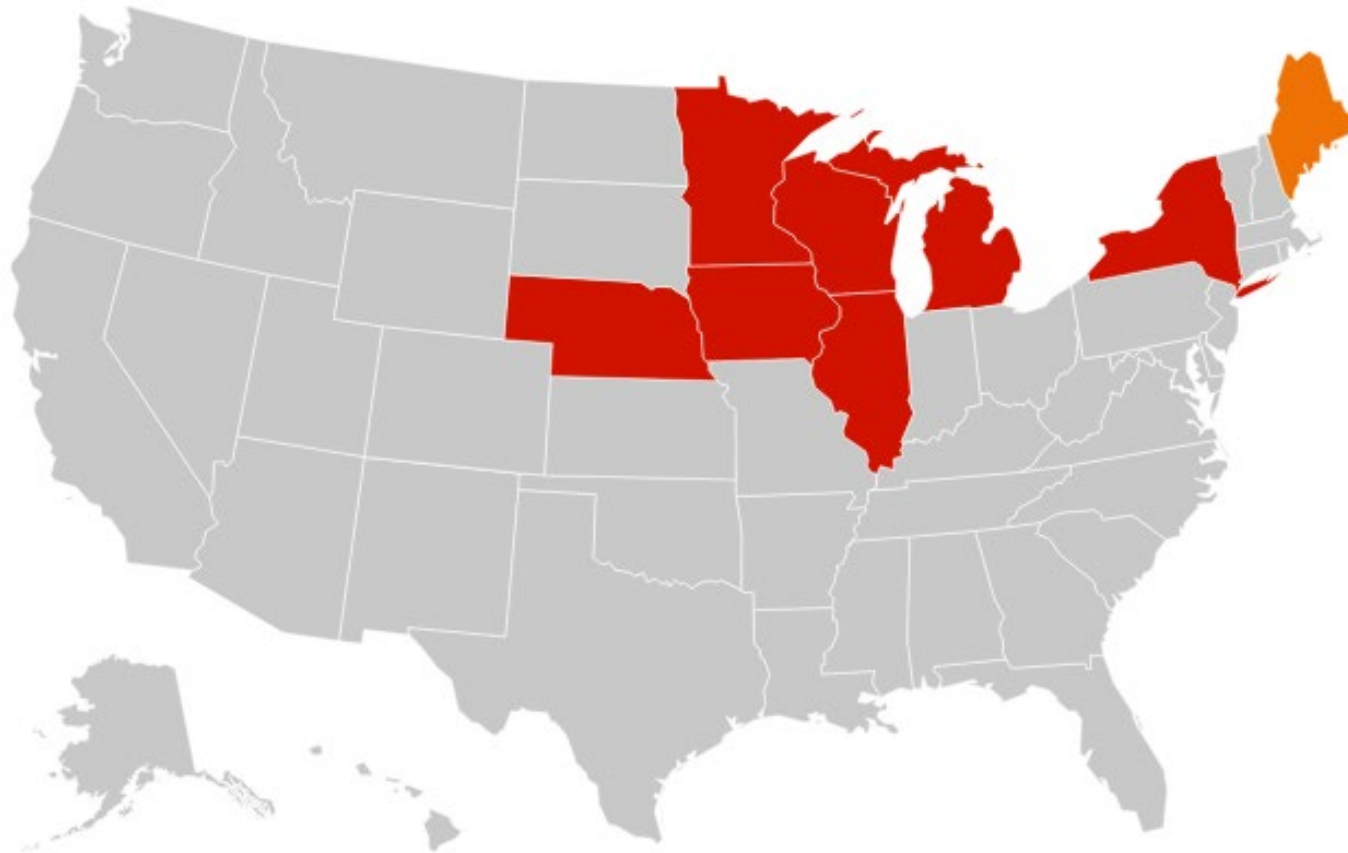


State	Number of Samples	% Positive Samples	Avg of Positive Samples
IA	17	6%	2
IL	4	0%	0
ME	1	100%	2
MI	2	0%	0
MN	2	0%	0
NE	2	50%	4
NY	2	0%	0
WI	14	7%	1

- 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

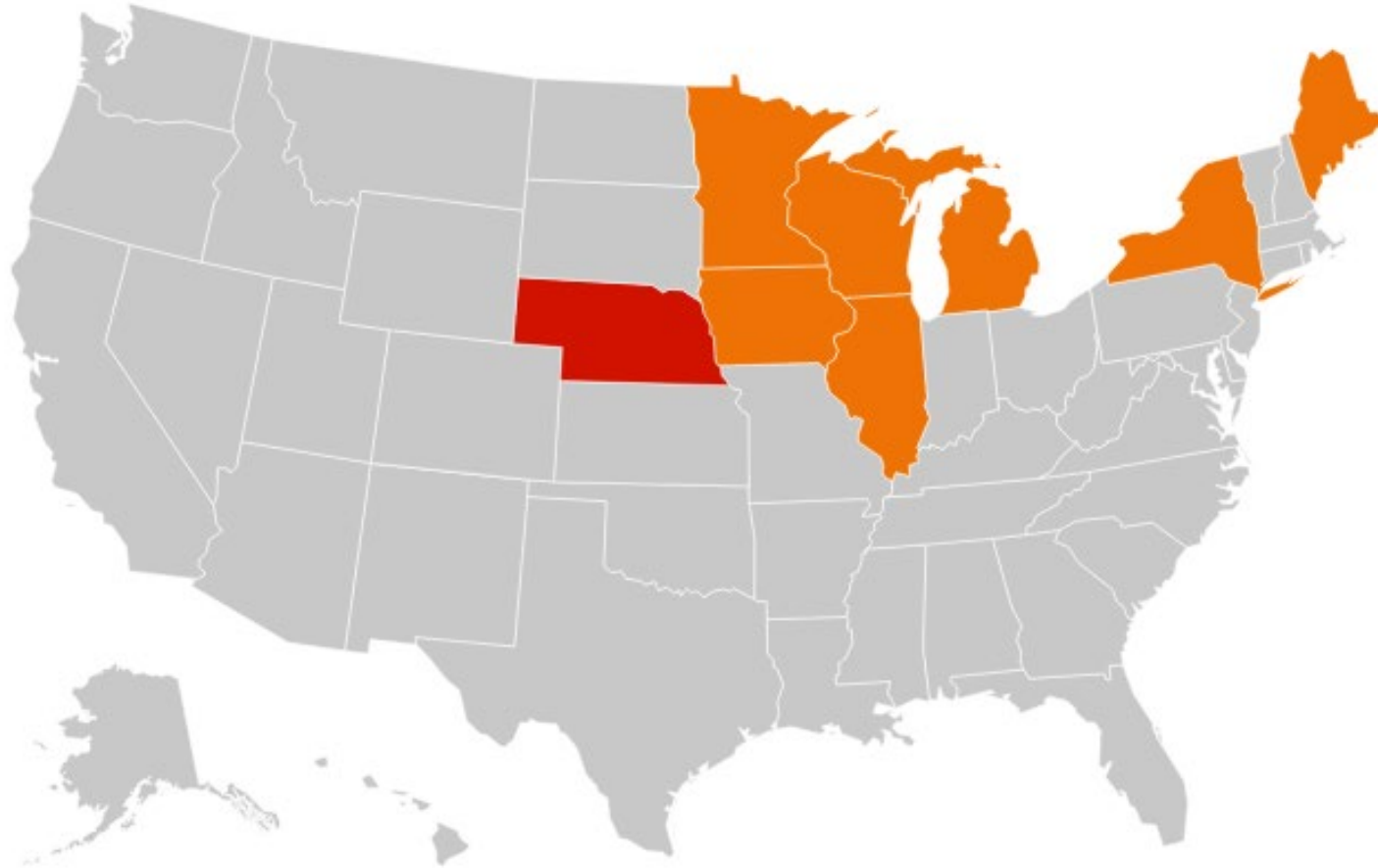


State	Number of Samples	% Positive Samples	Avg of Positive Samples
IA	17	100%	1579
IL	4	100%	1569
ME	1	100%	662
MI	2	100%	4359
MN	2	100%	1383
NE	2	100%	2933
NY	2	100%	3745
WI	14	100%	3544

- 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
IA	17	100%	441
IL	4	100%	675
ME	1	100%	100
MI	2	100%	1200
MN	2	100%	300
NE	2	100%	2650
NY	2	100%	250
WI	14	100%	693

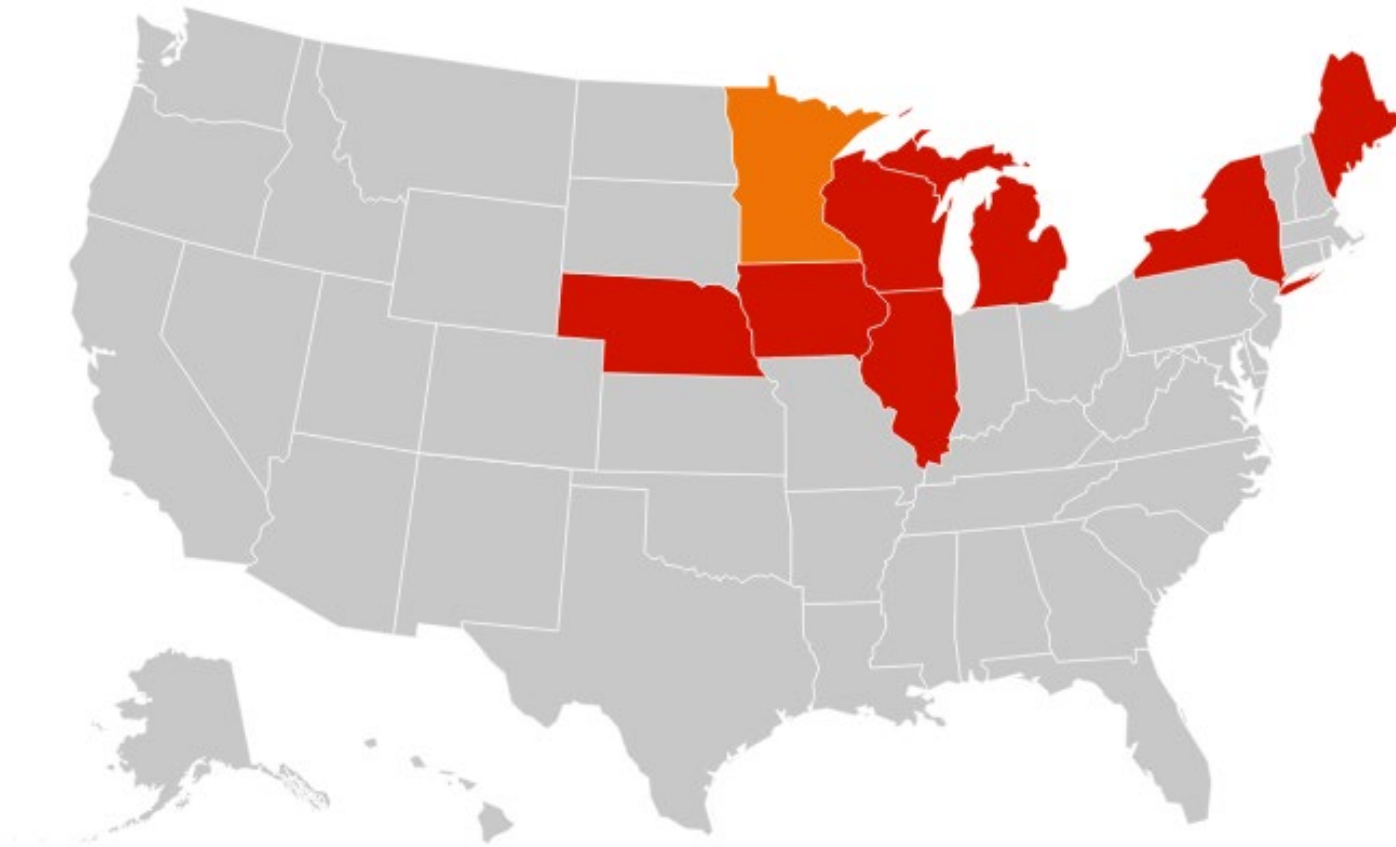
- State with average > 2,000 ppb
- State with average < 2,000 ppb
- State with samples < LOD (100 ppb)
- No sample submitted



# 2021 Corn By-Products Risk by State – ZEN

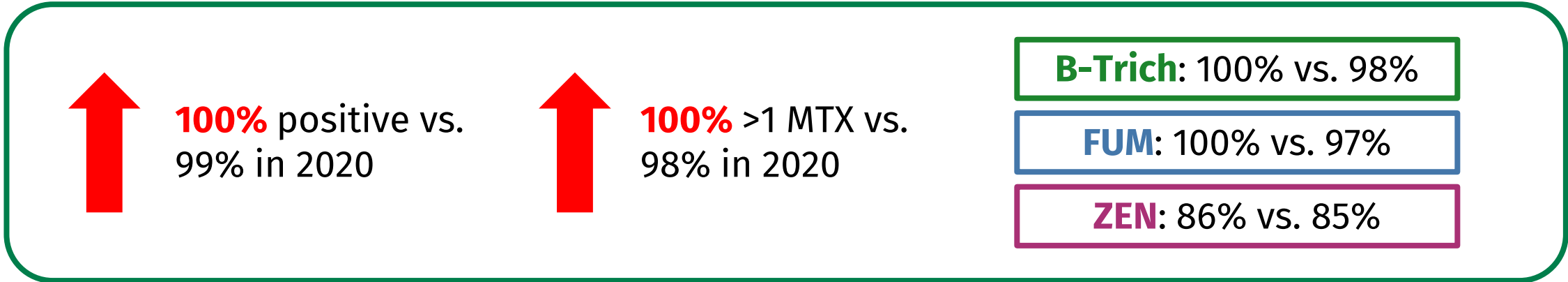


State	Number of Samples	% Positive Samples	Avg of Positive Samples
IA	17	65%	105
IL	4	100%	102
ME	1	100%	110
MI	2	100%	395
MN	2	100%	90
NE	2	100%	154
NY	2	100%	1766
WI	14	100%	335

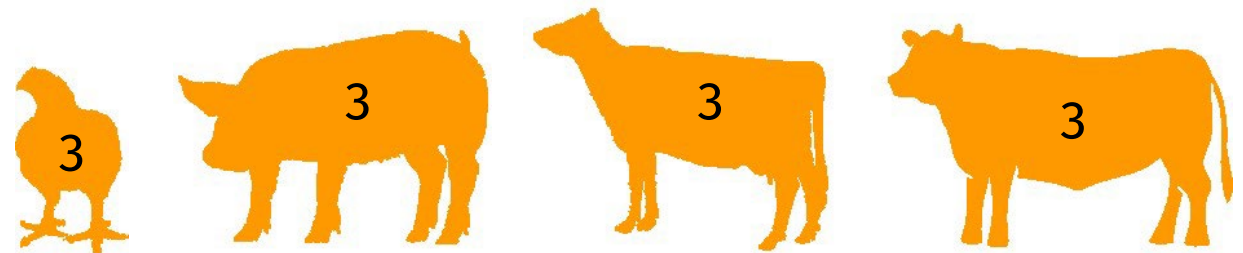
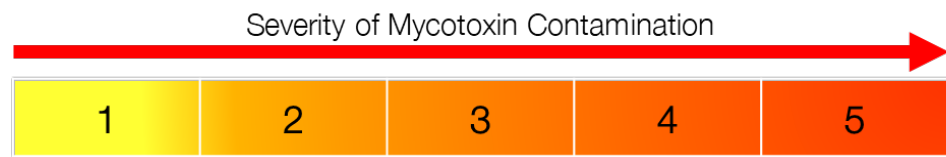


- State with average > 100 ppb
- State with average < 100 ppb
- State with samples < LOD (51.7 ppb)
- No sample submitted

# Mycotoxin Survey Summary – 2021 US Corn By-Products



## Forecasted potential risk for livestock production\*:



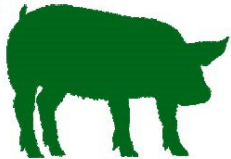
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