

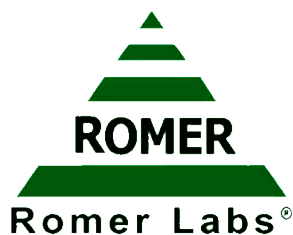
Mycotoxin Occurrence in 2020 US Corn & Corn By-products March 2021 Update

March 5, 2021

Mycotoxins & Analysis



LC-MS/MS



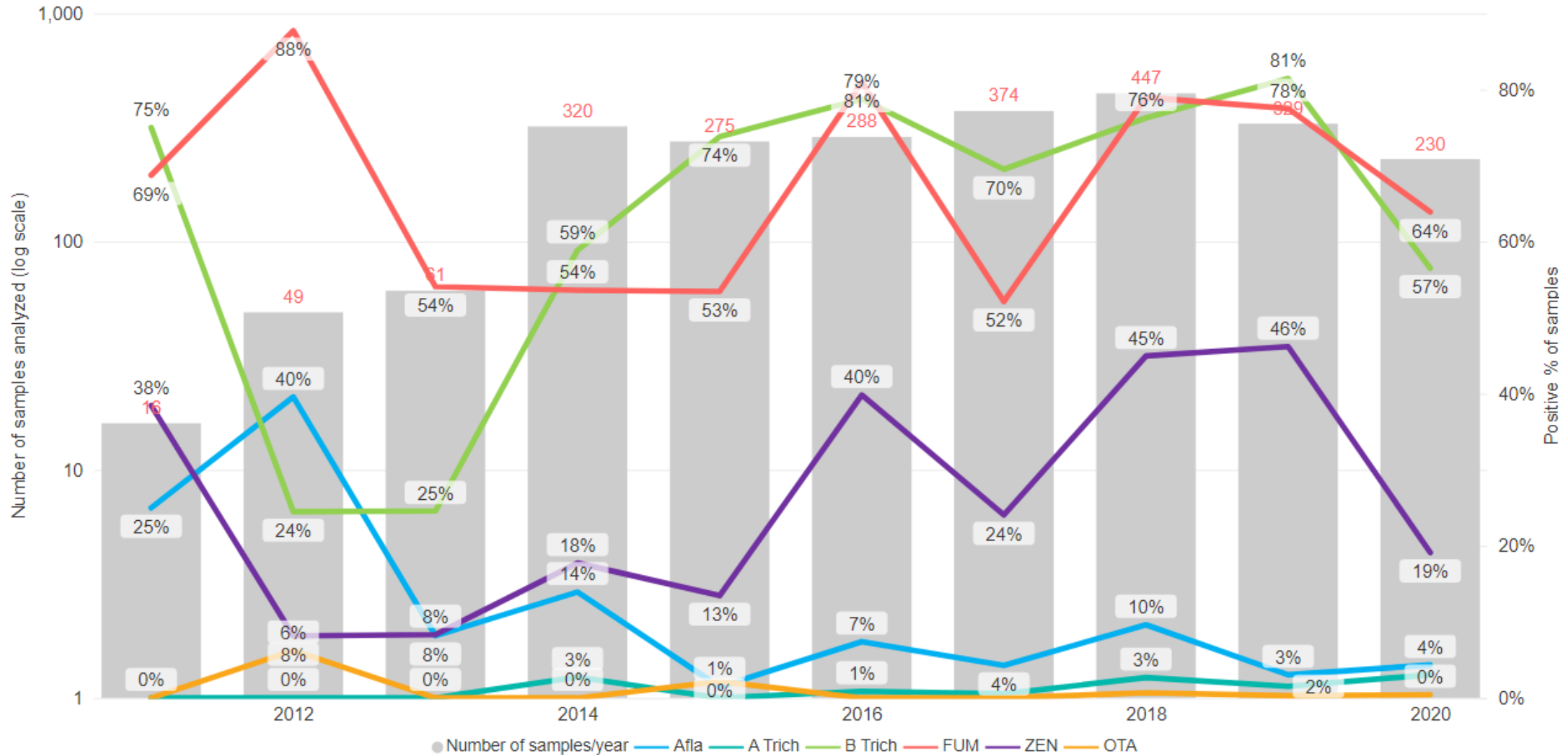
2 Labs

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	100.0
	HT-2	100.0
	Neosolaniol	100.0
	Diacetoxyscirpenol (DAS)	100.0
B-Trichothecenes (B-Trich)	Deoxynivalenol (DON/Vomitoxin)	100.0
	Acetyl-deoxynivalenol (A-DON)	100.0
	Nivalenol (NIV)	100.0
	Fusarenon X (FUS-X)	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

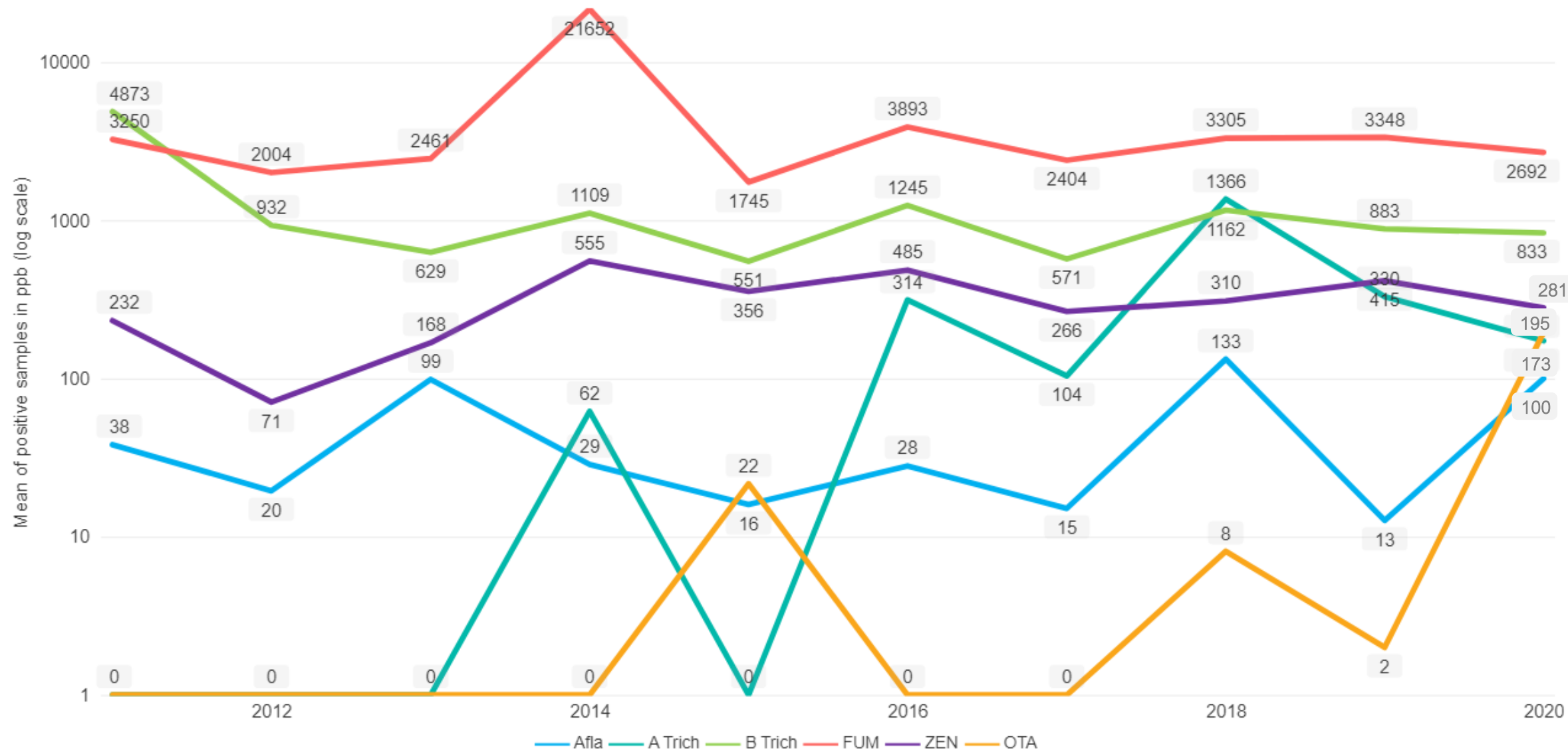


2020 US Corn (as-fed basis)

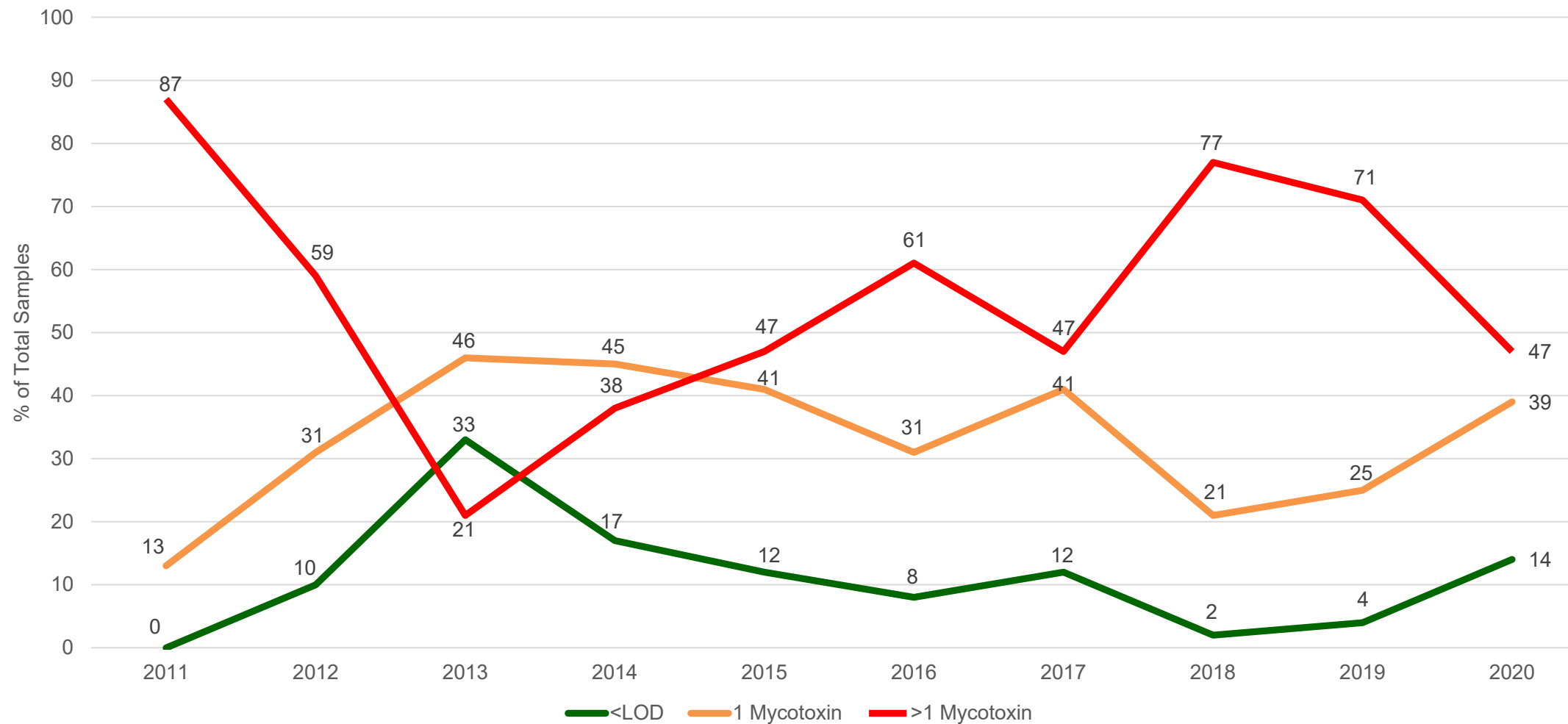
MTX Occurrence Trend in 2020 US Corn



Mean of Positives Trend in 2020 US Corn



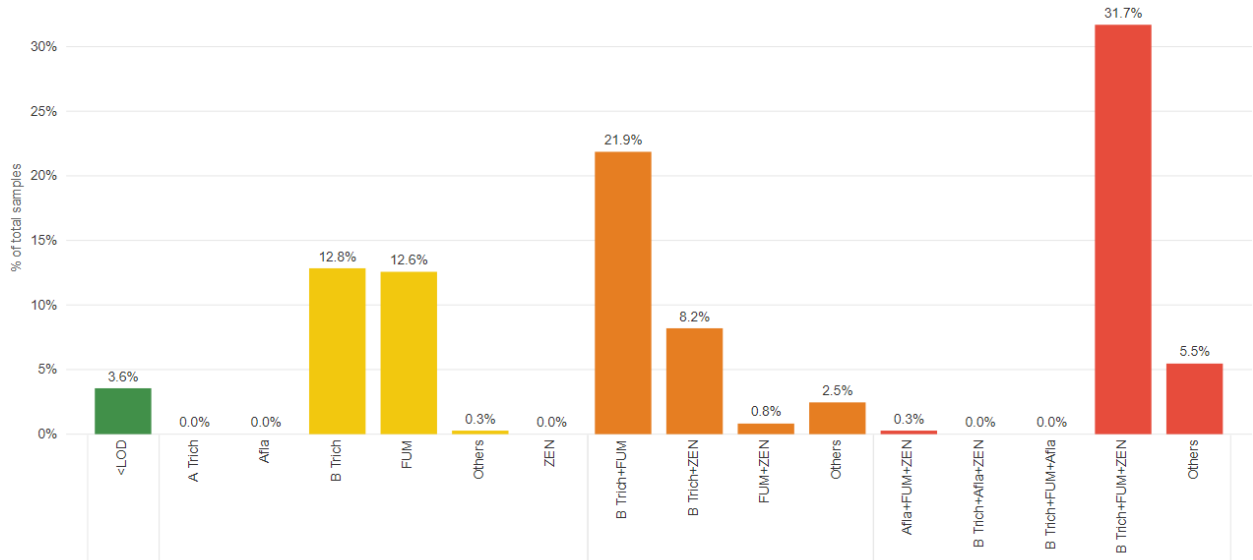
Mycotoxin Co-occurrence Trend in 2020 US Corn



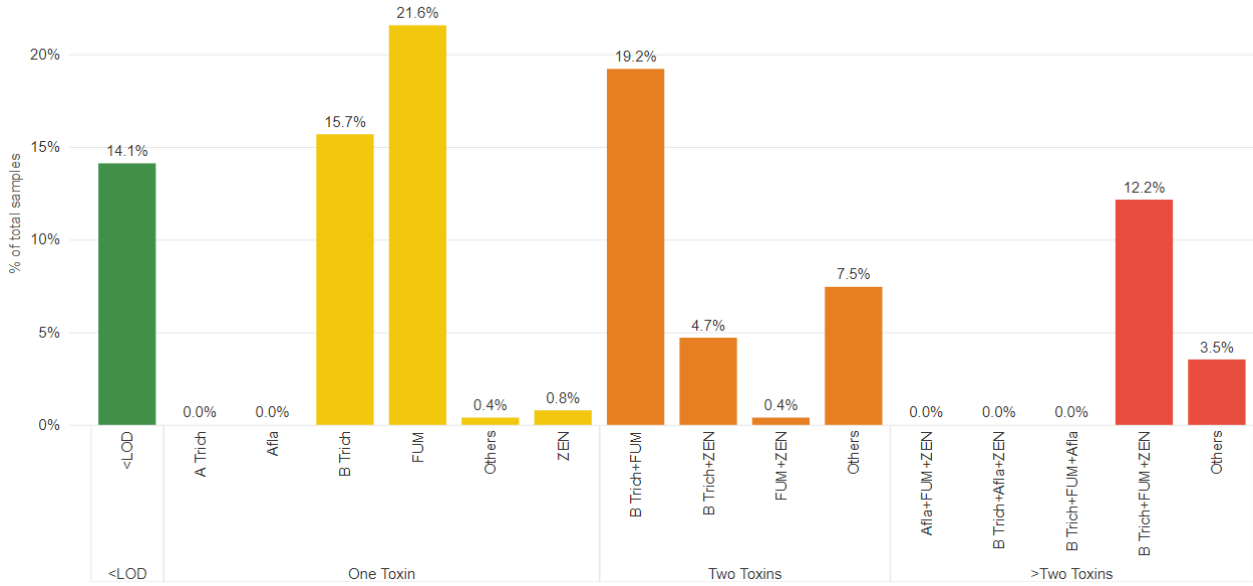
Mycotoxin Co-occurrence 2019 vs. 2020 in US Corn



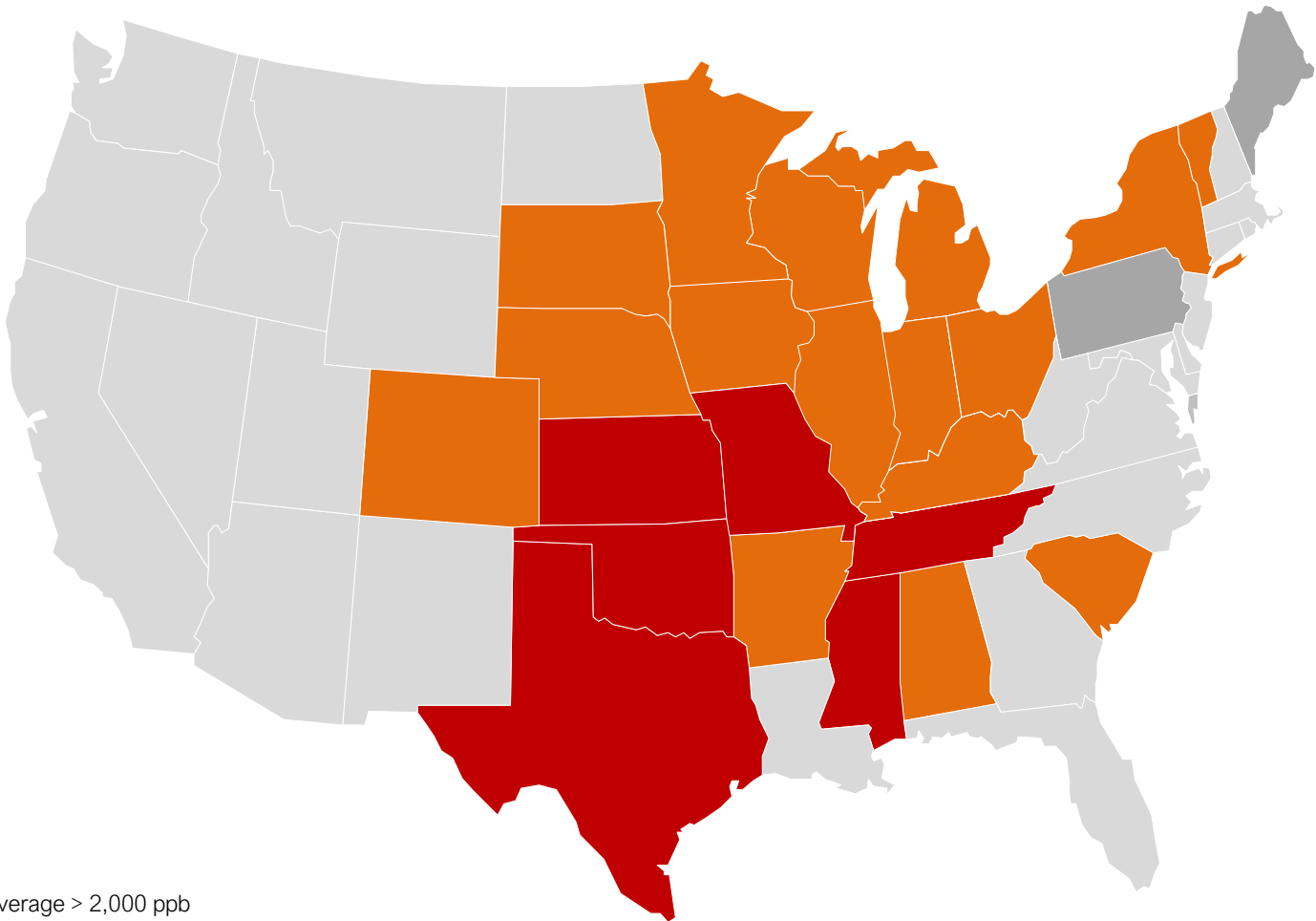
2019



2020



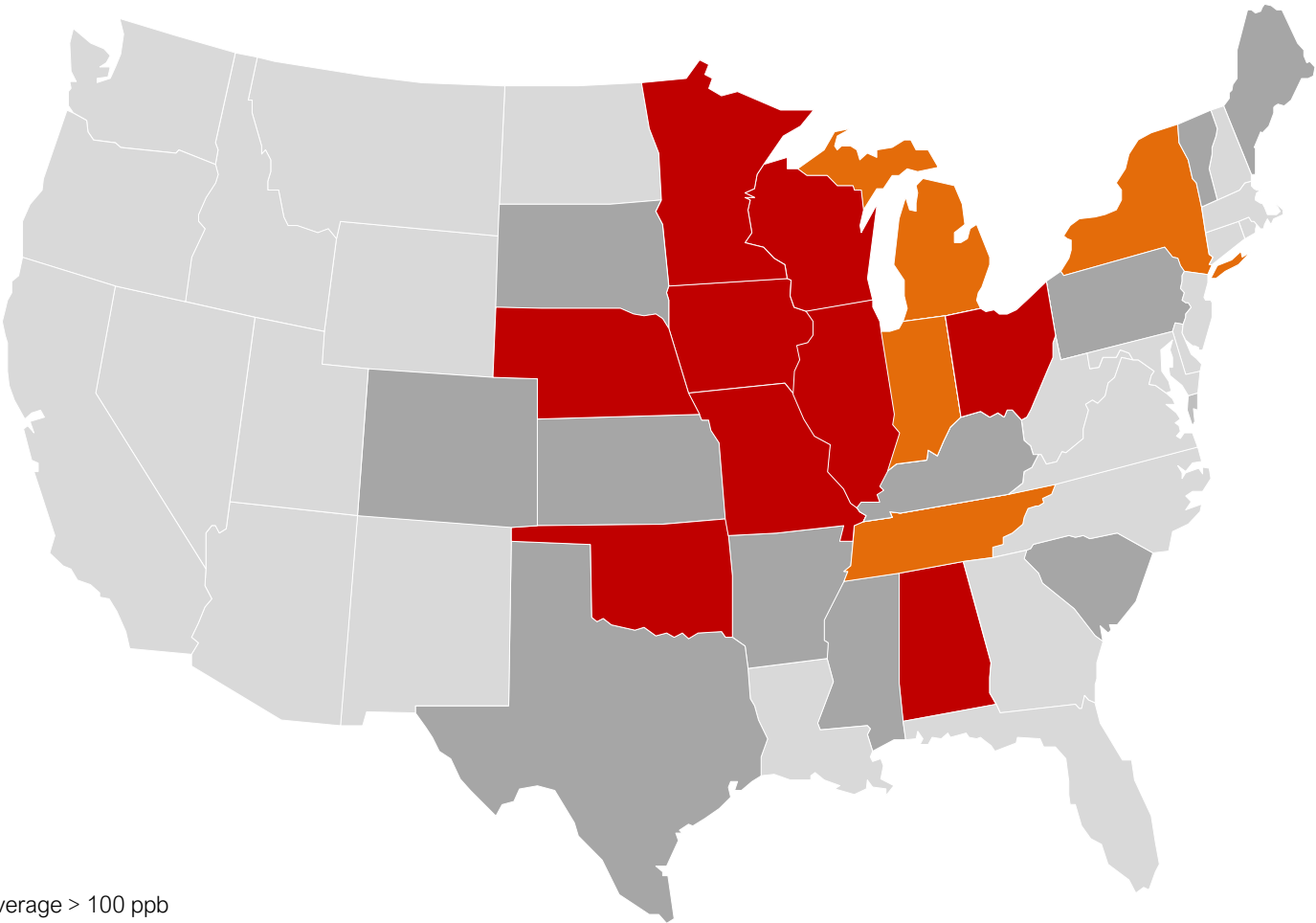
2020 Corn Risk by State - FUM



- 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
KS	8	100%	12638
MO	20	95%	8342
MS	1	100%	8200
TX	6	100%	6533
OK	7	71%	2900
TN	4	100%	2200
AL	5	100%	1580
SC	2	100%	1000
MN	25	24%	867
NE	32	66%	812
CO	7	86%	800
VT	2	50%	700
WI	30	53%	585
OH	3	67%	508
KY	1	100%	500
NY	3	67%	500
IN	12	50%	483
IL	21	71%	480
IA	29	55%	281
MI	9	44%	275
SD	1	100%	200
ME	1	0%	0
PA	1	0%	0

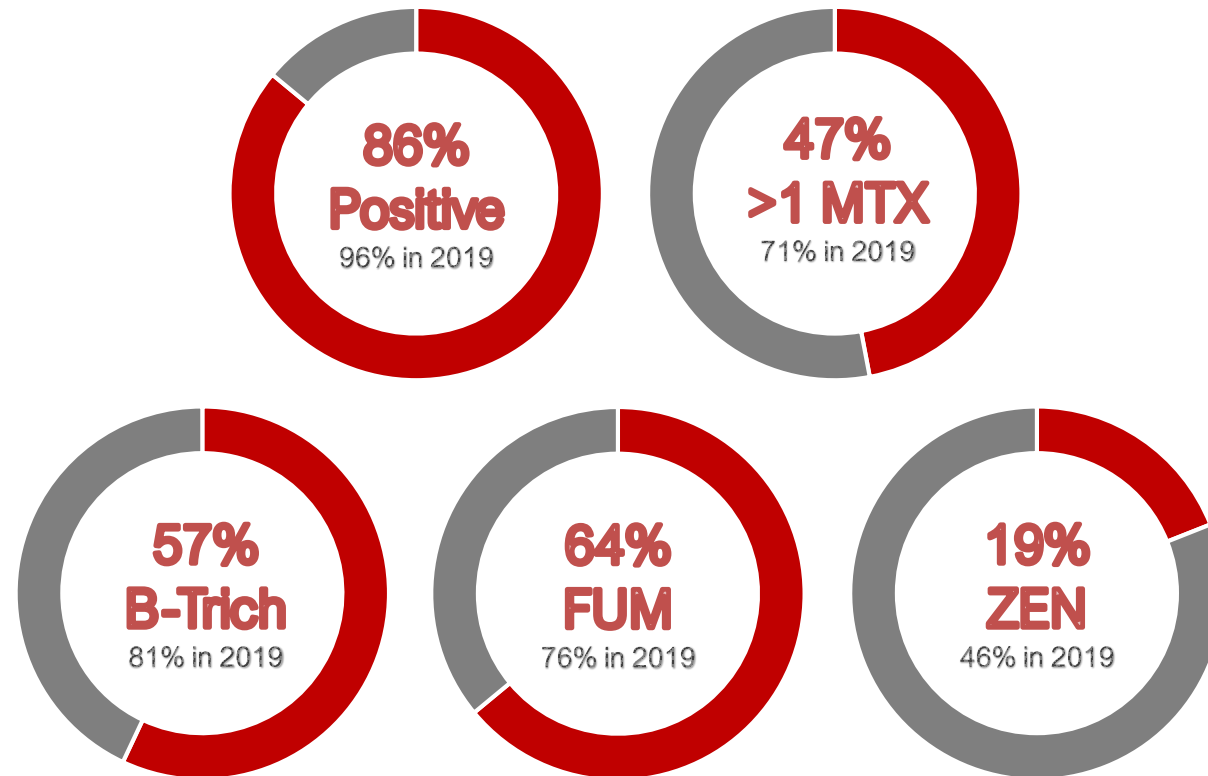
2020 Corn Risk by State - ZEN



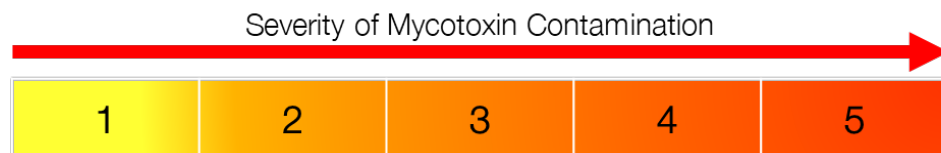
- State with average > 100 ppb
- State with average < 100 ppb
- State with samples < LOD (51.7 ppb)
- No sample submitted

State	Number of Samples	% Positive Samples	Avg of Positive Samples
MO	19	30%	496
WI	30	17%	408
IL	21	48%	338
NE	28	16%	289
OH	3	100%	248
MN	25	12%	209
OK	7	14%	118
AL	5	40%	112
IA	25	10%	108
TN	4	25%	86
IN	11	25%	82
MI	8	11%	73
NY	3	33%	64
CO	7	0%	0
KS	8	0%	0
KY	1	0%	0
ME	1	0%	0
MS	1	0%	0
PA	1	0%	0
SC	2	0%	0
SD	1	0%	0
TX	6	0%	0
VT	2	0%	0

Mycotoxin Survey Summary - 2020 US Corn



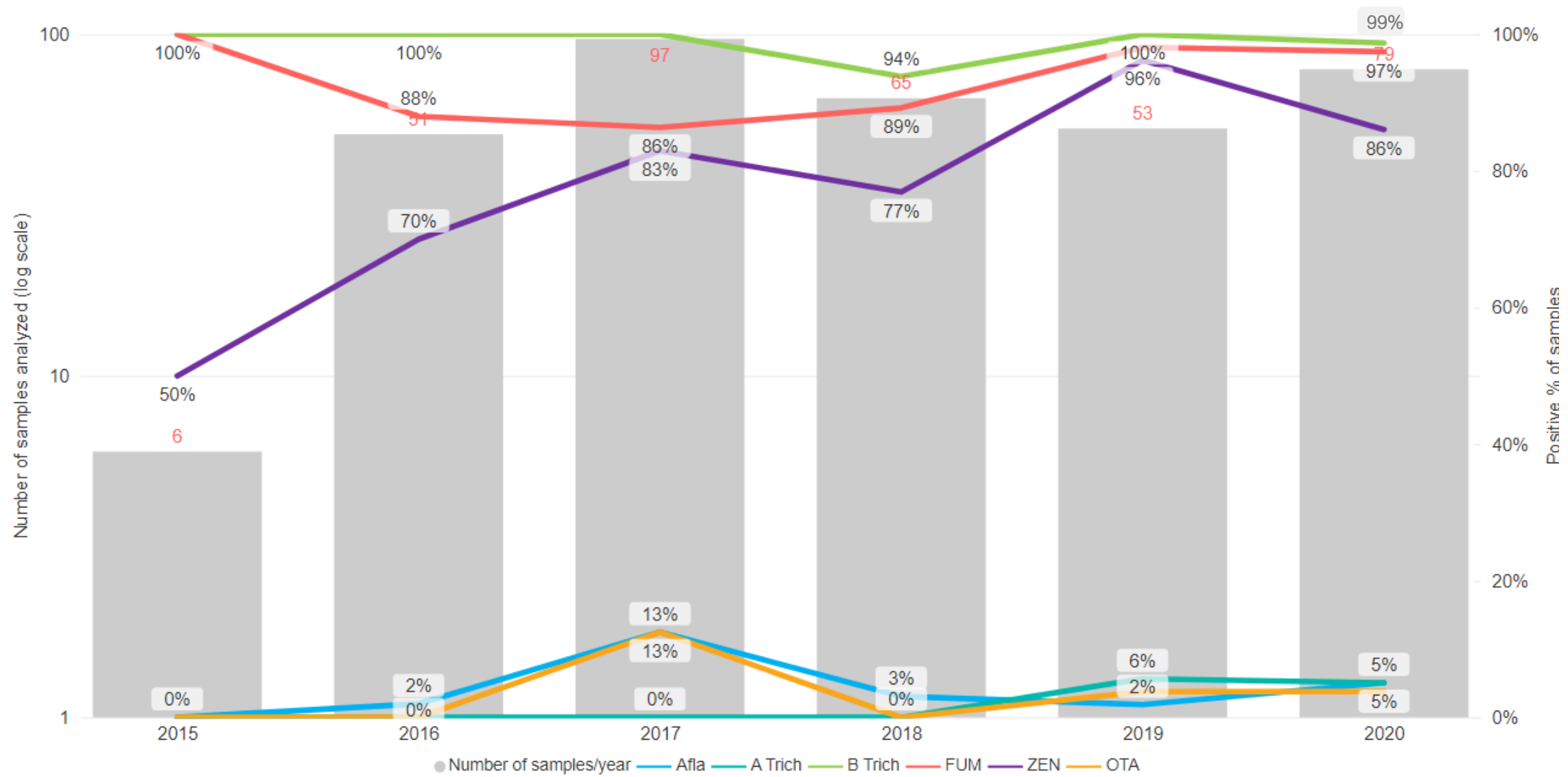
Forecasted risk for livestock production:



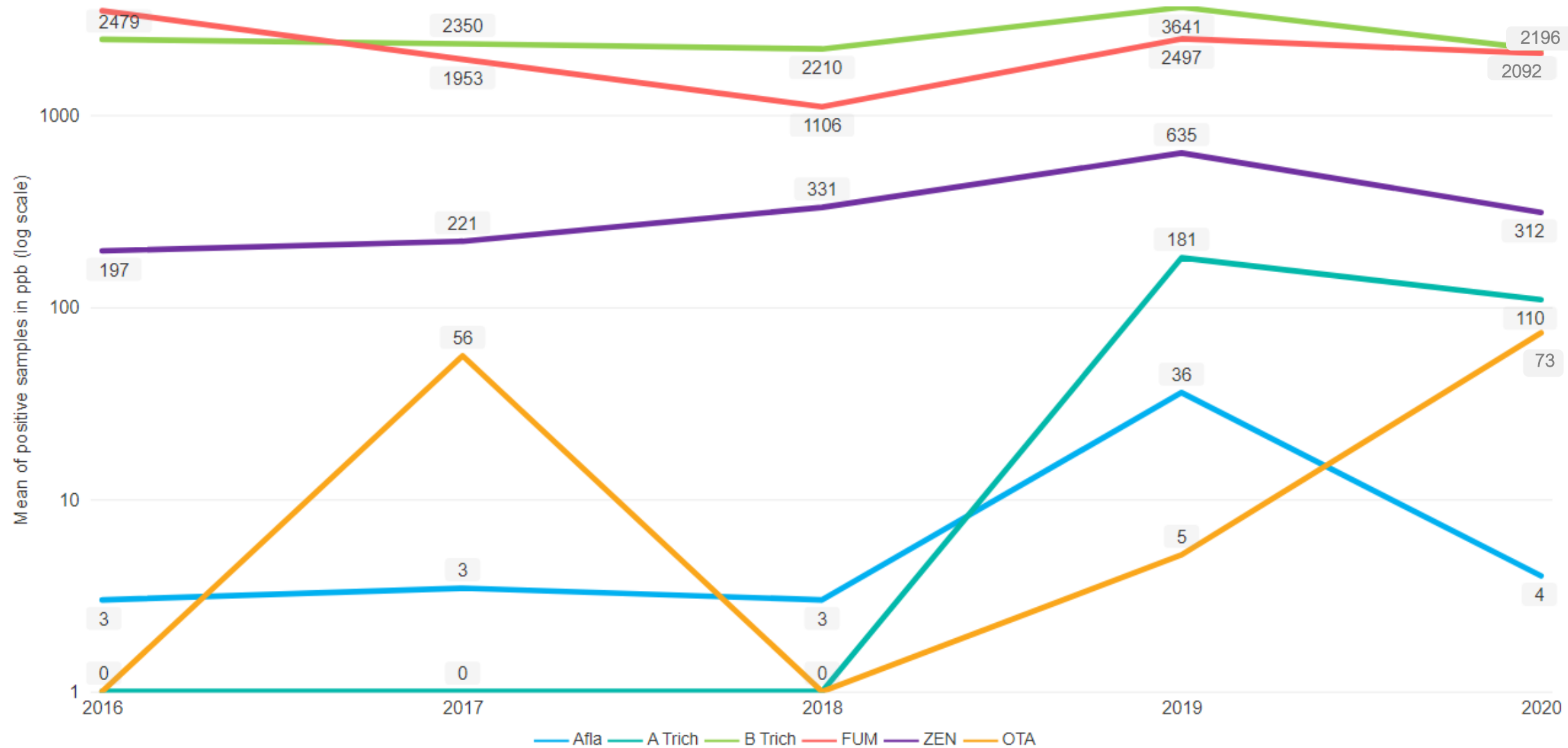


2020 US Corn By-products (as-fed basis)

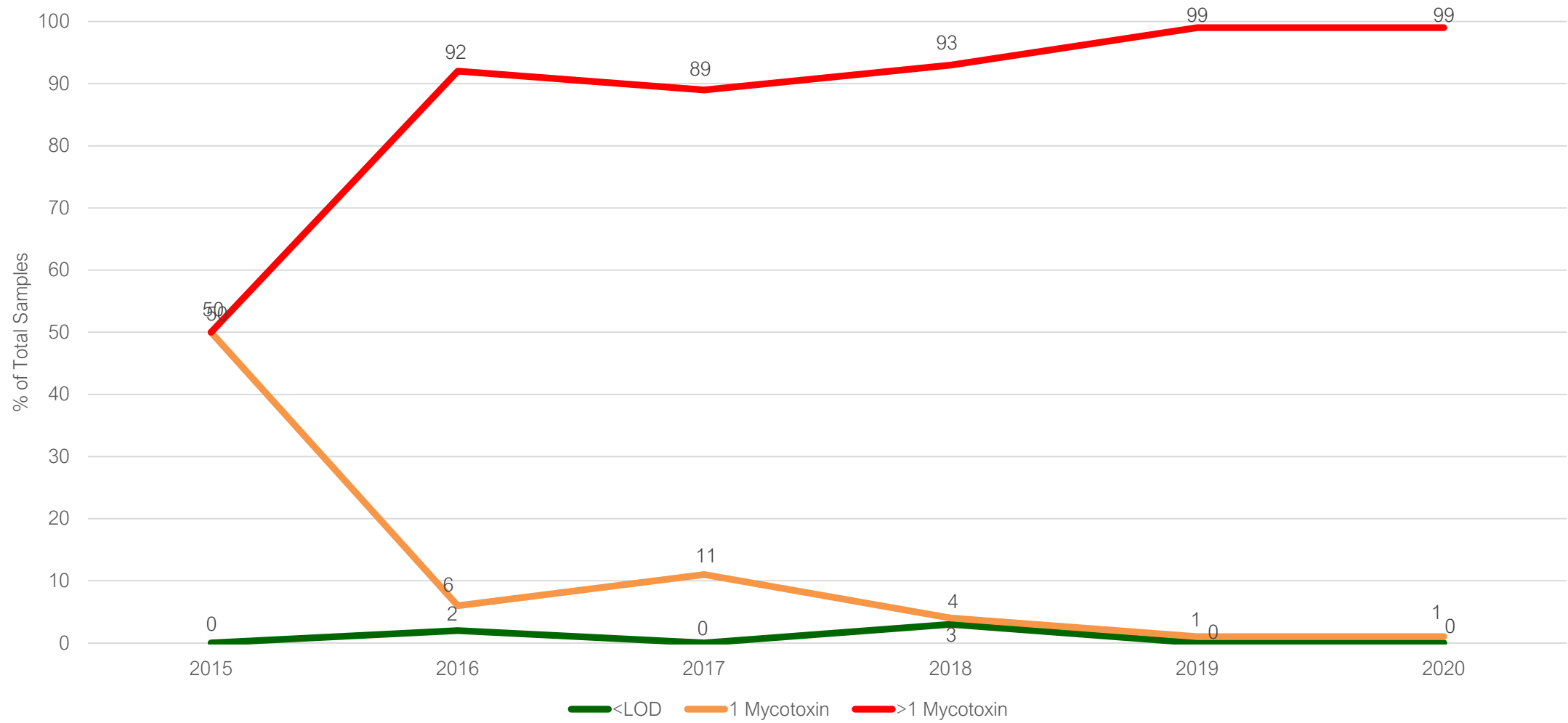
Occurrence Trend in USA



Mean of Positives Trend in USA



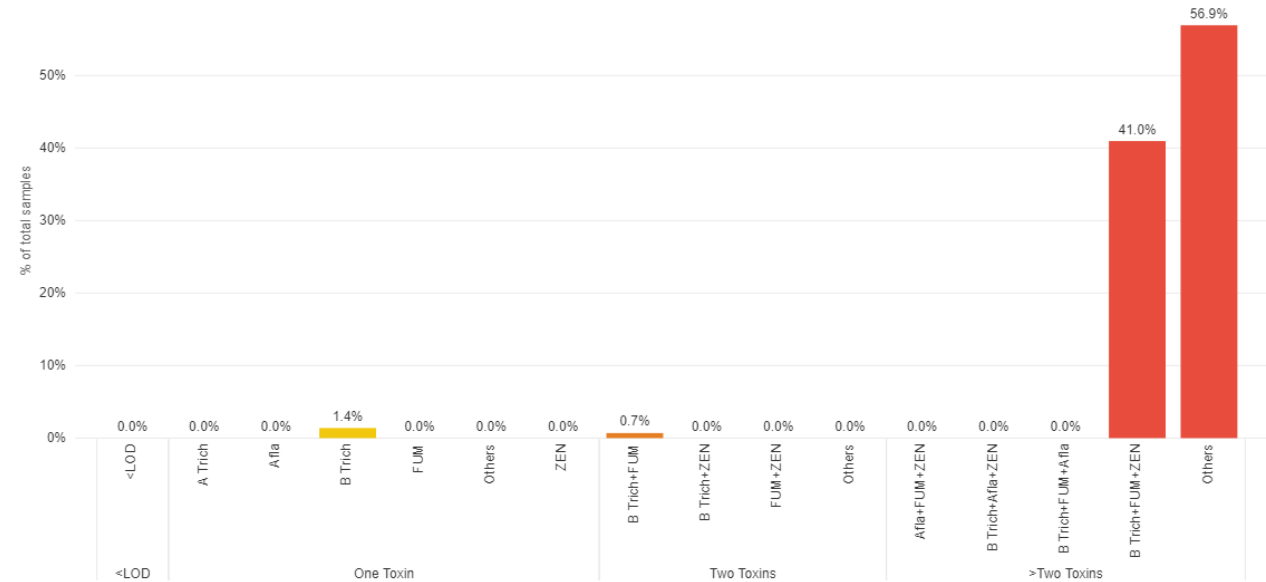
Co-occurrence Trend in USA



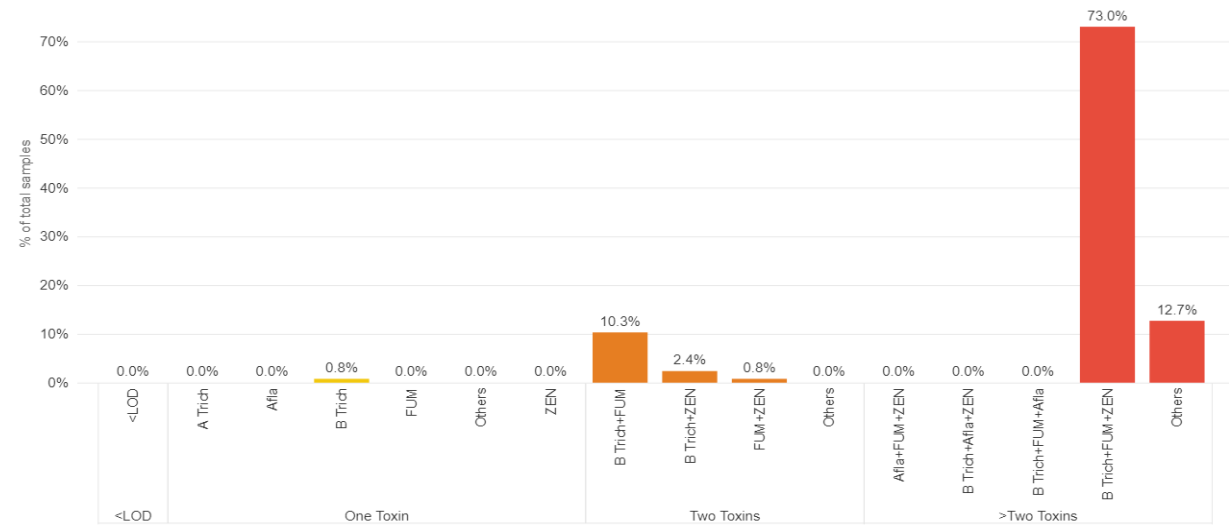
Co-occurrence 2019 vs. 2020 in USA



2019



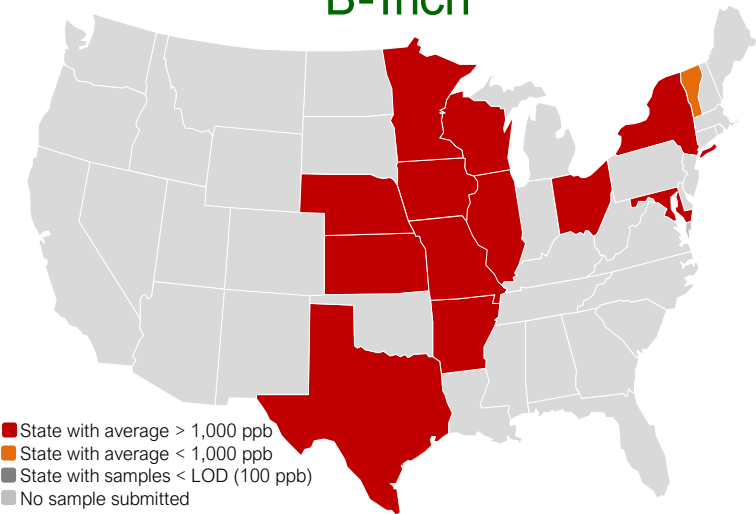
2020



2020 Corn By-products Risk by State



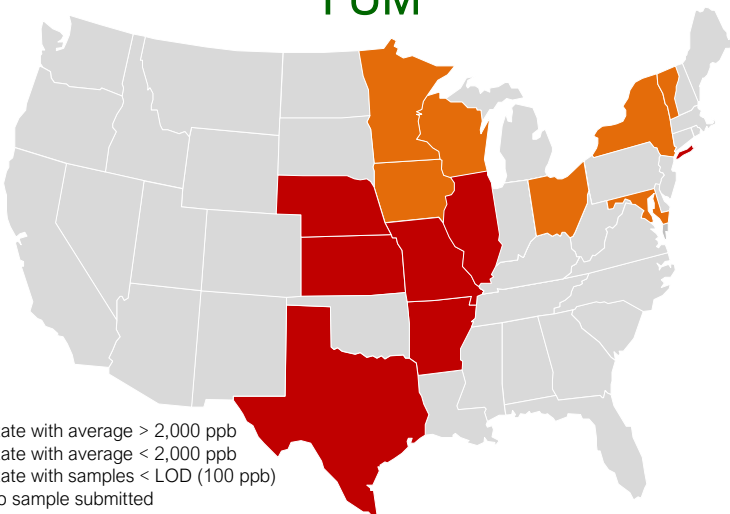
B-Trich



■ 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
MO	1	100%	5492
KS	1	100%	5318
NY	1	100%	3003
NE	1	100%	2907
MD	1	100%	2717
WI	21	100%	2585
MN	5	100%	2514
AR	1	100%	2472
IL	5	100%	1761
IA	36	97%	1605
OH	1	100%	1273
VT	1	100%	174

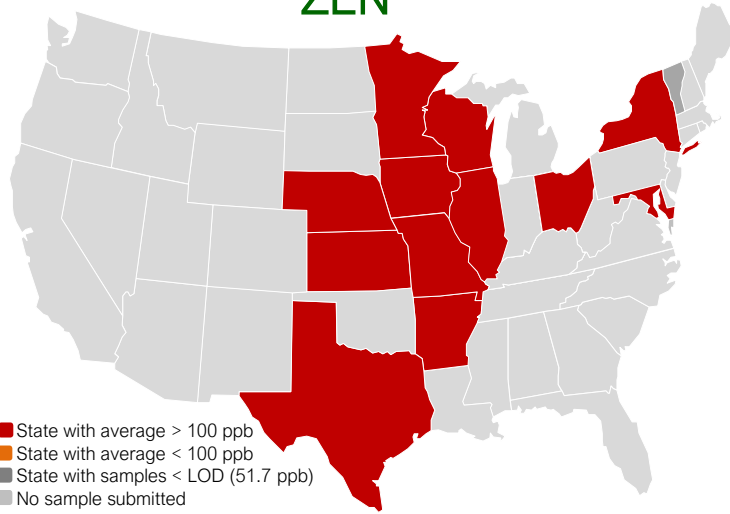
FUM



■ 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
AR	1	100%	19200
KS	1	100%	14200
NE	7	100%	5126
MO	1	100%	2800
NY	1	100%	2200
IL	5	100%	2200
IA	36	100%	1771
WI	17	100%	906
MD	1	100%	900
OH	1	100%	800
MN	5	60%	400
VT	1	100%	200

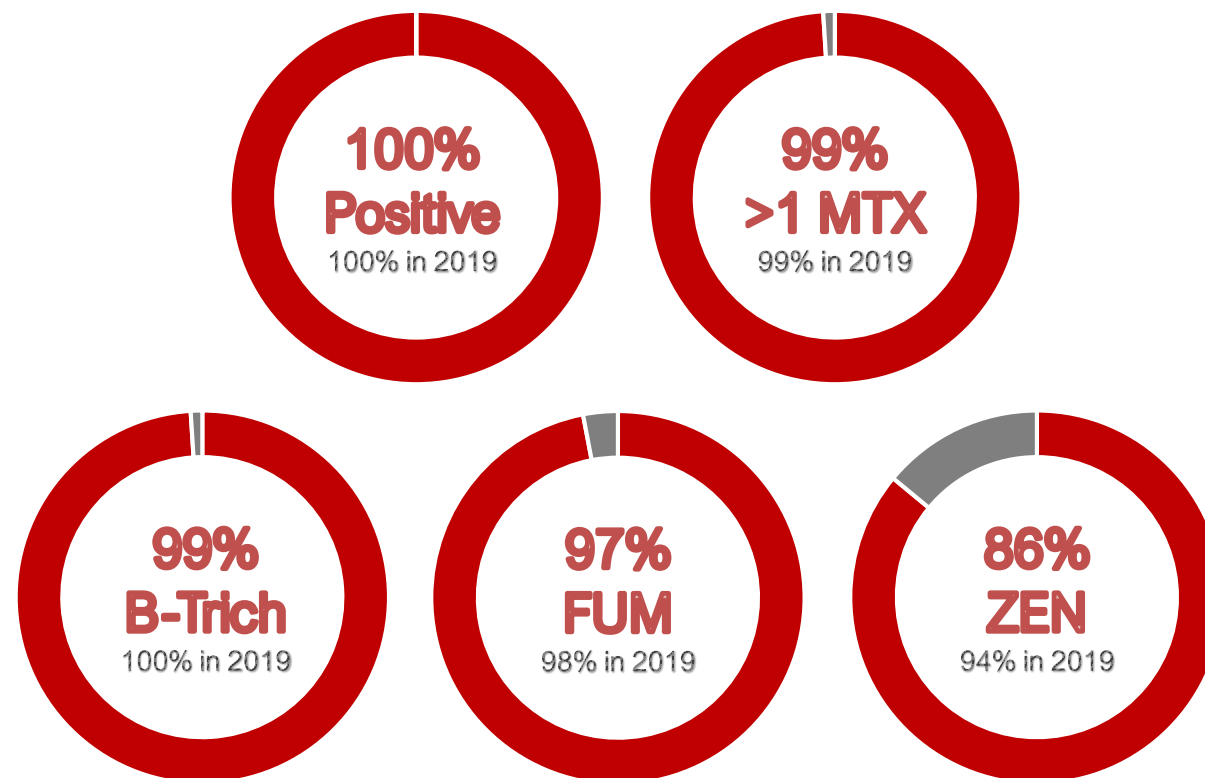
ZEN



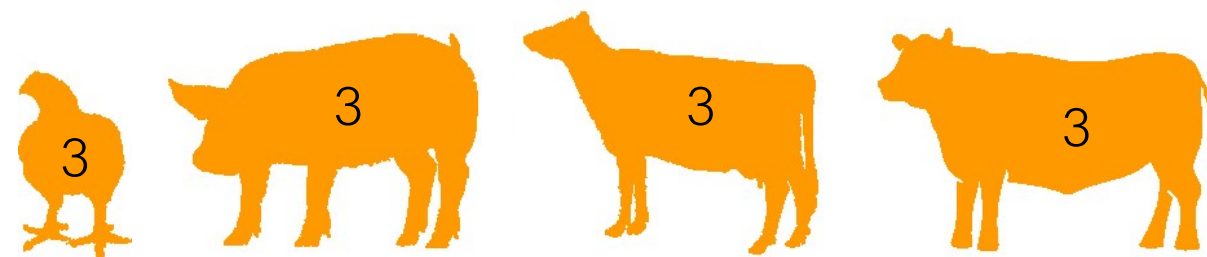
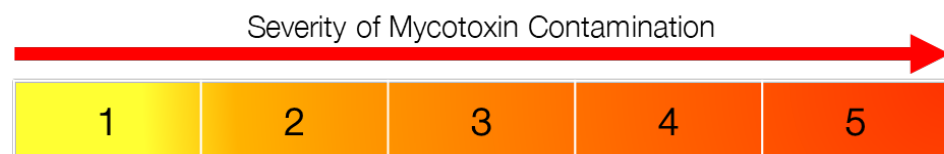
■ State with average > 100 ppb
■ State with average < 100 ppb
■ State with samples < LOD (51.7 ppb)
■ No sample submitted

State	Number of Samples	% Positive Samples	Avg of Positive Samples
MO	1	100%	1461
AR	1	100%	932
KS	1	100%	816
NE	5	57%	609
NY	1	100%	342
MN	5	80%	323
IA	34	81%	274
MD	1	100%	269
WI	17	100%	254
OH	1	100%	163
IL	5	100%	159
VT	1	0%	0

Mycotoxin Survey Summary - 2020 US Corn By-products



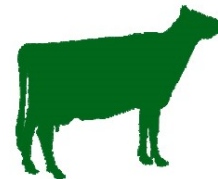
Forecasted risk for livestock production:



Questions?



chacity.pender@biomin.net



paige.gott@biomin.net



lan.zheng@biomin.net



erin.schwandt@biomin.net



<https://www.biomin.net/us/survey/>