

Supplementary Materials: Feed-Based Multi-Mycotoxin Occurrence in Smallholder Dairy Farming Systems of South Africa: The Case of Limpopo and Free State

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Table S1. Concentrations (µg/kg) of the detected toxins (unadjusted data).

		AFG2	AFG1	AFB2	AFB1	STERIG	NIV	DON3	ADON15	ADON	ZEN	OTADAS	T2	HT2	FB1	FB2	FB3	ENN B	NEOFUS-X	AOH	AMEROQC
FH255	Dairy concentrate							328.6	17.7	53.1		19.4						527.2			
FH250	Dairy concentrate	17.2	4.3	30.2	30.9			84.5				187.9									
LN114	Ramilick							<CCα										7048.6			699.9*
LJ272	Pellets							766.2	54.3	156.3					485.2	168.7					
LJ270	Pellets							592.7	53.4	179.0					289.4	219.9				30.5	
LJ271	Pellets							559.8		235.5					392.0	315.1		130.7			
LJ121	Pellets							406.7	33.6						71.3	76.3		321.0			
FP147	Dairy meal							490.3	50.9	186.0					176.0	128.5		129.1			
FP264	Molasses meal				46.1													432.4			
LN111	Pellets							344.5							52.3	83.1		459.4			
LJ269	Pellets							503.2		195.0	293.9				217.6	178.6					
FP262	Feed 2 unnamed							477.9		144.2								147.5			
LN275	Pellets							669.8	70.1						156.3	131.7					
FH132	Dairy meal																				
LN276	Pellets							583.5		210.6					247.2			<CCα			
FP141	Molasses meal																	14230.4*			
FH259	Pellets				7.6			390.0	9.2	59.3					77.0						
FP267	Dairy meal				6.8			309.9		86.2	1309.9										
FH125	Concentrate																				
FP144	Dairy meal							317.7			304.6				122.9	71.4		1790.3			
LJ119	Pellets				6.8			403.6	8.4						140.4	66.4	<CCα				
LN117	Pellets							433.3							121.2						
LN277	Pellets							538.8							191.0			<CCα			
FH136	TMR				15.0			192.9							392.9	416.9		44.8		214.8	
FH129	TMR							653.7		88.7											
FH258	TMR 1				10.1			239.8	16.3	16.0		49.4									
FH261	TMR				9.0			258.0	13.6	57.7										89.1	
FH128	TMR				29.5			101.2												127.7	
FH260	TMR 2		2.2	<CCα	9.6			375.9		48.7										17.9	
FH127	TMR							617.9												683.4	
FP265	TMR							94.5												106.0	
FP148	Maize stover						<CCα	2385.4	300.0	858.8		3.4			39.3						

FP140	Maize stover/grain		<CCα	<CCα	<CCα				
FP139	Maize stover		<CCα	<CCα					
LN113	Grass 1							3088.2	
FH254	Grass	55.6	<CCα				22.9	208.5	
LJ123	Grass 1								
FP145	Grass							876.8	
LN116	Grass	89.7						648.4	
FP268	Lucerne	36.7							
LG107	Lucerne	16.5							
LN118	Lucerne								
LJ273	Field lucerne	<CCα					20.6		
FP263	Hay 1							151.4	
LN112	Grass							456.3	
FH256	TMR	11.0	<CCα				32.0	<CCα	
LG102	Soya bean stover2	<CCα	<CCα		464.9		21.1	85.1	
LG106	Soya bean meal/stover								
LJ120	Grass		<CCα						
LG278	Grass	<CCα							
LG110	Soybean stover								
FH134	Silage		76.8				225.2		
FH135	Lucerne/crops	15.0						164.7	88.7
LG109	Commercial TMR	<CCα			96.7		<CCα	128.9	139.9
LG105	Hay	<CCα						70.8	
FH253	TMR	9.4	321.4				20.6	32.3	
FH131	Total mixed ration	<CCα	295.0				54.3	16.9	
FP146	Total mixed ration	35.4	585.4	38.3	398.4		<CCα	324.0	95.7
FH133	Maize silage		89.1				50.5	15.5	
LG103	Grass							653.1	
FP142	Lucerne		36.9	<CCα			88.7	136.6	
LG104	Lucerne	139.1						204.1	
FH251	Lucerne	<CCα						120.9	
LJ122	Lucerne	<CCα						84.2	
LG108	Lucerne	<CCα				11002.6*			
LN115	Lucerne	<CCα							
FH249	Dairy mix furu	4.8	<CCα				25.4	118.2	
LJ274	Grass silage	14.4							
LG101	Soya bean stover 1		<CCα		1793.7			255.1	603.2
FH126	Silage		409.3					52.8	
FH130	TMR/concentrate	14.2	271.1				81.4	39.4	54.4
FH137	Lucerne/bean stover/silage		820.4				47.7	38.8	

FH257	Silage						1004.9												
FP143	Silage mix					17.4	876.0	138.6											
FH252	TMR	11.1	23.1	6.8	21.9	6.3	<CC α							32.1				189.0	
FP266	Mix- feeding trough					7.7	284.6						55.4					35.5	
FP138	Bean stover														112.8			63.4	

*Unconfirmed positive according to confirmatory criteria, <CC α – below decision limit, TMR: total mixed ration (arbitrary content according to farmer).

Table S2. Summary statistics for all positive detections across specific feed types along with overall feeds.

			NIV	DON	3ADON	15ADO	N	ZEN	AFG2	AFG1	AFB2	AFB1	DAS	AOH	FB1	FB2	FB3	OTA	AME	STERIG	ROQC	**ENN
Dairy	n (pos)		0	2	1	1	0	0	1	1	1	0	0	0	0	0	0	2	0	1	0	1
conce	(μ g/k	min	nd	84.5	17.7	53.1	nd	nd	17.2	4.3	30.2	nd	nd	nd	nd	nd	nd	19.4	nd	30.9	nd	527.2
ntrate	g)	max	nd	328.6	17.7	53.1	nd	nd	17.2	4.3	30.2	nd	nd	nd	nd	nd	nd	187.9	nd	30.9	nd	527.2
(n=3)		mean	nd	206.6	17.7	53.1	nd	nd	17.2	4.3	30.2	nd	nd	nd	nd	nd	nd	103.7	nd	30.9	nd	527.2
Dairy	n (pos)		0	3	1	2	2	0	0	0	0	0	0	0	2	2	0	0	0	1	0	2
meal	(μ g/k	min	nd	309.9	50.9	86.2	304.6	nd	nd	nd	nd	nd	nd	nd	122.9	71.4	nd	nd	nd	6.8	nd	129.1
(n=4)	g)	max	nd	490.3	50.9	186	1309.9	nd	nd	nd	nd	nd	nd	nd	176	128.5	nd	nd	nd	6.8	nd	1790.3
		mean	nd	372.6	50.9	136.1	807.3	nd	nd	nd	nd	nd	nd	nd	149	100	nd	nd	nd	7	nd	960
Dairy	n (pos)		0	12	6	6	1	0	0	0	0	0	0	1	12	8	1	0	0	2	0	5
pellets	(μ g/k	min	nd	344.5	8.4	59.3	293.9	nd	nd	nd	nd	nd	nd	30.5	52.3	66.4	<CC α	nd	nd	6.8	nd	<CC α
(n=12)	g)	max	nd	766.2	70.1	235.5	293.9	nd	nd	nd	nd	nd	nd	30.5	485.2	315.1	<CC α	nd	nd	7.6	nd	459.4
		mean	nd	516	38.2	172.6	293.9	nd	nd	nd	nd	nd	nd	30.5	203.4	155	<CC α	nd	nd	7.2	nd	303.7
Molas	n (pos)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	2
ses	(μ g/k	min	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	46.1	nd	432.4
meal	g)	max	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	46.1	nd	14230.4
(n=2)		mean	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	46.1	nd	7331.4
Ramil	n (pos)		0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
ick	(μ g/k	min	nd	<CC α	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	7048.6
(n=1)	g)	max	nd	<CC α	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	7048.6
		mean	nd	<CC α	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	7048.6
Total	n (pos)		0	17	3	5	2	1	1	2	2	0	14	3	3	0	1	2	14	1	8	
mixed	(μ g/k	min	nd	<CC α	13.6	16	96.7	11.1	23.1	2.2	<CC α	nd	16.9	<CC α	25.4	nd	49.4	<CC α	<CC α	54.4	<CC α	
ration	g)	max	nd	653.7	38.3	144.2	398.4	11.1	23.1	6.8	21.9	nd	683.4	392.9	416.9	nd	49.4	139.9	35.4	54.4	324	
		mean	nd	340.7	22.7	71.1	247.6	11.1	23.1	4.5	21.9	nd	136.4	224.2	158.1	nd	49.4	139.9	13.5	54.4	100.7	

s																					
(n=18)																					
Maize stover/ grain (n=3)	n (pos)		3	3	2	1	0	0	0	0	0	1	0	1	0	0	0	0	0	0	
	(µg/k g)	min	<CCα	<CCα	<CCα	858.8	nd	nd	nd	nd	nd	3.4	nd	39.3	nd	nd	nd	nd	nd	nd	
		max	<CCα	2385.4	300	858.8	nd	nd	nd	nd	nd	3.4	nd	39.3	nd	nd	nd	nd	nd	nd	
		mean	<CCα	2385.4	300	858.8	nd	nd	nd	nd	nd	3.4	nd	39.3	nd	nd	nd	nd	nd	nd	
Grass es (n=11)	n (pos)		0	2	0	0	0	0	0	0	0	8	0	0	0	0	0	0	4	0	
	(µg/k g)	min	nd	<CCα	nd	nd	nd	nd	nd	nd	nd	nd	208.5	nd	nd	nd	nd	nd	<CCα	nd	
		max	nd	<CCα	nd	nd	nd	nd	nd	nd	nd	nd	3088.2	nd	nd	nd	nd	nd	89.7	nd	
		mean	nd	<CCα	nd	nd	nd	nd	nd	nd	nd	nd	988.5	nd	nd	nd	nd	nd	72.7	nd	
Lucer ne (n=12)	n (pos)		1	2	0	0	0	0	0	0	0	6	0	0	0	0	0	1	9	0	
	(µg/k g)	min	36.9	<CCα	nd	nd	nd	nd	nd	nd	nd	nd	38.8	nd	nd	nd	nd	88.7	<CCα	nd	
		max	36.9	820.4	nd	nd	nd	nd	nd	nd	nd	nd	204.1	nd	nd	nd	nd	88.7	139.1	nd	
		mean	36.9	820.4	nd	nd	nd	nd	nd	nd	nd	nd	124.9	nd	nd	nd	nd	88.7	51.8	nd	
Soya bean stover (n=5)	n (pos)		0	2	0	0	2	0	0	0	0	2	0	1	0	0	0	2	1	0	
	µg/kg)	min	nd	<CCα	nd	nd	464.9	nd	nd	nd	nd	nd	63.4	nd	21.1	nd	nd	85.1	<CCα	nd	
		max	nd	<CCα	nd	nd	1793.7	nd	nd	nd	nd	nd	255.1	nd	21.1	nd	nd	603.2	<CCα	nd	
		mean	nd	<CCα	nd	nd	1129.3	nd	nd	nd	nd	nd	159.3	nd	21.1	nd	nd	344.2	<CCα	nd	
Silage s (n=6)	n (pos)		0	5	0	1	0	0	0	0	0	2	0	1	0	0	0	0	2	0	
	(µg/k g)	min	nd	76.8	nd	138.6	nd	nd	nd	nd	nd	nd	15.5	nd	50.5	nd	nd	nd	14.4	nd	
		max	nd	1004.9	nd	138.6	nd	nd	nd	nd	nd	nd	52.8	nd	50.5	nd	nd	nd	17.4	nd	
		mean	nd	491.2	nd	138.6	nd	nd	nd	nd	nd	nd	34.2	nd	50.5	nd	nd	nd	15.9	nd	

LEGEND: ** semi-quantitative result, nd: not detected Nivalenol (NIV), deoxynivalenol (DON), 3- acetyl deoxynivalenol (3-ADON), 15- acetyl deoxynivalenol (15-ADONs), zearalenone (ZEN), aflatoxin G₂ (AFG₂), aflatoxin G₁ (AFG₁), aflatoxin B₂ (AFB₂), aflatoxin B₁ (AFB₁), diacetoxyscirpenol (DAS), alternariol (AOH), fumonisin FB₁ (FB₁), fumonisin FB₂ (FB₂), fumonisin FB₃ (FB₃), ochratoxin A (OTA), alternariol monomethylether (AME), sterigmatocystin (STERIG), roquefortine C (ROQ-C) and enniatin B (ENN B).

Table S3. Overview of prevalence data of investigated mycotoxins in smallholder dairy feeds specifying individual farm means concentrations alongside overall contamination data (N=77).

FARM	Nivalenol	Deoxynivalenol	Neosolaniol	Fusarenon-X	3- Acetyl Deoxynivalenol	15- Acetyl Deoxynivalenol	Zearalenone	Aflatoxin G2	Aflatoxin G1	Aflatoxin B2	Aflatoxin B1	Diacetoxyscirpenol	Alternariol	Fumonisin FB1	Fumonisin FB2	Fumonisin B3	T-2-Toxin	HT2-Toxin	Ochratoxin A	Alternariol Monomethyl Ether	Sterigmatocystin	Roquefortine C	Enniatin
1 (n=2)	/	/	/	/	/	/	<u>1129.3</u>	/	/	/	/	/	127.6	/	10.6	/	/	/	/	344.2	/	/	/
2 (n=4)	/	/	/	/	/	/	/	/	/	/	/	/	232.0	/	/	/	/	/	/	/	34.8	/	/
3 (n=2)	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	8.2	/	/
4 (n=2)	/	/	/	/	/	/	48.4	/	/	/	/	/	64.5	/	/	/	/	/	/	69.9	/	/	/
5 (n=1)	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
6 (n=3)	/	338.1	/	/	23.4	/	/	/	/	/	/	/	152.1	69.5	71.6	/	/	/	/	/	/	/	153.1
7 (n=4)	/	145.9	/	/	/	52.7	/	/	/	/	/	/	772.1	61.8	/	/	/	/	/	/	/	174.9	1762.2
8 (n=4)	/	243.0	/	/	/	/	/	/	/	/	/	/	162.1	78.1	/	/	/	/	/	/	22.4	/	/
9 (n=2)	/	453.4	/	/	4.2	97.5	146.9	/	/	/	/	/	/	179.0	122.5	/	/	/	/	/	3.40	/	/
10 (n=3)	/	333.1	/	/	29.0	59.7	/	/	/	/	/	/	10.2	120.2	98.7	/	/	/	/	/	/	/	107.0
11 (n=2)	/	/	/	/	/	/	/	/	/	/	/	/	42.1	/	/	/	/	/	/	/	/	/	/
12 (n=1)	/	559.8	/	/	/	235.5	/	/	/	/	/	/	/	392.0	315.1	/	/	/	/	/	/	/	130.7
13 (n=3)	/	255.4	/	/	18.1	52.1	/	/	/	/	/	/	/	161.7	56.2	/	/	/	/	/	4.8	/	6.9
14 (n=4)	/	256.8	/	/	/	/	/	/	/	/	/	/	213.6	/	6.4	/	/	/	/	/	1.2	/	/
15 (n=4)	/	46.4	/	/	/	/	/	2.78	<u>10.1</u>	2.8	<u>13.0</u>	/	109.4	/	8.03	/	/	/	46.9	/	16.7	/	/
16 (n=2)	/	487.5	/	/	/	44.4	/	/	/	/	/	/	16.1	/	/	/	/	/	/	/	4.7	/	10.3
17 (n=5)	/	179.0	/	/	3.5	10.6	/	/	/	/	/	/	52.9	/	/	/	/	/	3.9	/	16.2	10.9	143.6
18 (n=5)	/	234.2	/	/	/	/	/	/	/	/	/	/	36.1	/	10.1	/	/	/	/	17.7	3.0	/	45.0
19 (n=5)	/	403.8	/	/	5.1	24.8	/	/	/	0.4	/	/	54.3	93.9	83.4	/	/	/	9.9	/	8.5	/	18.5
20 (n=1)	/	258.0	/	/	13.6	57.7	/	/	/	/	/	/	89.1	/	/	/	/	/	/	/	9.00	/	/
21 (n=9)	4.1	63.6	/	/	/	16.0	/	/	/	/	/	/	50.8	/	/	/	/	/	/	/	5.1	/	864.6
22 (n=9)	/	583.3	/	/	43.2	141.1	223.7	/	/	/	/	0.4	112.0	43.7	22.2	/	/	/	/	/	11.6	/	249.3
¹ Overall Mean (µg/kg)	36.9	477.8	ND	ND	55.5	169.6	666.0	11.1	20.2	4.43	26.1	3.4	279.3	189.9	132.4	ND	ND	ND	85.6	229.2	25.8	377.2	1195.1
¹ Range (µg/kg)	36.9	76.8 – 2385.4	ND	ND	8.4 – 300.0	16.0 – 858.8	96.7 – 1793.7	11.1	17.2 – 23.1	2.2 – 6.8	21.9 – 30.2	3.4	15.5 – 3088.2	39.3 – 485.2	21.1 – 416.9	ND	ND	ND	19.4 – 187.9	85.1 – 603.2	4.8 – 139.1	54.4 – 699.9	20.6 – 14230.4
¹ N (%) pos	1 (1.3)	38 (48.7)	ND	ND	12 (15.4)	16 (20.5)	7 (8.9)	1 (1.3)	2 (2.6)	3 (3.9)	2 (2.6)	1 (1.3)	33 (42.9)	17 (21.8)	15 (19.2)	ND	ND	ND	3 (3.9)	4 (5.1)	25 (32.1)	2 (2.6)	22 (28.2)
¹ N (%) > legislated limits	1 (1.3)	EU				2 (2.6)	EU/ SA				2 (2.6)	SA											

LEGEND: ¹Overall data with values above CC α (positive samples); CC α : decision limit; /: none quantified result (ND-not detected or <CC α -decision limit); Underlined farm mean values exceed legislated limits apart from farm 4/T-2 toxin as this value was estimated; ¹N (%) pos: number and percentage of positive samples. N (%) > legislated limits: number and percentage of positive samples above legislated limits (DON: EU 2 000 µg/kg; ZEN: SA/EU 500 µg/kg; AFB1: SA 5 µg/kg/EU: 20 µg/kg).

Table S4. Mycotoxin co-occurrence combinations found in study.

Number of coexisting mycotoxins	Number of combinations	Types of combinations (a)	
7	1	AFG2, AFG1, AFB2, AFB1, FB2, AOH, STERIG	
6	6	DON, 3ADON, 15ADON, FB1 FB2, AOH DON, 3ADON, 15ADON, FB1, FB2, ENN B DON, 3ADON, ZEN, AOH, STERIG, ENN B	DON, 15ADON, AFB2, AFB1, AOH, STERIG DON, FB1, FB2, AOH, STERIG, ENN B DON, AFG1, AFB2, AFB1, OTA, STERIG
5	12	DON, 3ADON, 15ADON, FB1, FB2 DON, 3ADON, 15ADON, FB1, DAS DON, 3ADON, 15ADON, FB1, STERIG DON, 3ADON, 15ADON, OTA, ENN B DON, 3ADON, 15ADON, OTA, STERIG DON, 3ADON, 15ADON, AOH, STERIG	DON, 15ADON, FB1, FB2, ENN B DON, 15ADON, FB1, FB2, ZEN DON, 3ADON, FB1, FB2, ENN B DON, 3ADON, FB1, FB2, STERIG DON, AOH, STERIG, ROQ-C, ENN B DON, FB1, FB2, ZEN, ENN B
4	5	DON, 15ADON, ZEN, STERIG DON, 3ADON, FB1, FB2 DON, FB1, FB2, ENN B	DON, FB1, AOH, STERIG DON, AOH, STERIG, ENN B
3	12	DON, AOH, STERIG DON, AOH, ENN B (2) DON, FB2, AOH DON, 15ADON, STERIG DON, 15ADON, ENN B DON, 15ADON, FB1	ZEN, AOH, AME (2) ZEN, FB2, AME FB2, AOH, STERIG NIV, AOH, ENN B AOH, STERIG, ENN B AOH, STERIG, AME
2	8	DON, FB1 (2) DON, AOH (3) DON, 15ADON DON, ENN B	AOH, STERIG (2) AOH, ENN B ROQ-C, ENN B STERIG, ENN B (2)
1	5	DON T2 STERIG (3)	AOH (8) ENN B (2)
0	11	-	

Notes: (n) number of multiple occurrences of combination. Nivalenol (NIV), deoxynivalenol (DON), 3- acetyl deoxynivalenol (3-ADON), 15- acetyl deoxynivalenol (15-ADONs), zearalenone (ZEN), aflatoxin G2 (AFG2), aflatoxin G1 (AFG1), aflatoxin B2 (AFB2), aflatoxin B1 (AFB1), diacetoxyscirpenol (DAS), alternariol (AOH), fumonisin FB1 (FB1,) fumonisin FB2 (FB2), ochratoxin A (OTA), alternariol monomethyl ether (AME), sterigmatocystin (STERIG), roquefortine C (ROQ-C), enniatin B (ENN B).

Table S5. LC Gradient program employed.

Time (minutes)	0	7	11	13	14	14.1	17.6	18.6	19.8	19.9	22.4	23.4	25	26	28
Mobile phase A (%)	95	35	25	1	1	95	35	25	1	95	35	25	1	95	95
Mobile phase B (%)	5	65	75	99	99	5	65	75	99	5	65	75	99	5	5

Table S6. MS/MS parameters for determination of 23 mycotoxins and 2 internal standards.

Mycotoxin	Precursor ion (m/z)	Fragment ions (m/z)	Collision energy (eV)	Cone voltage (V)	Expected retention time (min)
Aflatoxin B1	313.0	285.1*	24.0	51.0	7.9
		241.2	36.0	51.0	
Aflatoxin B2	315.0	287.2*	27.0	51.0	7.6
		259.2	30.0	51.0	
Aflatoxin G1	329.0	243.0*	25.0	44.0	7.2
		311.2	20.0	44.0	
Aflatoxin G2	331.0	313.1*	25.0	53.0	6.9
		245.2	30.0	53.0	
Ochratoxin A	403.9	239.0*	22.0	24.0	11.3
		358.2	14.0	24.0	
Deoxynivalenol	297.1	249.2*	10.0	26.0	4.3
		231.2	15.0	26.0	
Zearalenone	319.1	187.2*	19.0	27.0	11.7
		203.0	20.0	27.0	
Fumonisin B1	722.1	352.4*	36.0	56.0	9.4
		704.4	29.0	56.0	
Fumonisin B2	706.1	336.5*	40.0	61.0	10.6
		688.5	29.0	61.0	
Fumonisin B3	706.1	336.5*	37.0	54.0	12.0
		688.5	31.0	54.0	
T-2 toxin	489.1	245.1*	26.0	26.0	10.2
		327.0	26.0	26.0	
HT-2 toxin	447.1	345.3*	21.0	30.0	9.2
		285.1	23.0	30.0	
Nivalenol	313.1	125.0*	13.0	26.0	3.2
		205.0	12.0	26.0	
3- Acetyl deoxynivalenol	339.0	231.2*	13.0	23.0	6.5
		203.2	12.0	23.0	
15- Acetyl deoxynivalenol	339.0	137.1*	10.0	26.0	6.5
		321.2	10.0	26.0	
Diacetoxyscirpenol	384.2	307.1*	12.0	21.0	7.9
		247	14.0	21.0	
Fusarenon-X	355.0	174.9*	20.0	18.0	5.2
		137.0	25.0	18.0	
Neosolaniol	400.0	305.3*	12.0	26.0	5.3
		185.0	19.0	26.0	
Alternariol	258.9	185.1*	30.0	40.0	9.9
		213.1	26.0	40.0	
Alternariol Methyl Ether	272.9	258.2*	26.0	57.0	12.7

		199.3	30.0	57.0	
Roquefortine C	390.0	193.2*	26.0	40.0	8.9
		322.2	21.0	40.0	
Sterigmatocystin	325.0	310.2*	25.0	47.0	12.2
		281.1	36.0	47.0	
Enniatin B	622.0	336.3*	49.0	58.0	13.0
		549.4	46.0	58.0	
Zearalanone (IS)	321.0	303.3*	13.0	26.0	11.3
		189.2	19.0	26.0	
De-epoxydeoxynivalenol (IS)	281.0	109.1*	19.0	26.0	5.5
		137	15.0	26.0	

* most abundant ion.

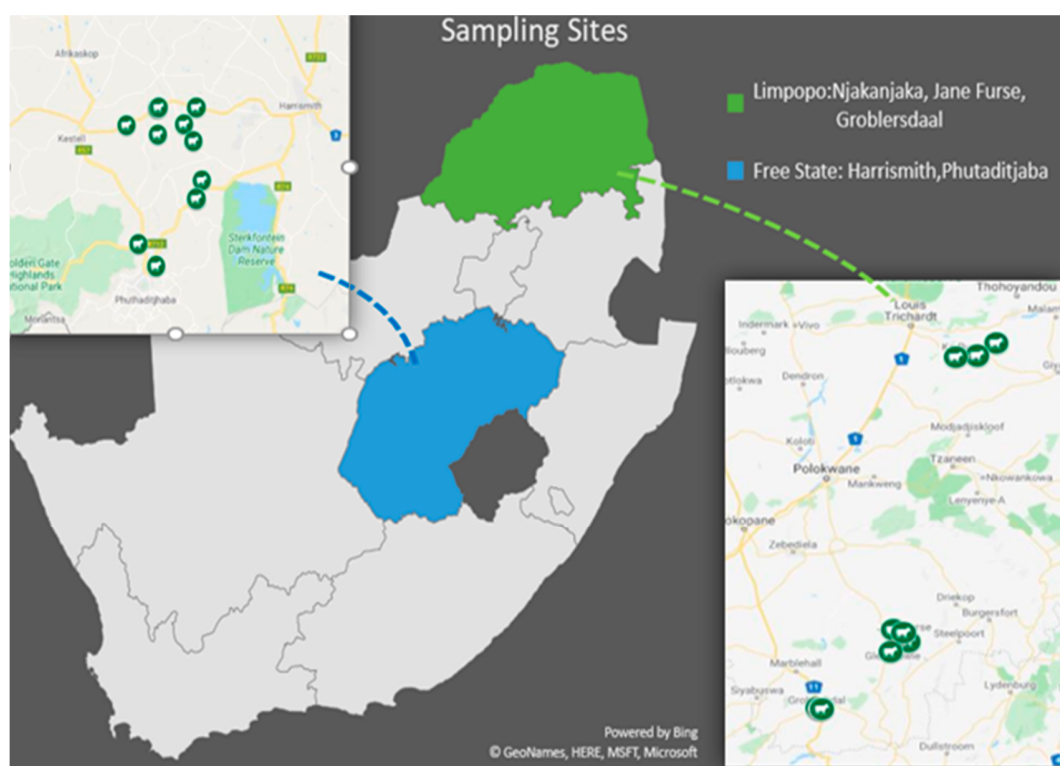


Figure S1. Map of South Africa showing towns and smallholder farming areas of interest to this study.