C1 N CHAIN CALCULATIONS SHEET C: N CHAINS BASED UPON DANISH VALUES AND WITH NORMAL IPCC N2O EMISSION VALUES | BASIC VALUES | By Jacob Bugge Version 310308, | Available at www.ppo.bugge.com See terms of use on Sheet A | C1

Note 33

Crop, fodder/food	WRS	WWH	WWB	WBA	RYE	TRI	SBA	SWH	OAT	MCC	MCW	GRO	GCR	CGR	GHP	GRP	CGR0	CONC	
Crop #	22	11	13	10	14	16	1	2	3	5	216	263	260	261	2520	252	2610	9999	Note 1
<NUE/e>	0.64	0.64	0.54	0.60	0.59	0.53	0.60	0.58	0.73	0.62	1.05	0.83	1.33	11.68	0.44	0.81	-2.75	1.00	Note 16
N digestibility, crop/crop part with N	0.84	0.67	0.68	0.66	0.62	0.65	0.65	0.67	0.64	0.62	0.63	0.78	0.80	0.80	0.66	0.78	0.80	0.87	Note 4
<NUE/e> addition before cereal	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.11	0.04	0.11	29.21	0.00	0.00	-0.81	0.00	Note 34
<NUE/e> addition from straw	0.15	0.11	0.09	0.12	0.17	0.13	0.12	0.07	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Note 34
Recalculated N norm, kg N/ha	144	157	198	147	117	141	118	118	93	140	160	309	199	21	132	132	-87		Note 14

Crop, PPO/biodiesel/bioethanol	WRB	WWHB	WWBB	WBB	RYB	TRB	SBB	SWB	OAB	MCB	
Crop #	229	119	139	109	149	169	19	29	39	59	Note 1
<NUE/e>	0.64	0.64	0.54	0.60	0.59	0.53	0.60	0.58	0.73	0.62	Note 16
N digestibility, crop part with N	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.83	Note 4
<NUE/e> addition before cereal	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Note 34
<NUE/e> addition from straw	0.15	0.11	0.09	0.12	0.17	0.13	0.12	0.07	0.13	0.00	Note 34
Recalculated N norm, kg N/ha	144	157	198	147	117	141	118	118	93	140	Note 14
<NUE/e> amounts from crop res	0.03	0.11	0.09	0.08	0.15	0.12	0.09	0.12	0.11	0.21	0.04	0.04	0.13	1.28	0.15	0.15	-0.30		Note 34
<NUE/e> amounts from N fixation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.47	11.96	0.00	0.00	-4.05		Note 34

Manure/fertilizer kind, #	None 0	N 1	Cattle manure 2	2	2	2	Pig manure 3	3	3	3	Poultry manure 4	4	4	4	Sheep manure 5	5	Goat manure 6	6	Green 71	Green 72	None 0	None 0	Note 35
Manure handling	None		Liquid	Separated	Deep litter	Grazing	Liquid	Separated	Deep litter	Rooting	Liquid	Separated	Deep litter	Scraping	Deep litter	Grazing	Deep litter	Grazing	high N	low N	None	None	Note 35
#	0	1	21	22	23	24	31	32	33	34	41	42	43	44	53	54	63	64	71	72	0	0	Note 35
Manure+straw, relative	1.000	1.016	1.016	1.159	1.000	1.000	1.024	1.127	1.000	1.000	1.000	1.013	1.000	1.162	1.000	1.162	1.000	1.000	1.000				Note 36
Vol/NH3 House	0.000	0.000	0.080	0.050	0.060	0.000	0.140	0.180	0.250	0.000	0.100	0.250	0.400	0.000	0.150	0.000	0.150	0.000	0.000	0.000			Note 37
Vol/NH3 Store	0.000	0.000	0.022	0.085	0.300	0.000	0.027	0.214	0.400	0.000	0.020	0.150	0.175	0.000	0.150	0.000	0.150	0.000	0.000	0.000			Note 37
% use of field store					20				70				85										Note 38
Vol/NH3 Field	0.000	0.022	0.250	0.250	0.250	0.070	0.250	0.250	0.250	0.070	0.250	0.250	0.250	0.070	0.250	0.070	0.250	0.070	0.250	0.250			Note 37
N efficiency	0.000	1.000	0.700	0.650	0.450	0.450	0.750	0.650	0.650	0.650	0.650	0.650	0.450	0.450	0.450	0.450	0.450	0.450	0.700	0.400			Note 39
N-Vol/NH3 efficiency		1.022	0.933	0.867	0.600	0.484	1.000	0.867	0.867	0.699	0.867	0.867	0.600	0.484	0.600	0.484	0.600	0.484	0.933	0.533			Note 40

Use Kind	Kind	Waste moved	Waste in field	Cattle Dairy	Cattle Beef	Pig Pork	Poultry Meat	Poultry Eggs	Sheep Milk/mutton	Goat Milk/meat	N crop high N	N crop low N	Food/ beverage	Fuel/ other	
#		-1	0	21	22	32	42	43	51	61	71	72	8	9	Note 41
Fodder to food	N eff	NON		0.264	0.227	0.418	0.510	0.241	0.142	0.096					Note 41
Fodder to food	N eff	ORG		0.264	0.146	0.269	0.328	0.272	0.142	0.096					Note 41
Fodder to food	ND eff	NON		0.351	0.310										Note 41
Fodder to food	ND eff	ORG		0.351	0.199										Note 41

Ratios of N2O-N to N according to		IPCC 1996 (current inventories)			IPCC 2006 (newest values, not yet used for inventories)			
Fertilizer/manure		N	Animal	Green	N	Animal	Green	Note 42
Handling/	Slurry and liquid manure	0	0.0010	0	0	0.0050	0	Note 42
house/store	Solid manure and deep litter	0	0.0200	0	0	0.0050	0	Note 42
Application/field		0.0125	0.0125	0.0125	0.0100	0.0100	0.0100	Note 42
Grazing cattle, rooting pigs, craping poultry		0	0.0200	0	0	0.0200	0	Note 42
Grazing, others		0	0.0200	0	0	0.0100	0	Note 42
Volatilisation/NH3		0.0100	0.0100	0.0100	0.0100	0.0100	0.0100	Note 42
Crop residues		0	0.0000	0.0125	0	0.0000	0.0100	Note 42
N fixing crops		0	0.0000	0.0125	0	0.0000	0.0000	Note 42
Leaching		0.0250	0.0250	0.0250	0.0075	0.0075	0.0075	Note 42

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N CHAIN STARTING WITH N FERTILIZER TO PRODUCE WINTER RAPESEED FOR PPO/BIODIESEL AND CATTLE DAIRY Note 43
AND CONTINUING WITH LIQUID CATTLE MANURE TO PRODUCE WINTER WHEAT FOR CATTLE DAIRY Note 43

Year	Fertlizer/manure # Name	Store 1/0	Amounts Store	Amounts Field	Or-ganic 1/0	Nnorm propor tion, %	Crop # Name	Cereal benefit 1/0	Straw used 1/0	Crop use & leach	Use # Name	Fodder: Uses #21-61 Fed	Fodder: Uses #21-61 Food	N crop #71/ #72	Food/ bev #8	Fuel/ other #9	Manure handling # Name	Final N a-mounts	N2O-N emission IPCC 1996 Each	N2O-N emission IPCC 1996 Total	N2O-N emission IPCC 2006 Each	N2O-N emission IPCC 2006 Total	Note 44
Total	N		RATIO OF N2O-N TO N IN FIRST CROP					TOTAL N AMOUNTS IN KG AND % ENDING AS FOOD/FUEL/OTHER/REMOVED										28.1	27.8	2.27	3.70	2.17	2.78	Note 45
Year	N NH3		ACCORDING TO		IPCC 1996		IPCC 2006	TOTAL N AMOUNTS IN KG AND % VOLATILISATION/NH3										26.3	26.0	0.26		0.26		Note 45
1-10	N leach		FIRST YEAR		0.0310		0.0237	TOTAL N AMOUNTS IN KG AND % LEACHED										46.7	46.2	1.17		0.35		Note 45
			TOTAL		0.0519		0.0390	TOTAL N AMOUNTS IN KG AND %										101.1	100.0					Note 45
N2O-N/N in food/beverage/fuel/other																				0.1318		0.0991		Note 46
Year	N	1	1	100.0	100.0	0	100	229	1	0	97.8	21	71.3	21.0	0.0	0.0	0.0	21	50.2	1.49	2.21	1.43	1.69	Note 47
1	Vol/NH3	N	YES	0.0	2.2	NON	100.00	WRB	1.113	NO	26.5	Cattle	0.84				0.0	Cattle	4.0	0.06	0.0125	0.06	0.0100	Note 48
	N leach		1.022	1.000		ORG	1.00	1.113	0.271	0.0	26.5	Dairy	2				17.5	Liquid	0.0	0.66	0.0010	0.20	0.0050	Note 49
Year	N	21	1	47.0	45.9	0	100	11	0	0	34.5	21	20.7	4.9	0.0	0.0	0.0	21	15.8	0.54	1.02	0.51	0.75	Note 47
2	Vol/NH3	Cattle	YES	1.0	11.5	NON	100.00	WWH	1.000	NO	13.8	Cattle	0.67				0.0	Cattle	1.3	0.14	0.0125	0.14	0.0100	Note 48
	N leach	Liquid	0.933	1.016		ORG	1.00	1.000	0.400	0.0	13.8	Dairy	2				7.5	Liquid	0.0	0.34	0.0010	0.10	0.0050	Note 49
Year	N	21	1	14.8	14.4	0	100	11	0	0	10.8	21	6.5	1.5	0.0	0.0	0.0	21	5.0	0.17	0.32	0.16	0.24	Note 47
3	Vol/NH3	Cattle	YES	0.3	3.6	NON	100.00	WWH	1.000	NO	4.3	Cattle	0.67				0.0	Cattle	0.4	0.04	0.0125	0.04	0.0100	Note 48
	N leach	Liquid	0.933	1.016		ORG	1.00	1.000	0.400	0.0	4.3	Dairy	2				2.4	Liquid	0.0	0.11	0.0010	0.03	0.0050	Note 49
Year	N	21	1	4.6	4.5	0	100	1	0	0	3.4	21	1.9	0.4	0.0	0.0	0.0	21	1.5	0.05	0.10	0.05	0.07	Note 47
4	Vol/NH3	Cattle	YES	0.1	1.1	NON	100.00	SBA	1.000	NO	1.5	Cattle	0.65				0.0	Cattle	0.1	0.01	0.0125	0.01	0.0100	Note 48
	N leach	Liquid	0.933	1.016		ORG	1.00	1.000	0.443	0.0	1.5	Dairy	2				0.7	Liquid	0.0	0.04	0.0010	0.01	0.0050	Note 49
Year	N	21	1	1.4	1.3	0	100	10	0	0	1.0	21	0.6	0.1	0.0	0.0	0.0	21	0.4	0.02	0.03	0.01	0.02	Note 47
5	Vol/NH3	Cattle	YES	0.0	0.3	NON	100.00	WBA	1.000	NO	0.4	Cattle	0.66				0.0	Cattle	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach	Liquid	0.933	1.016		ORG	1.00	1.000	0.444	0.0	0.4	Dairy	2				0.2	Liquid	0.0	0.01	0.0010	0.00	0.0050	Note 49
Year	N	21	1	0.4	0.4	0	100	229	1	0	0.3	21	0.2	0.1	0.0	0.0	0.0	21	0.1	0.00	0.01	0.00	0.01	Note 47
6	Vol/NH3	Cattle	YES	0.0	0.1	NON	100.00	WRB	1.113	NO	0.1	Cattle	0.84				0.0	Cattle	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach	Liquid	0.933	1.016		ORG	1.00	1.113	0.335	0.0	0.1	Dairy	2				0.1	Liquid	0.0	0.00	0.0010	0.00	0.0050	Note 49
Year	N	21	1	0.1	0.1	0	100	11	0	0	0.1	21	0.1	0.0	0.0	0.0	0.0	21	0.0	0.00	0.00	0.00	0.00	Note 47
7	Vol/NH3	Cattle	YES	0.0	0.0	NON	100.00	WWH	1.000	NO	0.0	Cattle	0.67				0.0	Cattle	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach	Liquid	0.933	1.016		ORG	1.00	1.000	0.400	0.0	0.0	Dairy	2				0.0	Liquid	0.0	0.00	0.0010	0.00	0.0050	Note 49
Year	N	21	1	0.0	0.0	0	100	11	0	0	0.0	21	0.0	0.0	0.0	0.0	0.0	21	0.0	0.00	0.00	0.00	0.00	Note 47
8	Vol/NH3	Cattle	YES	0.0	0.0	NON	100.00	WWH	1.000	NO	0.0	Cattle	0.67				0.0	Cattle	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach	Liquid	0.933	1.016		ORG	1.00	1.000	0.400	0.0	0.0	Dairy	2				0.0	Liquid	0.0	0.00	0.0010	0.00	0.0050	Note 49
Year	N	21	1	0.0	0.0	0	100	1	0	0	0.0	21	0.0	0.0	0.0	0.0	0.0	21	0.0	0.00	0.00	0.00	0.00	Note 47
9	Vol/NH3	Cattle	YES	0.0	0.0	NON	100.00	SBA	1.000	NO	0.0	Cattle	0.65				0.0	Cattle	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach	Liquid	0.933	1.016		ORG	1.00	1.000	0.443	0.0	0.0	Dairy	2				0.0	Liquid	0.0	0.00	0.0010	0.00	0.0050	Note 49
Year	N	21	1	0.0	0.0	0	100	10	0	0	0.0	21	0.0	0.0	0.0	0.0	0.0	21	0.0	0.00	0.00	0.00	0.00	Note 47
10	Vol/NH3	Cattle	YES	0.0	0.0	NON	100.00	WBA	1.000	NO	0.0	Cattle	0.66				0.0	Cattle	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach	Liquid	0.933	1.016		ORG	1.00	1.000	0.444	0.0	0.0	Dairy	2				0.0	Liquid	0.0	0.00	0.0010	0.00	0.0050	Note 49

Year	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year10	Total	Total/year 1	
Area with crop, ha	0.77	0.27	0.08	0.04	0.01	0.00	0.00	0.00	0.00	0.00	1.17	1.52	Note 50

Possible additional non IPCC N2O-N emissions	Value											Kind of source	Total IPCC and non IPCC N2O	
N residues emissions, ratio of N2O-N to N:	0.0000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Current crops	3.70	2.78 Note 51
Increased soil N emissions, kg N2O-N/ha:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Total anthropogenic	3.70	2.78 Note 51
Natural background emissions, kg N2O-N/ha:	1.00	0.77	0.27	0.08	0.04	0.01	0.00	0.00	0.00	0.00	0.00	Total including natural	4.87	3.95 Note 51

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N CHAIN STARTING WITH N FERTILIZER TO PRODUCE WINTER RAPESEED FOR PPO/BIODIESEL AND CATTLE DAIRY Note 43
AND CONTINUING WITH SEPARATED CATTLE MANURE TO PRODUCE WINTER WHEAT FOR CATTLE DAIRY Note 43

Year	Fertlizer/manure # Name	Store 1/0	Amounts Store	Field	Or-ganic 1/0	Nnorm propor tion, %	Crop # Name	Cereal benefit 1/0	Straw used 1/0	Crop use & leach	Use # Name	Fodder: Uses #21-61 Fed	Food	N crop #71/ #72	Food/ bev #8	Fuel/ other #9	Manure handling # Name	Final N a-mounts	N2O-N emission IPCC 1996 Each	Total	N2O-N emission IPCC 2006 Each	Total	Note 44 Note 44 Note 44
Total N			RATIO OF N2O-N TO N IN FIRST CROP				TOTAL N AMOUNTS IN KG AND % ENDING AS FOOD/FUEL/OTHER/REMOVED							27.1	26.8	2.84	4.29	2.12	2.74	Note 45
Year N NH3			ACCORDING TO		IPCC 1996	IPCC 2006	TOTAL N AMOUNTS IN KG AND % VOLATILISATION/NH3							26.9	26.6	0.27		0.27		Note 45
1-10 N leach			FIRST YEAR		0.0372	0.0236	TOTAL N AMOUNTS IN KG AND % LEACHED							47.1	46.6	1.18		0.35		Note 45
			TOTAL		0.0602	0.0384	TOTAL N AMOUNTS IN KG AND %							101.1	100.0					Note 45
N2O-N/N in food/beverage/fuel/other																	0.1584		0.1011	Note 46
Year	N	1	1	100.0	100.0	0	100	229	1	0	97.8	21	71.3	21.0	0.0	0.0	0.0	22	50.2	1.94	2.65	1.43	1.68	Note 47
1	Vol/NH3	N	YES	0.0	2.2	NON	100.00	WRB	1.113	NO	26.5	Cattle	0.84				0.0	Cattle	2.5	0.05	0.0125	0.05	0.0100	Note 48
	N leach		1.022	1.000		ORG	1.00	1.113	0.271	0.0	26.5	Dairy	2				17.5	Sep	0.0	0.66	0.0105	0.20	0.0050	Note 49
Year	N	22	1	48.5	44.4	0	100	11	0	0	33.3	21	18.5	4.4	0.0	0.0	0.0	22	14.2	0.65	1.18	0.49	0.76	Note 47
2	Vol/NH3	Cattle	YES	4.1	11.1	NON	100.00	WWH	1.000	NO	14.7	Cattle	0.67				0.0	Cattle	0.7	0.16	0.0125	0.16	0.0100	Note 48
	N leach	Sep	0.867	1.016		ORG	1.00	1.000	0.443	0.0	14.7	Dairy	2				7.3	Sep	0.0	0.37	0.0105	0.11	0.0050	Note 49
Year	N	22	1	13.7	12.5	0	100	11	0	0	9.4	21	5.2	1.2	0.0	0.0	0.0	22	4.0	0.18	0.33	0.14	0.21	Note 47
3	Vol/NH3	Cattle	YES	1.2	3.1	NON	100.00	WWH	1.000	NO	4.2	Cattle	0.67				0.0	Cattle	0.2	0.04	0.0125	0.04	0.0100	Note 48
	N leach	Sep	0.867	1.016		ORG	1.00	1.000	0.443	0.0	4.2	Dairy	2				2.1	Sep	0.0	0.10	0.0105	0.03	0.0050	Note 49
Year	N	22	1	3.9	3.5	0	100	1	0	0	2.6	21	1.4	0.3	0.0	0.0	0.0	22	1.1	0.05	0.09	0.04	0.06	Note 47
4	Vol/NH3	Cattle	YES	0.3	0.9	NON	100.00	SBA	1.000	NO	1.3	Cattle	0.65				0.0	Cattle	0.1	0.01	0.0125	0.01	0.0100	Note 48
	N leach	Sep	0.867	1.016		ORG	1.00	1.000	0.483	0.0	1.3	Dairy	2				0.5	Sep	0.0	0.03	0.0105	0.01	0.0050	Note 49
Year	N	22	1	1.0	0.9	0	100	10	0	0	0.7	21	0.4	0.1	0.0	0.0	0.0	22	0.3	0.01	0.03	0.01	0.02	Note 47
5	Vol/NH3	Cattle	YES	0.1	0.2	NON	100.00	WBA	1.000	NO	0.3	Cattle	0.66				0.0	Cattle	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach	Sep	0.867	1.016		ORG	1.00	1.000	0.483	0.0	0.3	Dairy	2				0.1	Sep	0.0	0.01	0.0105	0.00	0.0050	Note 49
Year	N	22	1	0.3	0.2	0	100	229	1	0	0.2	21	0.1	0.0	0.0	0.0	0.0	22	0.1	0.00	0.01	0.00	0.00	Note 47
6	Vol/NH3	Cattle	YES	0.0	0.1	NON	100.00	WRB	1.113	NO	0.1	Cattle	0.84				0.0	Cattle	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach	Sep	0.867	1.016		ORG	1.00	1.113	0.382	0.0	0.1	Dairy	2				0.0	Sep	0.0	0.00	0.0105	0.00	0.0050	Note 49
Year	N	22	1	0.1	0.1	0	100	11	0	0	0.1	21	0.0	0.0	0.0	0.0	0.0	22	0.0	0.00	0.00	0.00	0.00	Note 47
7	Vol/NH3	Cattle	YES	0.0	0.0	NON	100.00	WWH	1.000	NO	0.0	Cattle	0.67				0.0	Cattle	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach	Sep	0.867	1.016		ORG	1.00	1.000	0.443	0.0	0.0	Dairy	2				0.0	Sep	0.0	0.00	0.0105	0.00	0.0050	Note 49
Year	N	22	1	0.0	0.0	0	100	11	0	0	0.0	21	0.0	0.0	0.0	0.0	0.0	22	0.0	0.00	0.00	0.00	0.00	Note 47
8	Vol/NH3	Cattle	YES	0.0	0.0	NON	100.00	WWH	1.000	NO	0.0	Cattle	0.67				0.0	Cattle	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach	Sep	0.867	1.016		ORG	1.00	1.000	0.443	0.0	0.0	Dairy	2				0.0	Sep	0.0	0.00	0.0105	0.00	0.0050	Note 49
Year	N	22	1	0.0	0.0	0	100	1	0	0	0.0	21	0.0	0.0	0.0	0.0	0.0	22	0.0	0.00	0.00	0.00	0.00	Note 47
9	Vol/NH3	Cattle	YES	0.0	0.0	NON	100.00	SBA	1.000	NO	0.0	Cattle	0.65				0.0	Cattle	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach	Sep	0.867	1.016		ORG	1.00	1.000	0.483	0.0	0.0	Dairy	2				0.0	Sep	0.0	0.00	0.0105	0.00	0.0050	Note 49
Year	N	22	1	0.0	0.0	0	100	10	0	0	0.0	21	0.0	0.0	0.0	0.0	0.0	22	0.0	0.00	0.00	0.00	0.00	Note 47
10	Vol/NH3	Cattle	YES	0.0	0.0	NON	100.00	WBA	1.000	NO	0.0	Cattle	0.66				0.0	Cattle	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach	Sep	0.867	1.016		ORG	1.00	1.000	0.483	0.0	0.0	Dairy	2				0.0	Sep	0.0	0.00	0.0105	0.00	0.0050	Note 49

Year	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year10	Total	Total/year 1	
Area with crop, ha	0.77	0.24	0.07	0.03	0.01	0.00	0.00	0.00	0.00	0.00	1.11	1.44	Note 50

Possible additional non IPCC N2O-N emissions	Value												Kind of source	Total IPCC and non IPCC N2O		Note 51
N residues emissions, ratio of N2O-N to N:	0.0000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Current crops	4.29	2.74	Note 51
Increased soil N emissions, kg N2O-N/ha:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Total anthropogenic	4.29	2.74	Note 51
Natural background emissions, kg N2O-N/ha:	1.00	0.77	0.24	0.07	0.03	0.01	0.00	0.00	0.00	0.00	0.00	1.11	Total including natural	5.40	3.85	Note 51

C2 N CHAIN CALCULATIONS SHEET C: N CHAINS BASED UPON DANISH VALUES CALCULATIONS By Jacob Bugge Available at www.ppo.bugge.com C2

N CHAIN STARTING WITH N FERTILIZER TO PRODUCE WINTER RAPESEED FOR PPO/BIODIESEL AND CATTLE DAIRY Note 43
AND CONTINUING WITH CATTLE DEEP LITTER TO PRODUCE WINTER WHEAT FOR CATTLE DAIRY Note 43

Year	Fertlizer/manure # Name	Store 1/0	Amounts Store	Field	Or-ganic 1/0	Nnorm propor tion, %	Crop # Name	Cereal benefit 1/0	Straw used 1/0	Crop use & leach	Use # Name	Fodder: Uses #21-61 Fed	Food	N crop #71/ #72	Food/ bev #8	Fuel/ other #9	Manure handling # Name	Final N a-mounts	N2O-N emission IPCC 1996 Each	Total	N2O-N emission IPCC 2006 Each	Total	Note 44 Note 44 Note 44
Total N			RATIO OF N2O-N TO N IN FIRST CROP					TOTAL N AMOUNTS IN KG AND % ENDING AS FOOD/FUEL/OTHER/REMOVED						24.2	22.2				3.10	4.67	1.92	2.65	Note 45
Year N NH3			ACCORDING TO		IPCC 1996		IPCC 2006			TOTAL N AMOUNTS IN KG AND % VOLATILISATION/NH3				37.1	34.0				0.37		0.37		Note 45
1-10 N leach			FIRST YEAR		0.0435		0.0236			TOTAL N AMOUNTS IN KG AND % LEACHED				47.8	43.8				1.19		0.36		Note 45
			TOTAL		0.0655		0.0372			TOTAL N AMOUNTS IN KG AND %				109.0	100.0								Note 45
N2O-N/N in food/beverage/fuel/other																				0.1931		0.1096	Note 46
Year	N	1	1	100.0	100.0	0	100	229	1	0	97.8	21	71.3	21.0	0.0	0.0	0.0	23	50.2	2.39	3.10	1.43	1.68	Note 47
1	Vol/NH3	N	YES	0.0	2.2	NON	100.00	WRB	1.113	NO	26.5	Cattle	0.84				0.0	Cattle	3.0	0.05	0.0125	0.05	0.0100	Note 48
	N leach		1.022	1.000		ORG	1.00	1.113	0.271	0.0	26.5	Dairy	2				17.5	Deep	0.0	0.66	0.0200	0.20	0.0050	Note 49
Year	N	23	1	54.7	38.3	0	100	11	0	0	28.7	21	11.1	2.6	0.0	0.0	0.0	23	8.5	0.60	1.30	0.41	0.80	Note 47
2	Vol/NH3	Cattle	YES	16.4	9.6	NON	100.00	WWH	1.000	NO	17.7	Cattle	0.67				0.0	Cattle	0.5	0.27	0.0125	0.27	0.0100	Note 48
	N leach	Deep	0.600	1.159		ORG	1.00	1.000	0.614	0.0	17.7	Dairy	2				6.3	Deep	0.0	0.44	0.0200	0.13	0.0050	Note 49
Year	N	23	1	9.2	6.5	0	100	11	0	0	4.8	21	1.9	0.4	0.0	0.0	0.0	23	1.4	0.10	0.22	0.07	0.14	Note 47
3	Vol/NH3	Cattle	YES	2.8	1.6	NON	100.00	WWH	1.000	NO	3.0	Cattle	0.67				0.0	Cattle	0.1	0.04	0.0125	0.04	0.0100	Note 48
	N leach	Deep	0.600	1.159		ORG	1.00	1.000	0.614	0.0	3.0	Dairy	2				1.1	Deep	0.0	0.07	0.0200	0.02	0.0050	Note 49
Year	N	23	1	1.6	1.1	0	100	1	0	0	0.8	21	0.3	0.1	0.0	0.0	0.0	23	0.2	0.02	0.04	0.01	0.02	Note 47
4	Vol/NH3	Cattle	YES	0.5	0.3	NON	100.00	SBA	1.000	NO	0.5	Cattle	0.65				0.0	Cattle	0.0	0.01	0.0125	0.01	0.0100	Note 48
	N leach	Deep	0.600	1.159		ORG	1.00	1.000	0.642	0.0	0.5	Dairy	2				0.2	Deep	0.0	0.01	0.0200	0.00	0.0050	Note 49
Year	N	23	1	0.2	0.2	0	100	10	0	0	0.1	21	0.0	0.0	0.0	0.0	0.0	23	0.0	0.00	0.01	0.00	0.00	Note 47
5	Vol/NH3	Cattle	YES	0.1	0.0	NON	100.00	WBA	1.000	NO	0.1	Cattle	0.66				0.0	Cattle	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach	Deep	0.600	1.159		ORG	1.00	1.000	0.642	0.0	0.1	Dairy	2				0.0	Deep	0.0	0.00	0.0200	0.00	0.0050	Note 49
Year	N	23	1	0.0	0.0	0	100	229	1	0	0.0	21	0.0	0.0	0.0	0.0	0.0	23	0.0	0.00	0.00	0.00	0.00	Note 47
6	Vol/NH3	Cattle	YES	0.0	0.0	NON	100.00	WRB	1.113	NO	0.0	Cattle	0.84				0.0	Cattle	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach	Deep	0.600	1.159		ORG	1.00	1.113	0.572	0.0	0.0	Dairy	2				0.0	Deep	0.0	0.00	0.0200	0.00	0.0050	Note 49
Year	N	23	1	0.0	0.0	0	100	11	0	0	0.0	21	0.0	0.0	0.0	0.0	0.0	23	0.0	0.00	0.00	0.00	0.00	Note 47
7	Vol/NH3	Cattle	YES	0.0	0.0	NON	100.00	WWH	1.000	NO	0.0	Cattle	0.67				0.0	Cattle	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach	Deep	0.600	1.159		ORG	1.00	1.000	0.614	0.0	0.0	Dairy	2				0.0	Deep	0.0	0.00	0.0200	0.00	0.0050	Note 49
Year	N	23	1	0.0	0.0	0	100	11	0	0	0.0	21	0.0	0.0	0.0	0.0	0.0	23	0.0	0.00	0.00	0.00	0.00	Note 47
8	Vol/NH3	Cattle	YES	0.0	0.0	NON	100.00	WWH	1.000	NO	0.0	Cattle	0.67				0.0	Cattle	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach	Deep	0.600	1.159		ORG	1.00	1.000	0.614	0.0	0.0	Dairy	2				0.0	Deep	0.0	0.00	0.0200	0.00	0.0050	Note 49
Year	N	23	1	0.0	0.0	0	100	1	0	0	0.0	21	0.0	0.0	0.0	0.0	0.0	23	0.0	0.00	0.00	0.00	0.00	Note 47
9	Vol/NH3	Cattle	YES	0.0	0.0	NON	100.00	SBA	1.000	NO	0.0	Cattle	0.65				0.0	Cattle	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach	Deep	0.600	1.159		ORG	1.00	1.000	0.642	0.0	0.0	Dairy	2				0.0	Deep	0.0	0.00	0.0200	0.00	0.0050	Note 49
Year	N	23	1	0.0	0.0	0	100	10	0	0	0.0	21	0.0	0.0	0.0	0.0	0.0	23	0.0	0.00	0.00	0.00	0.00	Note 47
10	Vol/NH3	Cattle	YES	0.0	0.0	NON	100.00	WBA	1.000	NO	0.0	Cattle	0.66				0.0	Cattle	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach	Deep	0.600	1.159		ORG	1.00	1.000	0.642	0.0	0.0	Dairy	2				0.0	Deep	0.0	0.00	0.0200	0.00	0.0050	Note 49

Year	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year10	Total	Total/year 1	
Area with crop, ha	0.77	0.14	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.95	1.22	Note 50

Possible additional non IPCC N2O-N emissions	Value											Kind of source	Total IPCC and non IPCC N2O		Note 51
N residues emissions, ratio of N2O-N to N:	0.0000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Current crops	4.67	2.65	Note 51
Increased soil N emissions, kg N2O-N/ha:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Total anthropogenic	4.67	2.65	Note 51
Natural background emissions, kg N2O-N/ha:	1.00	0.77	0.14	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.95	Total including natural	5.61	3.59	Note 51

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N CHAIN STARTING WITH N FERTILIZER TO PRODUCE WINTER RAPESEED FOR PPO/BIODIESEL AND CATTLE DAIRY Note 43
AND CONTINUING WITH MANURE FROM GRAZING CATTLE TO PRODUCE WINTER WHEAT FOR CATTLE DAIRY Note 43

Year	Fertlizer/manure # Name	Store 1/0	Amounts Store	Field	Or-ganic 1/0	Nnorm propor tion, %	Crop # Name	Cereal benefit 1/0	Straw used 1/0	Crop use & leach	Use # Name	Fodder: Uses #21-61 Fed	Food	N crop #71/ #72	Food/ bev #8	Fuel/ other #9	Manure handling # Name	Final N a-mounts	N2O-N emission IPCC 1996 Each	Total	N2O-N emission IPCC 2006 Each	Total	Note 44
Total N			RATIO OF N2O-N TO N IN FIRST CROP			TOTAL N AMOUNTS IN KG AND % ENDING AS FOOD/FUEL/OTHER/REMOVED								25.4	25.4	3.64	5.41	3.25	3.82	Note 45	
Year N NH3			ACCORDING TO		IPCC 1996	IPCC 2006		TOTAL N AMOUNTS IN KG AND % VOLATILISATION/NH3						6.7	6.7	0.07		0.07		Note 45	
1-10 N leach			FIRST YEAR		0.0439	0.0340		TOTAL N AMOUNTS IN KG AND % LEACHED						67.9	67.9	1.70		0.51		Note 45	
			TOTAL		0.0758	0.0536		TOTAL N AMOUNTS IN KG AND %						100.0	100.0					Note 45	
N2O-N/N in food/beverage/fuel/other																			0.2127		0.1505	Note 46
Year	N	1	1	100.0	100.0	0	100	229	1	0	97.8	21	71.3	21.0	0.0	0.0	0.0	24	50.2	2.45	3.13	2.20	2.42	Note 47
1	Vol/NH3	N	YES	0.0	2.2	NON	100.00	WRB	1.113	NO	26.5	Cattle	0.84				0.0	Cattle	0.0	0.02	0.0125	0.02	0.0100	Note 48
	N leach		1.022	1.000		ORG	1.00	1.113	0.271	0.0	26.5	Dairy	2				17.5	Graz	0.0	0.66	0.0200	0.20	0.0200	Note 49
Year	N	24	1	50.2	50.2	0	100	11	0	0	46.7	21	14.5	3.4	0.0	0.0	0.0	24	11.1	0.93	1.77	0.82	1.09	Note 47
2	Vol/NH3	Cattle	YES	0.0	3.5	NON	100.00	WWH	1.000	NO	32.2	Cattle	0.67				0.0	Cattle	0.0	0.04	0.0125	0.04	0.0100	Note 48
	N leach	Graz	0.484	1.000		ORG	1.00	1.000	0.689	0.0	32.2	Dairy	2				10.2	Graz	0.0	0.80	0.0200	0.24	0.0200	Note 49
Year	N	24	1	11.1	11.1	0	100	11	0	0	10.3	21	3.2	0.8	0.0	0.0	0.0	24	2.5	0.21	0.39	0.18	0.24	Note 47
3	Vol/NH3	Cattle	YES	0.0	0.8	NON	100.00	WWH	1.000	NO	7.1	Cattle	0.67				0.0	Cattle	0.0	0.01	0.0125	0.01	0.0100	Note 48
	N leach	Graz	0.484	1.000		ORG	1.00	1.000	0.689	0.0	7.1	Dairy	2				2.3	Graz	0.0	0.18	0.0200	0.05	0.0200	Note 49
Year	N	24	1	2.5	2.5	0	100	1	0	0	2.3	21	0.7	0.2	0.0	0.0	0.0	24	0.5	0.04	0.09	0.04	0.05	Note 47
4	Vol/NH3	Cattle	YES	0.0	0.2	NON	100.00	SBA	1.000	NO	1.6	Cattle	0.65				0.0	Cattle	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach	Graz	0.484	1.000		ORG	1.00	1.000	0.711	0.0	1.6	Dairy	2				0.5	Graz	0.0	0.04	0.0200	0.01	0.0200	Note 49
Year	N	24	1	0.5	0.5	0	100	10	0	0	0.5	21	0.1	0.0	0.0	0.0	0.0	24	0.1	0.01	0.02	0.01	0.01	Note 47
5	Vol/NH3	Cattle	YES	0.0	0.0	NON	100.00	WBA	1.000	NO	0.3	Cattle	0.66				0.0	Cattle	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach	Graz	0.484	1.000		ORG	1.00	1.000	0.712	0.0	0.3	Dairy	2				0.1	Graz	0.0	0.01	0.0200	0.00	0.0200	Note 49
Year	N	24	1	0.1	0.1	0	100	229	1	0	0.1	21	0.0	0.0	0.0	0.0	0.0	24	0.0	0.00	0.00	0.00	0.00	Note 47
6	Vol/NH3	Cattle	YES	0.0	0.0	NON	100.00	WRB	1.113	NO	0.1	Cattle	0.84				0.0	Cattle	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach	Graz	0.484	1.000		ORG	1.00	1.113	0.655	0.0	0.1	Dairy	2				0.0	Graz	0.0	0.00	0.0200	0.00	0.0200	Note 49
Year	N	24	1	0.0	0.0	0	100	11	0	0	0.0	21	0.0	0.0	0.0	0.0	0.0	24	0.0	0.00	0.00	0.00	0.00	Note 47
7	Vol/NH3	Cattle	YES	0.0	0.0	NON	100.00	WWH	1.000	NO	0.0	Cattle	0.67				0.0	Cattle	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach	Graz	0.484	1.000		ORG	1.00	1.000	0.689	0.0	0.0	Dairy	2				0.0	Graz	0.0	0.00	0.0200	0.00	0.0200	Note 49
Year	N	24	1	0.0	0.0	0	100	11	0	0	0.0	21	0.0	0.0	0.0	0.0	0.0	24	0.0	0.00	0.00	0.00	0.00	Note 47
8	Vol/NH3	Cattle	YES	0.0	0.0	NON	100.00	WWH	1.000	NO	0.0	Cattle	0.67				0.0	Cattle	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach	Graz	0.484	1.000		ORG	1.00	1.000	0.689	0.0	0.0	Dairy	2				0.0	Graz	0.0	0.00	0.0200	0.00	0.0200	Note 49
Year	N	24	1	0.0	0.0	0	100	1	0	0	0.0	21	0.0	0.0	0.0	0.0	0.0	24	0.0	0.00	0.00	0.00	0.00	Note 47
9	Vol/NH3	Cattle	YES	0.0	0.0	NON	100.00	SBA	1.000	NO	0.0	Cattle	0.65				0.0	Cattle	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach	Graz	0.484	1.000		ORG	1.00	1.000	0.711	0.0	0.0	Dairy	2				0.0	Graz	0.0	0.00	0.0200	0.00	0.0200	Note 49
Year	N	24	1	0.0	0.0	0	100	10	0	0	0.0	21	0.0	0.0	0.0	0.0	0.0	24	0.0	0.00	0.00	0.00	0.00	Note 47
10	Vol/NH3	Cattle	YES	0.0	0.0	NON	100.00	WBA	1.000	NO	0.0	Cattle	0.66				0.0	Cattle	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach	Graz	0.484	1.000		ORG	1.00	1.000	0.712	0.0	0.0	Dairy	2				0.0	Graz	0.0	0.00	0.0200	0.00	0.0200	Note 49

Year	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year10	Total	Total/year 1	
Area with crop, ha	0.77	0.15	0.03	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.97	1.25	Note 50

Possible additional non IPCC N2O-N emissions	Value											Kind of source	Total IPCC and non IPCC N2O		Note 51
N residues emissions, ratio of N2O-N to N:	0.0000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Current crops	5.41	3.82	Note 51
Increased soil N emissions, kg N2O-N/ha:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Total anthropogenic	5.41	3.82	Note 51
Natural background emissions, kg N2O-N/ha:	1.00	0.77	0.15	0.03	0.01	0.00	0.00	0.00	0.00	0.00	0.00	Total including natural	6.38	4.79	Note 51

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N CHAIN STARTING WITH N FERTILIZER TO PRODUCE WINTER RAPESEED FOR PPO/BIODIESEL AND CATTLE BEEF Note 43
AND CONTINUING WITH LIQUID CATTLE MANURE TO PRODUCE WINTER WHEAT FOR CATTLE BEEF Note 43

Year	Fertlizer/manure # Name	Store 1/0	Amounts Store	Amounts Field	Or-ganic 1/0	Nnorm propor tion, %	Crop # Name	Cereal benefit 1/0	Straw used 1/0	Crop use & leach	Use # Name	Fodder: Uses #21-61 Fed	Fodder: Uses #21-61 Food	N crop #71/ #72	Food/ bev #8	Fuel/ other #9	Manure handling # Name	Final N a-mounts	N2O-N emission IPCC 1996 Each	N2O-N emission IPCC 1996 Total	N2O-N emission IPCC 2006 Each	N2O-N emission IPCC 2006 Total	Note 44
Total	N		RATIO OF N2O-N TO N IN FIRST CROP					TOTAL N AMOUNTS IN KG AND % ENDING AS FOOD/FUEL/OTHER/REMOVED						25.2	24.9							Note 45
Year	N NH3		ACCORDING TO		IPCC 1996	IPCC 2006		TOTAL N AMOUNTS IN KG AND % VOLATILISATION/NH3						27.9	27.6			0.28		0.28		Note 45
1-10	N leach		FIRST YEAR		0.0311	0.0239		TOTAL N AMOUNTS IN KG AND % LEACHED						48.1	47.6			1.20		0.36		Note 45
			TOTAL		0.0534	0.0403		TOTAL N AMOUNTS IN KG AND %						101.1	100.0							Note 45
N2O-N/N in food/beverage/fuel/other																			0.1512		0.1142	Note 46
Year	N	1	1	100.0	100.0	0	100	229	1	0	97.8	22	71.3	18.6	0.0	0.0	0.0	21	52.7	1.49	2.22	1.44	1.70	Note 47
1	Vol/NH3	N	YES	0.0	2.2	NON	100.00	WRB	1.113	NO	26.5	Cattle	0.84				0.0	Cattle	4.2	0.06	0.0125	0.06	0.0100	Note 48
	N leach		1.022	1.000		ORG	1.00	1.113	0.271	0.0	26.5	Beef	2				17.5	Liquid	0.0	0.66	0.0010	0.20	0.0050	Note 49
Year	N	21	1	49.3	48.2	0	100	11	0	0	36.2	22	21.7	4.5	0.0	0.0	0.0	21	17.2	0.57	1.07	0.54	0.79	Note 47
2	Vol/NH3	Cattle	YES	1.1	12.1	NON	100.00	WWH	1.000	NO	14.5	Cattle	0.67				0.0	Cattle	1.4	0.15	0.0125	0.15	0.0100	Note 48
	N leach	Liquid	0.933	1.016		ORG	1.00	1.000	0.400	0.0	14.5	Beef	2				7.9	Liquid	0.0	0.36	0.0010	0.11	0.0050	Note 49
Year	N	21	1	16.1	15.7	0	100	11	0	0	11.8	22	7.1	1.5	0.0	0.0	0.0	21	5.6	0.18	0.35	0.18	0.26	Note 47
3	Vol/NH3	Cattle	YES	0.4	3.9	NON	100.00	WWH	1.000	NO	4.7	Cattle	0.67				0.0	Cattle	0.4	0.05	0.0125	0.05	0.0100	Note 48
	N leach	Liquid	0.933	1.016		ORG	1.00	1.000	0.400	0.0	4.7	Beef	2				2.6	Liquid	0.0	0.12	0.0010	0.04	0.0050	Note 49
Year	N	21	1	5.2	5.1	0	100	1	0	0	3.8	22	2.1	0.4	0.0	0.0	0.0	21	1.7	0.06	0.12	0.06	0.08	Note 47
4	Vol/NH3	Cattle	YES	0.1	1.3	NON	100.00	SBA	1.000	NO	1.7	Cattle	0.65				0.0	Cattle	0.1	0.02	0.0125	0.02	0.0100	Note 48
	N leach	Liquid	0.933	1.016		ORG	1.00	1.000	0.443	0.0	1.7	Beef	2				0.8	Liquid	0.0	0.04	0.0010	0.01	0.0050	Note 49
Year	N	21	1	1.6	1.6	0	100	10	0	0	1.2	22	0.7	0.1	0.0	0.0	0.0	21	0.5	0.02	0.04	0.02	0.03	Note 47
5	Vol/NH3	Cattle	YES	0.0	0.4	NON	100.00	WBA	1.000	NO	0.5	Cattle	0.66				0.0	Cattle	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach	Liquid	0.933	1.016		ORG	1.00	1.000	0.444	0.0	0.5	Beef	2				0.2	Liquid	0.0	0.01	0.0010	0.00	0.0050	Note 49
Year	N	21	1	0.5	0.5	0	100	229	1	0	0.4	22	0.2	0.1	0.0	0.0	0.0	21	0.2	0.01	0.01	0.01	0.01	Note 47
6	Vol/NH3	Cattle	YES	0.0	0.1	NON	100.00	WRB	1.113	NO	0.1	Cattle	0.84				0.0	Cattle	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach	Liquid	0.933	1.016		ORG	1.00	1.113	0.335	0.0	0.1	Beef	2				0.1	Liquid	0.0	0.00	0.0010	0.00	0.0050	Note 49
Year	N	21	1	0.2	0.2	0	100	11	0	0	0.1	22	0.1	0.0	0.0	0.0	0.0	21	0.1	0.00	0.00	0.00	0.00	Note 47
7	Vol/NH3	Cattle	YES	0.0	0.0	NON	100.00	WWH	1.000	NO	0.0	Cattle	0.67				0.0	Cattle	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach	Liquid	0.933	1.016		ORG	1.00	1.000	0.400	0.0	0.0	Beef	2				0.0	Liquid	0.0	0.00	0.0010	0.00	0.0050	Note 49
Year	N	21	1	0.1	0.1	0	100	11	0	0	0.0	22	0.0	0.0	0.0	0.0	0.0	21	0.0	0.00	0.00	0.00	0.00	Note 47
8	Vol/NH3	Cattle	YES	0.0	0.0	NON	100.00	WWH	1.000	NO	0.0	Cattle	0.67				0.0	Cattle	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach	Liquid	0.933	1.016		ORG	1.00	1.000	0.400	0.0	0.0	Beef	2				0.0	Liquid	0.0	0.00	0.0010	0.00	0.0050	Note 49
Year	N	21	1	0.0	0.0	0	100	1	0	0	0.0	22	0.0	0.0	0.0	0.0	0.0	21	0.0	0.00	0.00	0.00	0.00	Note 47
9	Vol/NH3	Cattle	YES	0.0	0.0	NON	100.00	SBA	1.000	NO	0.0	Cattle	0.65				0.0	Cattle	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach	Liquid	0.933	1.016		ORG	1.00	1.000	0.443	0.0	0.0	Beef	2				0.0	Liquid	0.0	0.00	0.0010	0.00	0.0050	Note 49
Year	N	21	1	0.0	0.0	0	100	10	0	0	0.0	22	0.0	0.0	0.0	0.0	0.0	21	0.0	0.00	0.00	0.00	0.00	Note 47
10	Vol/NH3	Cattle	YES	0.0	0.0	NON	100.00	WBA	1.000	NO	0.0	Cattle	0.66				0.0	Cattle	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach	Liquid	0.933	1.016		ORG	1.00	1.000	0.444	0.0	0.0	Beef	2				0.0	Liquid	0.0	0.00	0.0010	0.00	0.0050	Note 49

Year	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year10	Total	Total/year 1	
Area with crop, ha	0.77	0.28	0.09	0.04	0.01	0.00	0.00	0.00	0.00	0.00	1.20	1.55	Note 50

Possible additional non IPCC N2O-N emissions	Value											Kind of source	Total IPCC and non IPCC N2O		
N residues emissions, ratio of N2O-N to N:	0.0000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Current crops	3.81	2.87	Note 51
Increased soil N emissions, kg N2O-N/ha:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Total anthropogenic	3.81	2.87	Note 51
Natural background emissions, kg N2O-N/ha:	1.00	0.77	0.28	0.09	0.04	0.01	0.00	0.00	0.00	0.00	1.20	Total including natural	5.00	4.07	Note 51

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N CHAIN STARTING WITH N FERTILIZER TO PRODUCE WINTER RAPESEED FOR PPO/BIODIESEL AND CATTLE BEEF Note 43
AND CONTINUING WITH SEPARATED CATTLE MANURE TO PRODUCE WINTER WHEAT FOR CATTLE BEEF Note 43

Year	Fertlizer/manure # Name	Store 1/0	Amounts Store	Field	Or-ganic 1/0	Nnorm propor tion, %	Crop # Name	Cereal benefit 1/0	Straw used 1/0	Crop use & leach	Use # Name	Fodder: Uses #21-61 Fed	Food	N crop #71/ #72	Food/ bev #8	Fuel/ other #9	Manure handling # Name	Final N a-mounts	N2O-N emission IPCC 1996 Each	Total	N2O-N emission IPCC 2006 Each	Total	Note 44 Note 44 Note 44
Total N	RATIO OF N2O-N TO N IN FIRST CROP		TOTAL N AMOUNTS IN KG AND % ENDING AS FOOD/FUEL/OTHER/REMOVED											24.2	23.9	2.93	4.43	2.18	2.82	Note 45
Year N NH3	ACCORDING TO	IPCC 1996	IPCC 2006	TOTAL N AMOUNTS IN KG AND % VOLATILISATION/NH3										28.4	28.1	0.28		0.28		Note 45
1-10 N leach	FIRST YEAR	0.0376	0.0238	TOTAL N AMOUNTS IN KG AND % LEACHED										48.5	47.9	1.21		0.36		Note 45
	TOTAL	0.0621	0.0396	TOTAL N AMOUNTS IN KG AND %										101.1	100.0					Note 45
N2O-N/N in food/beverage/fuel/other																	0.1828		0.1166	Note 46
Year N	1	1	100.0	100.0	0	100	229	1	0	97.8	22	71.3	18.6	0.0	0.0	0.0	22	52.7	1.97	2.68	1.45	1.69	Note 47
1 Vol/NH3	N	YES	0.0	2.2	NON	100.00	WRB	1.113	NO	26.5	Cattle	0.84				0.0	Cattle	2.6	0.05	0.0125	0.05	0.0100	Note 48
N leach		1.022	1.000		ORG	1.00	1.113	0.271	0.0	26.5	Beef	2				17.5	Sep	0.0	0.66	0.0105	0.20	0.0050	Note 49
Year N	22	1	50.9	46.6	0	100	11	0	0	34.9	22	19.5	4.0	0.0	0.0	0.0	22	15.4	0.69	1.24	0.52	0.80	Note 47
2 Vol/NH3	Cattle	YES	4.3	11.6	NON	100.00	WWH	1.000	NO	15.5	Cattle	0.67				0.0	Cattle	0.8	0.17	0.0125	0.17	0.0100	Note 48
N leach	Sep	0.867	1.016		ORG	1.00	1.000	0.443	0.0	15.5	Beef	2				7.6	Sep	0.0	0.39	0.0105	0.12	0.0050	Note 49
Year N	22	1	14.9	13.6	0	100	11	0	0	10.2	22	5.7	1.2	0.0	0.0	0.0	22	4.5	0.20	0.36	0.15	0.23	Note 47
3 Vol/NH3	Cattle	YES	1.3	3.4	NON	100.00	WWH	1.000	NO	4.5	Cattle	0.67				0.0	Cattle	0.2	0.05	0.0125	0.05	0.0100	Note 48
N leach	Sep	0.867	1.016		ORG	1.00	1.000	0.443	0.0	4.5	Beef	2				2.2	Sep	0.0	0.11	0.0105	0.03	0.0050	Note 49
Year N	22	1	4.4	4.0	0	100	1	0	0	3.0	22	1.5	0.3	0.0	0.0	0.0	22	1.2	0.06	0.11	0.04	0.07	Note 47
4 Vol/NH3	Cattle	YES	0.4	1.0	NON	100.00	SBA	1.000	NO	1.4	Cattle	0.65				0.0	Cattle	0.1	0.01	0.0125	0.01	0.0100	Note 48
N leach	Sep	0.867	1.016		ORG	1.00	1.000	0.483	0.0	1.4	Beef	2				0.6	Sep	0.0	0.04	0.0105	0.01	0.0050	Note 49
Year N	22	1	1.2	1.1	0	100	10	0	0	0.8	22	0.4	0.1	0.0	0.0	0.0	22	0.3	0.02	0.03	0.01	0.02	Note 47
5 Vol/NH3	Cattle	YES	0.1	0.3	NON	100.00	WBA	1.000	NO	0.4	Cattle	0.66				0.0	Cattle	0.0	0.00	0.0125	0.00	0.0100	Note 48
N leach	Sep	0.867	1.016		ORG	1.00	1.000	0.483	0.0	0.4	Beef	2				0.2	Sep	0.0	0.01	0.0105	0.00	0.0050	Note 49
Year N	22	1	0.3	0.3	0	100	229	1	0	0.2	22	0.1	0.0	0.0	0.0	0.0	22	0.1	0.00	0.01	0.00	0.00	Note 47
6 Vol/NH3	Cattle	YES	0.0	0.1	NON	100.00	WRB	1.113	NO	0.1	Cattle	0.84				0.0	Cattle	0.0	0.00	0.0125	0.00	0.0100	Note 48
N leach	Sep	0.867	1.016		ORG	1.00	1.113	0.382	0.0	0.1	Beef	2				0.0	Sep	0.0	0.00	0.0105	0.00	0.0050	Note 49
Year N	22	1	0.1	0.1	0	100	11	0	0	0.1	22	0.0	0.0	0.0	0.0	0.0	22	0.0	0.00	0.00	0.00	0.00	Note 47
7 Vol/NH3	Cattle	YES	0.0	0.0	NON	100.00	WWH	1.000	NO	0.0	Cattle	0.67				0.0	Cattle	0.0	0.00	0.0125	0.00	0.0100	Note 48
N leach	Sep	0.867	1.016		ORG	1.00	1.000	0.443	0.0	0.0	Beef	2				0.0	Sep	0.0	0.00	0.0105	0.00	0.0050	Note 49
Year N	22	1	0.0	0.0	0	100	11	0	0	0.0	22	0.0	0.0	0.0	0.0	0.0	22	0.0	0.00	0.00	0.00	0.00	Note 47
8 Vol/NH3	Cattle	YES	0.0	0.0	NON	100.00	WWH	1.000	NO	0.0	Cattle	0.67				0.0	Cattle	0.0	0.00	0.0125	0.00	0.0100	Note 48
N leach	Sep	0.867	1.016		ORG	1.00	1.000	0.443	0.0	0.0	Beef	2				0.0	Sep	0.0	0.00	0.0105	0.00	0.0050	Note 49
Year N	22	1	0.0	0.0	0	100	1	0	0	0.0	22	0.0	0.0	0.0	0.0	0.0	22	0.0	0.00	0.00	0.00	0.00	Note 47
9 Vol/NH3	Cattle	YES	0.0	0.0	NON	100.00	SBA	1.000	NO	0.0	Cattle	0.65				0.0	Cattle	0.0	0.00	0.0125	0.00	0.0100	Note 48
N leach	Sep	0.867	1.016		ORG	1.00	1.000	0.483	0.0	0.0	Beef	2				0.0	Sep	0.0	0.00	0.0105	0.00	0.0050	Note 49
Year N	22	1	0.0	0.0	0	100	10	0	0	0.0	22	0.0	0.0	0.0	0.0	0.0	22	0.0	0.00	0.00	0.00	0.00	Note 47
10 Vol/NH3	Cattle	YES	0.0	0.0	NON	100.00	WBA	1.000	NO	0.0	Cattle	0.66				0.0	Cattle	0.0	0.00	0.0125	0.00	0.0100	Note 48
N leach	Sep	0.867	1.016		ORG	1.00	1.000	0.483	0.0	0.0	Beef	2				0.0	Sep	0.0	0.00	0.0105	0.00	0.0050	Note 49

Year	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year10	Total	Total/year 1	
Area with crop, ha	0.77	0.25	0.07	0.03	0.01	0.00	0.00	0.00	0.00	0.00	1.13	1.47	Note 50

Possible additional non IPCC N2O-N emissions	Value											Kind of source	Total IPCC and non IPCC N2O		Note 51
N residues emissions, ratio of N2O-N to N:	0.0000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Current crops	4.43	2.82	Note 51
Increased soil N emissions, kg N2O-N/ha:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Total anthropogenic	4.43	2.82	Note 51
Natural background emissions, kg N2O-N/ha:	1.00	0.77	0.25	0.07	0.03	0.01	0.00	0.00	0.00	0.00	0.00	1.13 Total including natural	5.56	3.96	Note 51

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N CHAIN STARTING WITH N FERTILIZER TO PRODUCE WINTER RAPESEED FOR PPO/BIODIESEL AND CATTLE BEEF Note 43
AND CONTINUING WITH CATTLE DEEP LITTER TO PRODUCE WINTER WHEAT FOR CATTLE BEEF Note 43

Year	Fertlizer/manure # Name	Store 1/0	Amounts Store	Field	Or-ganic 1/0	Nnorm propor tion, %	Crop # Name	Cereal benefit 1/0	Straw used 1/0	Crop use & leach	Use # Name	Fodder: Uses #21-61 Fed	Food	N crop #71/ #72	Food/ bev #8	Fuel/ other #9	Manure handling # Name	Final N a-mounts	N2O-N emission IPCC 1996 Each	Total	N2O-N emission IPCC 2006 Each	Total	Note 44 Note 44 Note 44
Total N			RATIO OF N2O-N TO N IN FIRST CROP				TOTAL N AMOUNTS IN KG AND % ENDING AS FOOD/FUEL/OTHER/REMOVED											21.5	19.6	3.20	4.81	1.96	2.72	Note 45
Year N NH3			ACCORDING TO		IPCC 1996		IPCC 2006		TOTAL N AMOUNTS IN KG AND % VOLATILISATION/NH3									39.1	35.7	0.39		0.39		Note 45
1-10 N leach			FIRST YEAR		0.0442		0.0238		TOTAL N AMOUNTS IN KG AND % LEACHED									49.0	44.7	1.22		0.37		Note 45
			TOTAL		0.0675		0.0382		TOTAL N AMOUNTS IN KG AND %									109.5	100.0					Note 45
N2O-N/N in food/beverage/fuel/other																					0.2242		0.1267	Note 46
Year	N	1	1	100.0	100.0	0	100	229	1	0	97.8	22	71.3	18.6	0.0	0.0	0.0	23	52.7	2.43	3.15	1.44	1.70	Note 47
1	Vol/NH3	N	YES	0.0	2.2	NON	100.00	WRB	1.113	NO	26.5	Cattle	0.84				0.0	Cattle	3.2	0.05	0.0125	0.05	0.0100	Note 48
	N leach		1.022	1.000		ORG	1.00	1.113	0.271	0.0	26.5	Beef	2				17.5	Deep	0.0	0.66	0.0200	0.20	0.0050	Note 49
Year	N	23	1	57.5	40.2	0	100	11	0	0	30.2	22	11.6	2.4	0.0	0.0	0.0	23	9.2	0.63	1.37	0.43	0.84	Note 47
2	Vol/NH3	Cattle	YES	17.2	10.1	NON	100.00	WWH	1.000	NO	18.5	Cattle	0.67				0.0	Cattle	0.6	0.28	0.0125	0.28	0.0100	Note 48
	N leach	Deep	0.600	1.159		ORG	1.00	1.000	0.614	0.0	18.5	Beef	2				6.6	Deep	0.0	0.46	0.0200	0.14	0.0050	Note 49
Year	N	23	1	10.0	7.0	0	100	11	0	0	5.3	22	2.0	0.4	0.0	0.0	0.0	23	1.6	0.11	0.24	0.07	0.15	Note 47
3	Vol/NH3	Cattle	YES	3.0	1.8	NON	100.00	WWH	1.000	NO	3.2	Cattle	0.67				0.0	Cattle	0.1	0.05	0.0125	0.05	0.0100	Note 48
	N leach	Deep	0.600	1.159		ORG	1.00	1.000	0.614	0.0	3.2	Beef	2				1.2	Deep	0.0	0.08	0.0200	0.02	0.0050	Note 49
Year	N	23	1	1.8	1.2	0	100	1	0	0	0.9	22	0.3	0.1	0.0	0.0	0.0	23	0.3	0.02	0.04	0.01	0.03	Note 47
4	Vol/NH3	Cattle	YES	0.5	0.3	NON	100.00	SBA	1.000	NO	0.6	Cattle	0.65				0.0	Cattle	0.0	0.01	0.0125	0.01	0.0100	Note 48
	N leach	Deep	0.600	1.159		ORG	1.00	1.000	0.642	0.0	0.6	Beef	2				0.2	Deep	0.0	0.01	0.0200	0.00	0.0050	Note 49
Year	N	23	1	0.3	0.2	0	100	10	0	0	0.2	22	0.1	0.0	0.0	0.0	0.0	23	0.0	0.00	0.01	0.00	0.00	Note 47
5	Vol/NH3	Cattle	YES	0.1	0.1	NON	100.00	WBA	1.000	NO	0.1	Cattle	0.66				0.0	Cattle	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach	Deep	0.600	1.159		ORG	1.00	1.000	0.642	0.0	0.1	Beef	2				0.0	Deep	0.0	0.00	0.0200	0.00	0.0050	Note 49
Year	N	23	1	0.0	0.0	0	100	229	1	0	0.0	22	0.0	0.0	0.0	0.0	0.0	23	0.0	0.00	0.00	0.00	0.00	Note 47
6	Vol/NH3	Cattle	YES	0.0	0.0	NON	100.00	WRB	1.113	NO	0.0	Cattle	0.84				0.0	Cattle	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach	Deep	0.600	1.159		ORG	1.00	1.113	0.572	0.0	0.0	Beef	2				0.0	Deep	0.0	0.00	0.0200	0.00	0.0050	Note 49
Year	N	23	1	0.0	0.0	0	100	11	0	0	0.0	22	0.0	0.0	0.0	0.0	0.0	23	0.0	0.00	0.00	0.00	0.00	Note 47
7	Vol/NH3	Cattle	YES	0.0	0.0	NON	100.00	WWH	1.000	NO	0.0	Cattle	0.67				0.0	Cattle	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach	Deep	0.600	1.159		ORG	1.00	1.000	0.614	0.0	0.0	Beef	2				0.0	Deep	0.0	0.00	0.0200	0.00	0.0050	Note 49
Year	N	23	1	0.0	0.0	0	100	11	0	0	0.0	22	0.0	0.0	0.0	0.0	0.0	23	0.0	0.00	0.00	0.00	0.00	Note 47
8	Vol/NH3	Cattle	YES	0.0	0.0	NON	100.00	WWH	1.000	NO	0.0	Cattle	0.67				0.0	Cattle	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach	Deep	0.600	1.159		ORG	1.00	1.000	0.614	0.0	0.0	Beef	2				0.0	Deep	0.0	0.00	0.0200	0.00	0.0050	Note 49
Year	N	23	1	0.0	0.0	0	100	1	0	0	0.0	22	0.0	0.0	0.0	0.0	0.0	23	0.0	0.00	0.00	0.00	0.00	Note 47
9	Vol/NH3	Cattle	YES	0.0	0.0	NON	100.00	SBA	1.000	NO	0.0	Cattle	0.65				0.0	Cattle	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach	Deep	0.600	1.159		ORG	1.00	1.000	0.642	0.0	0.0	Beef	2				0.0	Deep	0.0	0.00	0.0200	0.00	0.0050	Note 49
Year	N	23	1	0.0	0.0	0	100	10	0	0	0.0	22	0.0	0.0	0.0	0.0	0.0	23	0.0	0.00	0.00	0.00	0.00	Note 47
10	Vol/NH3	Cattle	YES	0.0	0.0	NON	100.00	WBA	1.000	NO	0.0	Cattle	0.66				0.0	Cattle	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach	Deep	0.600	1.159		ORG	1.00	1.000	0.642	0.0	0.0	Beef	2				0.0	Deep	0.0	0.00	0.0200	0.00	0.0050	Note 49

Year	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year10	Total	Total/year 1	
Area with crop, ha	0.77	0.15	0.03	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.96	1.24	Note 50

Possible additional non IPCC N2O-N emissions	Value											Kind of source	Total IPCC and non IPCC N2O		Note 51
N residues emissions, ratio of N2O-N to N:	0.0000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Current crops	4.81	2.72	Note 51
Increased soil N emissions, kg N2O-N/ha:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Total anthropogenic	4.81	2.72	Note 51
Natural background emissions, kg N2O-N/ha:	1.00	0.77	0.15	0.03	0.01	0.00	0.00	0.00	0.00	0.00	0.96	Total including natural	5.77	3.68	Note 51

C2 N CHAIN CALCULATIONS SHEET C: N CHAINS BASED UPON DANISH VALUES CALCULATIONS By Jacob Bugge Available at www.ppo.bugge.com C2

N CHAIN STARTING WITH N FERTILIZER TO PRODUCE WINTER RAPESEED FOR PPO/BIODIESEL AND CATTLE BEEF Note 43
AND CONTINUING WITH MANURE FROM GRAZING CATTLE TO PRODUCE WINTER WHEAT FOR CATTLE BEEF Note 43

Year	Fertlizer/manure # Name	Store 1/0	Amounts Store	Amounts Field	Or-ganic 1/0	Nnorm propor tion, %	Crop # Name	Cereal benefit 1/0	Straw used 1/0	Crop use & leach	Use # Name	Fodder: Uses #21-61 Fed	Fodder: Uses #21-61 Food	N crop #71/ #72	Food/ bev #8	Fuel/ other #9	Manure handling # Name	Final N a-mounts	N2O-N emission IPCC 1996 Each	N2O-N emission IPCC 1996 Total	N2O-N emission IPCC 2006 Each	N2O-N emission IPCC 2006 Total	Note 44
Total	N		RATIO OF N2O-N TO N IN FIRST CROP				TOTAL N AMOUNTS IN KG AND % ENDING AS FOOD/FUEL/OTHER/REMOVED							22.6	22.6				3.78	5.60	3.37	3.97	Note 45
Year	N NH3		ACCORDING TO		IPCC 1996	IPCC 2006	TOTAL N AMOUNTS IN KG AND % VOLATILISATION/NH3							7.0	7.0				0.07		0.07		Note 45
1-10	N leach		FIRST YEAR		0.0446	0.0347	TOTAL N AMOUNTS IN KG AND % LEACHED							70.4	70.4				1.76		0.53		Note 45
			TOTAL		0.0786	0.0557	TOTAL N AMOUNTS IN KG AND %							100.0	100.0								Note 45
N2O-N/N in food/beverage/fuel/other																				0.2475		0.1753	Note 46
Year	N	1	1	100.0	100.0	0	100	229	1	0	97.8	22	71.3	18.6	0.0	0.0	0.0	24	52.7	2.50	3.18	2.25	2.47	Note 47
1	Vol/NH3	N	YES	0.0	2.2	NON	100.00	WRB	1.113	NO	26.5	Cattle	0.84				0.0	Cattle	0.0	0.02	0.0125	0.02	0.0100	Note 48
	N leach		1.022	1.000		ORG	1.00	1.113	0.271	0.0	26.5	Beef	2				17.5	Graz	0.0	0.66	0.0200	0.20	0.0200	Note 49
Year	N	24	1	52.7	52.7	0	100	11	0	0	49.0	22	15.3	3.2	0.0	0.0	0.0	24	12.1	0.99	1.87	0.87	1.16	Note 47
2	Vol/NH3	Cattle	YES	0.0	3.7	NON	100.00	WWH	1.000	NO	33.8	Cattle	0.67				0.0	Cattle	0.0	0.04	0.0125	0.04	0.0100	Note 48
	N leach	Graz	0.484	1.000		ORG	1.00	1.000	0.689	0.0	33.8	Beef	2				10.7	Graz	0.0	0.84	0.0200	0.25	0.0200	Note 49
Year	N	24	1	12.1	12.1	0	100	11	0	0	11.2	22	3.5	0.7	0.0	0.0	0.0	24	2.8	0.23	0.43	0.20	0.27	Note 47
3	Vol/NH3	Cattle	YES	0.0	0.8	NON	100.00	WWH	1.000	NO	7.7	Cattle	0.67				0.0	Cattle	0.0	0.01	0.0125	0.01	0.0100	Note 48
	N leach	Graz	0.484	1.000		ORG	1.00	1.000	0.689	0.0	7.7	Beef	2				2.5	Graz	0.0	0.19	0.0200	0.06	0.0200	Note 49
Year	N	24	1	2.8	2.8	0	100	1	0	0	2.6	22	0.7	0.1	0.0	0.0	0.0	24	0.6	0.05	0.10	0.04	0.06	Note 47
4	Vol/NH3	Cattle	YES	0.0	0.2	NON	100.00	SBA	1.000	NO	1.8	Cattle	0.65				0.0	Cattle	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach	Graz	0.484	1.000		ORG	1.00	1.000	0.711	0.0	1.8	Beef	2				0.5	Graz	0.0	0.05	0.0200	0.01	0.0200	Note 49
Year	N	24	1	0.6	0.6	0	100	10	0	0	0.6	22	0.2	0.0	0.0	0.0	0.0	24	0.1	0.01	0.02	0.01	0.01	Note 47
5	Vol/NH3	Cattle	YES	0.0	0.0	NON	100.00	WBA	1.000	NO	0.4	Cattle	0.66				0.0	Cattle	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach	Graz	0.484	1.000		ORG	1.00	1.000	0.712	0.0	0.4	Beef	2				0.1	Graz	0.0	0.01	0.0200	0.00	0.0200	Note 49
Year	N	24	1	0.1	0.1	0	100	229	1	0	0.1	22	0.0	0.0	0.0	0.0	0.0	24	0.0	0.00	0.00	0.00	0.00	Note 47
6	Vol/NH3	Cattle	YES	0.0	0.0	NON	100.00	WRB	1.113	NO	0.1	Cattle	0.84				0.0	Cattle	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach	Graz	0.484	1.000		ORG	1.00	1.113	0.655	0.0	0.1	Beef	2				0.0	Graz	0.0	0.00	0.0200	0.00	0.0200	Note 49
Year	N	24	1	0.0	0.0	0	100	11	0	0	0.0	22	0.0	0.0	0.0	0.0	0.0	24	0.0	0.00	0.00	0.00	0.00	Note 47
7	Vol/NH3	Cattle	YES	0.0	0.0	NON	100.00	WWH	1.000	NO	0.0	Cattle	0.67				0.0	Cattle	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach	Graz	0.484	1.000		ORG	1.00	1.000	0.689	0.0	0.0	Beef	2				0.0	Graz	0.0	0.00	0.0200	0.00	0.0200	Note 49
Year	N	24	1	0.0	0.0	0	100	11	0	0	0.0	22	0.0	0.0	0.0	0.0	0.0	24	0.0	0.00	0.00	0.00	0.00	Note 47
8	Vol/NH3	Cattle	YES	0.0	0.0	NON	100.00	WWH	1.000	NO	0.0	Cattle	0.67				0.0	Cattle	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach	Graz	0.484	1.000		ORG	1.00	1.000	0.689	0.0	0.0	Beef	2				0.0	Graz	0.0	0.00	0.0200	0.00	0.0200	Note 49
Year	N	24	1	0.0	0.0	0	100	1	0	0	0.0	22	0.0	0.0	0.0	0.0	0.0	24	0.0	0.00	0.00	0.00	0.00	Note 47
9	Vol/NH3	Cattle	YES	0.0	0.0	NON	100.00	SBA	1.000	NO	0.0	Cattle	0.65				0.0	Cattle	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach	Graz	0.484	1.000		ORG	1.00	1.000	0.711	0.0	0.0	Beef	2				0.0	Graz	0.0	0.00	0.0200	0.00	0.0200	Note 49
Year	N	24	1	0.0	0.0	0	100	10	0	0	0.0	22	0.0	0.0	0.0	0.0	0.0	24	0.0	0.00	0.00	0.00	0.00	Note 47
10	Vol/NH3	Cattle	YES	0.0	0.0	NON	100.00	WBA	1.000	NO	0.0	Cattle	0.66				0.0	Cattle	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach	Graz	0.484	1.000		ORG	1.00	1.000	0.712	0.0	0.0	Beef	2				0.0	Graz	0.0	0.00	0.0200	0.00	0.0200	Note 49

Year	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year10	Total	Total/year 1	
Area with crop, ha	0.77	0.16	0.04	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.98	1.27	Note 50

Possible additional non IPCC N2O-N emissions	Value											Kind of source	Total IPCC and non IPCC N2O		Note 51
N residues emissions, ratio of N2O-N to N:	0.0000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Current crops	5.60	3.97	Note 51
Increased soil N emissions, kg N2O-N/ha:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Total anthropogenic	5.60	3.97	Note 51
Natural background emissions, kg N2O-N/ha:	1.00	0.77	0.16	0.04	0.01	0.00	0.00	0.00	0.00	0.00	0.98	Total including natural	6.59	4.95	Note 51

C2 N CHAIN CALCULATIONS SHEET C: N CHAINS BASED UPON DANISH VALUES CALCULATIONS By Jacob Bugge Available at www.ppo.bugge.com C2

N CHAIN STARTING WITH N FERTILIZER TO PRODUCE WINTER RAPESEED FOR PPO/BIODIESEL AND PIG PORK Note 43
AND CONTINUING WITH LIQUID PIG MANURE TO PRODUCE WINTER WHEAT FOR PIG PORK Note 43

Year	Fertlizer/manure # Name	Store 1/0	Amounts Store	Field	Or-ganic 1/0	Nnorm propor tion, %	Crop # Name	Cereal benefit 1/0	Straw used 1/0	Crop use & leach	Use # Name	Fodder: Uses #21-61 Fed	Food	N crop #71/ #72	Food/ bev #8	Fuel/ other #9	Manure handling # Name	Final N a-mounts	N2O-N emission IPCC 1996 Each	Total	N2O-N emission IPCC 2006 Each	Total	Note 44 Note 44 Note 44
Total N			RATIO OF N2O-N TO N IN FIRST CROP					TOTAL N AMOUNTS IN KG AND % ENDING AS FOOD/FUEL/OTHER/REMOVED						38.9	38.9	2.00	3.20	1.86	2.38	Note 45
Year N NH3			ACCORDING TO		IPCC 1996	IPCC 2006		TOTAL N AMOUNTS IN KG AND % VOLATILISATION/NH3						22.4	22.4	0.22		0.22		Note 45
1-10 N leach			FIRST YEAR		0.0311	0.0232		TOTAL N AMOUNTS IN KG AND % LEACHED						38.7	38.7	0.97		0.29		Note 45
			TOTAL		0.0448	0.0333		TOTAL N AMOUNTS IN KG AND %						100.0	100.0					Note 45
N2O-N/N in food/beverage/fuel/other																			0.0822		0.0611	Note 46
Year	N	1	1	100.0	100.0	0	100	229	1	0	97.8	32	71.3	29.8	0.0	0.0	0.0	31	41.5	1.48	2.22	1.37	1.65	Note 47
1	Vol/NH3	N	YES	0.0	2.2	NON	100.00	WRB	1.113	NO	26.5	Pig	0.84				0.0	Pig	5.8	0.08	0.0125	0.08	0.0100	Note 48
	N leach		1.022	1.000		ORG	1.00	1.113	0.271	0.0	26.5	Pork	3				17.5	Liquid	0.0	0.66	0.0010	0.20	0.0050	Note 49
Year	N	31	1	35.7	34.7	0	100	11	0	0	26.0	32	16.7	7.0	0.0	0.0	0.0	31	9.7	0.41	0.75	0.37	0.55	Note 47
2	Vol/NH3	Pig	YES	1.0	8.7	NON	100.00	WWH	1.000	NO	9.3	Pig	0.67				0.0	Pig	1.4	0.11	0.0125	0.11	0.0100	Note 48
	N leach	Liquid	1.000	1.000		ORG	1.00	1.000	0.357	0.0	9.3	Pork	3				5.7	Liquid	0.0	0.23	0.0010	0.07	0.0050	Note 49
Year	N	31	1	8.4	8.2	0	100	11	0	0	6.1	32	3.9	1.6	0.0	0.0	0.0	31	2.3	0.10	0.18	0.09	0.13	Note 47
3	Vol/NH3	Pig	YES	0.2	2.0	NON	100.00	WWH	1.000	NO	2.2	Pig	0.67				0.0	Pig	0.3	0.03	0.0125	0.03	0.0100	Note 48
	N leach	Liquid	1.000	1.000		ORG	1.00	1.000	0.357	0.0	2.2	Pork	3				1.3	Liquid	0.0	0.05	0.0010	0.02	0.0050	Note 49
Year	N	31	1	2.0	1.9	0	100	1	0	0	1.4	32	0.9	0.4	0.0	0.0	0.0	31	0.5	0.02	0.04	0.02	0.03	Note 47
4	Vol/NH3	Pig	YES	0.1	0.5	NON	100.00	SBA	1.000	NO	0.6	Pig	0.65				0.0	Pig	0.1	0.01	0.0125	0.01	0.0100	Note 48
	N leach	Liquid	1.000	1.000		ORG	1.00	1.000	0.403	0.0	0.6	Pork	3				0.3	Liquid	0.0	0.01	0.0010	0.00	0.0050	Note 49
Year	N	31	1	0.4	0.4	0	100	10	0	0	0.3	32	0.2	0.1	0.0	0.0	0.0	31	0.1	0.00	0.01	0.00	0.01	Note 47
5	Vol/NH3	Pig	YES	0.0	0.1	NON	100.00	WBA	1.000	NO	0.1	Pig	0.66				0.0	Pig	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach	Liquid	1.000	1.000		ORG	1.00	1.000	0.404	0.0	0.1	Pork	3				0.1	Liquid	0.0	0.00	0.0010	0.00	0.0050	Note 49
Year	N	31	1	0.1	0.1	0	100	229	1	0	0.1	32	0.0	0.0	0.0	0.0	0.0	31	0.0	0.00	0.00	0.00	0.00	Note 47
6	Vol/NH3	Pig	YES	0.0	0.0	NON	100.00	WRB	1.113	NO	0.0	Pig	0.84				0.0	Pig	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach	Liquid	1.000	1.000		ORG	1.00	1.113	0.287	0.0	0.0	Pork	3				0.0	Liquid	0.0	0.00	0.0010	0.00	0.0050	Note 49
Year	N	31	1	0.0	0.0	0	100	11	0	0	0.0	32	0.0	0.0	0.0	0.0	0.0	31	0.0	0.00	0.00	0.00	0.00	Note 47
7	Vol/NH3	Pig	YES	0.0	0.0	NON	100.00	WWH	1.000	NO	0.0	Pig	0.67				0.0	Pig	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach	Liquid	1.000	1.000		ORG	1.00	1.000	0.357	0.0	0.0	Pork	3				0.0	Liquid	0.0	0.00	0.0010	0.00	0.0050	Note 49
Year	N	31	1	0.0	0.0	0	100	11	0	0	0.0	32	0.0	0.0	0.0	0.0	0.0	31	0.0	0.00	0.00	0.00	0.00	Note 47
8	Vol/NH3	Pig	YES	0.0	0.0	NON	100.00	WWH	1.000	NO	0.0	Pig	0.67				0.0	Pig	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach	Liquid	1.000	1.000		ORG	1.00	1.000	0.357	0.0	0.0	Pork	3				0.0	Liquid	0.0	0.00	0.0010	0.00	0.0050	Note 49
Year	N	31	1	0.0	0.0	0	100	1	0	0	0.0	32	0.0	0.0	0.0	0.0	0.0	31	0.0	0.00	0.00	0.00	0.00	Note 47
9	Vol/NH3	Pig	YES	0.0	0.0	NON	100.00	SBA	1.000	NO	0.0	Pig	0.65				0.0	Pig	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach	Liquid	1.000	1.000		ORG	1.00	1.000	0.403	0.0	0.0	Pork	3				0.0	Liquid	0.0	0.00	0.0010	0.00	0.0050	Note 49
Year	N	31	1	0.0	0.0	0	100	10	0	0	0.0	32	0.0	0.0	0.0	0.0	0.0	31	0.0	0.00	0.00	0.00	0.00	Note 47
10	Vol/NH3	Pig	YES	0.0	0.0	NON	100.00	WBA	1.000	NO	0.0	Pig	0.66				0.0	Pig	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach	Liquid	1.000	1.000		ORG	1.00	1.000	0.404	0.0	0.0	Pork	3				0.0	Liquid	0.0	0.00	0.0010	0.00	0.0050	Note 49

Year	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year10	Total	Total/year 1	
Area with crop, ha	0.77	0.22	0.05	0.02	0.00	0.00	0.00	0.00	0.00	0.00	1.06	1.37	Note 50

Possible additional non IPCC N2O-N emissions	Value											Kind of source	Total IPCC and non IPCC N2O		
N residues emissions, ratio of N2O-N to N:	0.0000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Current crops	3.20	2.38	Note 51
Increased soil N emissions, kg N2O-N/ha:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Total anthropogenic	3.20	2.38	Note 51
Natural background emissions, kg N2O-N/ha:	1.00	0.77	0.22	0.05	0.02	0.00	0.00	0.00	0.00	0.00	1.06	Total including natural	4.25	3.43	Note 51

C2 N CHAIN CALCULATIONS SHEET C: N CHAINS BASED UPON DANISH VALUES CALCULATIONS By Jacob Bugge Available at www.ppo.bugge.com C2

N CHAIN STARTING WITH N FERTILIZER TO PRODUCE WINTER RAPESEED FOR PPO/BIODIESEL AND PIG PORK Note 43
AND CONTINUING WITH SEPARATED PIG MANURE TO PRODUCE WINTER WHEAT FOR PIG PORK Note 43

Year	Fertlizer/manure # Name	Store 1/0	Amounts Store	Field	Or-ganic 1/0	Nnorm propor tion, %	Crop # Name	Cereal benefit 1/0	Straw used 1/0	Crop use & leach	Use # Name	Fodder: Uses #21-61 Fed	Food	N crop #71/ #72	Food/ bev #8	Fuel/ other #9	Manure handling # Name	Final N a-mounts	N2O-N emission IPCC 1996 Each	Total	N2O-N emission IPCC 2006 Each	Total	Note 44 Note 44 Note 44
Total N			RATIO OF N2O-N TO N IN FIRST CROP				TOTAL N AMOUNTS IN KG AND % ENDING AS FOOD/FUEL/OTHER/REMOVED											35.5	35.1	2.24	3.45	1.71	2.27 Note 45
Year N NH3			ACCORDING TO		IPCC 1996		IPCC 2006		TOTAL N AMOUNTS IN KG AND % VOLATILISATION/NH3									28.1	27.9	0.28		0.28	Note 45
1-10 N leach			FIRST YEAR		0.0359		0.0233		TOTAL N AMOUNTS IN KG AND % LEACHED									37.4	37.0	0.93		0.28	Note 45
			TOTAL		0.0484		0.0319		TOTAL N AMOUNTS IN KG AND %									101.0	100.0				Note 45
N2O-N/N in food/beverage/fuel/other																					0.0973		0.0640 Note 46
Year	N	1	1	100.0	100.0	0	100	229	1	0	97.8	32	71.3	29.8	0.0	0.0	0.0	32	41.5	1.80	2.56	1.37	1.66 Note 47
1	Vol/NH3	N	YES	0.0	2.2	NON	100.00	WRB	1.113	NO	26.5	Pig	0.84				0.0	Pig	7.5	0.10	0.0125	0.10	0.0100 Note 48
	N leach		1.022	1.000		ORG	1.00	1.113	0.271	0.0	26.5	Pork	3				17.5	Sep	0.0	0.66	0.0105	0.20	0.0050 Note 49
Year	N	32	1	34.8	27.4	0	100	11	0	0	20.5	32	11.4	4.8	0.0	0.0	0.0	32	6.7	0.37	0.75	0.29	0.51 Note 47
2	Vol/NH3	Pig	YES	7.5	6.8	NON	100.00	WWH	1.000	NO	9.1	Pig	0.67				0.0	Pig	1.2	0.16	0.0125	0.16	0.0100 Note 48
	N leach	Sep	0.867	1.024		ORG	1.00	1.000	0.443	0.0	9.1	Pork	3				4.5	Sep	0.0	0.23	0.0105	0.07	0.0050 Note 49
Year	N	32	1	5.6	4.4	0	100	11	0	0	3.3	32	1.8	0.8	0.0	0.0	0.0	32	1.1	0.06	0.12	0.05	0.08 Note 47
3	Vol/NH3	Pig	YES	1.2	1.1	NON	100.00	WWH	1.000	NO	1.5	Pig	0.67				0.0	Pig	0.2	0.02	0.0125	0.02	0.0100 Note 48
	N leach	Sep	0.867	1.024		ORG	1.00	1.000	0.443	0.0	1.5	Pork	3				0.7	Sep	0.0	0.04	0.0105	0.01	0.0050 Note 49
Year	N	32	1	0.9	0.7	0	100	1	0	0	0.5	32	0.3	0.1	0.0	0.0	0.0	32	0.2	0.01	0.02	0.01	0.01 Note 47
4	Vol/NH3	Pig	YES	0.2	0.2	NON	100.00	SBA	1.000	NO	0.3	Pig	0.65				0.0	Pig	0.0	0.00	0.0125	0.00	0.0100 Note 48
	N leach	Sep	0.867	1.024		ORG	1.00	1.000	0.483	0.0	0.3	Pork	3				0.1	Sep	0.0	0.01	0.0105	0.00	0.0050 Note 49
Year	N	32	1	0.1	0.1	0	100	10	0	0	0.1	32	0.0	0.0	0.0	0.0	0.0	32	0.0	0.00	0.00	0.00	0.00 Note 47
5	Vol/NH3	Pig	YES	0.0	0.0	NON	100.00	WBA	1.000	NO	0.0	Pig	0.66				0.0	Pig	0.0	0.00	0.0125	0.00	0.0100 Note 48
	N leach	Sep	0.867	1.024		ORG	1.00	1.000	0.483	0.0	0.0	Pork	3				0.0	Sep	0.0	0.00	0.0105	0.00	0.0050 Note 49
Year	N	32	1	0.0	0.0	0	100	229	1	0	0.0	32	0.0	0.0	0.0	0.0	0.0	32	0.0	0.00	0.00	0.00	0.00 Note 47
6	Vol/NH3	Pig	YES	0.0	0.0	NON	100.00	WRB	1.113	NO	0.0	Pig	0.84				0.0	Pig	0.0	0.00	0.0125	0.00	0.0100 Note 48
	N leach	Sep	0.867	1.024		ORG	1.00	1.113	0.382	0.0	0.0	Pork	3				0.0	Sep	0.0	0.00	0.0105	0.00	0.0050 Note 49
Year	N	32	1	0.0	0.0	0	100	11	0	0	0.0	32	0.0	0.0	0.0	0.0	0.0	32	0.0	0.00	0.00	0.00	0.00 Note 47
7	Vol/NH3	Pig	YES	0.0	0.0	NON	100.00	WWH	1.000	NO	0.0	Pig	0.67				0.0	Pig	0.0	0.00	0.0125	0.00	0.0100 Note 48
	N leach	Sep	0.867	1.024		ORG	1.00	1.000	0.443	0.0	0.0	Pork	3				0.0	Sep	0.0	0.00	0.0105	0.00	0.0050 Note 49
Year	N	32	1	0.0	0.0	0	100	11	0	0	0.0	32	0.0	0.0	0.0	0.0	0.0	32	0.0	0.00	0.00	0.00	0.00 Note 47
8	Vol/NH3	Pig	YES	0.0	0.0	NON	100.00	WWH	1.000	NO	0.0	Pig	0.67				0.0	Pig	0.0	0.00	0.0125	0.00	0.0100 Note 48
	N leach	Sep	0.867	1.024		ORG	1.00	1.000	0.443	0.0	0.0	Pork	3				0.0	Sep	0.0	0.00	0.0105	0.00	0.0050 Note 49
Year	N	32	1	0.0	0.0	0	100	1	0	0	0.0	32	0.0	0.0	0.0	0.0	0.0	32	0.0	0.00	0.00	0.00	0.00 Note 47
9	Vol/NH3	Pig	YES	0.0	0.0	NON	100.00	SBA	1.000	NO	0.0	Pig	0.65				0.0	Pig	0.0	0.00	0.0125	0.00	0.0100 Note 48
	N leach	Sep	0.867	1.024		ORG	1.00	1.000	0.483	0.0	0.0	Pork	3				0.0	Sep	0.0	0.00	0.0105	0.00	0.0050 Note 49
Year	N	32	1	0.0	0.0	0	100	10	0	0	0.0	32	0.0	0.0	0.0	0.0	0.0	32	0.0	0.00	0.00	0.00	0.00 Note 47
10	Vol/NH3	Pig	YES	0.0	0.0	NON	100.00	WBA	1.000	NO	0.0	Pig	0.66				0.0	Pig	0.0	0.00	0.0125	0.00	0.0100 Note 48
	N leach	Sep	0.867	1.024		ORG	1.00	1.000	0.483	0.0	0.0	Pork	3				0.0	Sep	0.0	0.00	0.0105	0.00	0.0050 Note 49

Year	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year10	Total	Total/year 1	
Area with crop, ha	0.77	0.15	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.95	1.23	Note 50

Possible additional non IPCC N2O-N emissions	Value											Kind of source	Total IPCC and non IPCC N2O		Note 51
N residues emissions, ratio of N2O-N to N:	0.0000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Current crops	3.45	2.27	Note 51
Increased soil N emissions, kg N2O-N/ha:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Total anthropogenic	3.45	2.27	Note 51
Natural background emissions, kg N2O-N/ha:	1.00	0.77	0.15	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.95	Total including natural	4.40	3.22	Note 51

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N CHAIN STARTING WITH N FERTILIZER TO PRODUCE WINTER RAPESEED FOR PPO/BIODIESEL AND PIG PORK Note 43
AND CONTINUING WITH PIG DEEP LITTER TO PRODUCE WINTER WHEAT FOR PIG PORK Note 43

Year	Fertlizer/manure # Name	Store 1/0	Amounts Store	Field	Or-ganic 1/0	Nnorm propor tion, %	Crop # Name	Cereal benefit 1/0	Straw used 1/0	Crop use & leach	Use # Name	Fodder: Uses #21-61 Fed	Food	N crop #71/ #72	Food/ bev #8	Fuel/ other #9	Manure handling # Name	Final N a-mounts	N2O-N emission IPCC 1996 Each	Total	N2O-N emission IPCC 2006 Each	Total	Note 44 Note 44 Note 44
Total N			RATIO OF N2O-N TO N IN FIRST CROP				TOTAL N AMOUNTS IN KG AND % ENDING AS FOOD/FUEL/OTHER/REMOVED										34.0	32.5	2.42	3.65	1.60	2.22	Note 45
Year N NH3			ACCORDING TO		IPCC 1996		IPCC 2006		TOTAL N AMOUNTS IN KG AND % VOLATILISATION/NH3								36.0	34.5	0.36		0.36		Note 45
1-10 N leach			FIRST YEAR		0.0400		0.0235		TOTAL N AMOUNTS IN KG AND % LEACHED								34.5	33.0	0.86		0.26		Note 45
			TOTAL		0.0512		0.0312		TOTAL N AMOUNTS IN KG AND %								104.5	100.0					Note 45
N2O-N/N in food/beverage/fuel/other																				0.1073		0.0654	Note 46
Year	N	1	1	100.0	100.0	0	100	229	1	0	97.8	32	71.3	29.8	0.0	0.0	0.0	33	41.5	2.06	2.85	1.35	1.68	Note 47
1	Vol/NH3	N	YES	0.0	2.2	NON	100.00	WRB	1.113	NO	26.5	Pig	0.84				0.0	Pig	10.4	0.13	0.0125	0.13	0.0100	Note 48
	N leach		1.022	1.000		ORG	1.00	1.113	0.271	0.0	26.5	Pork	3				17.5	Deep	0.0	0.66	0.0200	0.20	0.0050	Note 49
Year	N	33	1	35.1	21.0	0	100	11	0	0	15.8	32	8.8	3.7	0.0	0.0	0.0	33	5.1	0.32	0.70	0.22	0.48	Note 47
2	Vol/NH3	Pig	YES	14.0	5.3	NON	100.00	WWH	1.000	NO	7.0	Pig	0.67				0.0	Pig	1.3	0.21	0.0125	0.21	0.0100	Note 48
	N leach	Deep	0.867	1.127		ORG	1.00	1.000	0.443	0.0	7.0	Pork	3				3.5	Deep	0.0	0.17	0.0200	0.05	0.0050	Note 49
Year	N	33	1	4.3	2.6	0	100	11	0	0	1.9	32	1.1	0.5	0.0	0.0	0.0	33	0.6	0.04	0.09	0.03	0.06	Note 47
3	Vol/NH3	Pig	YES	1.7	0.6	NON	100.00	WWH	1.000	NO	0.9	Pig	0.67				0.0	Pig	0.2	0.03	0.0125	0.03	0.0100	Note 48
	N leach	Deep	0.867	1.127		ORG	1.00	1.000	0.443	0.0	0.9	Pork	3				0.4	Deep	0.0	0.02	0.0200	0.01	0.0050	Note 49
Year	N	33	1	0.5	0.3	0	100	1	0	0	0.2	32	0.1	0.1	0.0	0.0	0.0	33	0.1	0.00	0.01	0.00	0.01	Note 47
4	Vol/NH3	Pig	YES	0.2	0.1	NON	100.00	SBA	1.000	NO	0.1	Pig	0.65				0.0	Pig	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach	Deep	0.867	1.127		ORG	1.00	1.000	0.483	0.0	0.1	Pork	3				0.0	Deep	0.0	0.00	0.0200	0.00	0.0050	Note 49
Year	N	33	1	0.1	0.0	0	100	10	0	0	0.0	32	0.0	0.0	0.0	0.0	0.0	33	0.0	0.00	0.00	0.00	0.00	Note 47
5	Vol/NH3	Pig	YES	0.0	0.0	NON	100.00	WBA	1.000	NO	0.0	Pig	0.66				0.0	Pig	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach	Deep	0.867	1.127		ORG	1.00	1.000	0.483	0.0	0.0	Pork	3				0.0	Deep	0.0	0.00	0.0200	0.00	0.0050	Note 49
Year	N	33	1	0.0	0.0	0	100	229	1	0	0.0	32	0.0	0.0	0.0	0.0	0.0	33	0.0	0.00	0.00	0.00	0.00	Note 47
6	Vol/NH3	Pig	YES	0.0	0.0	NON	100.00	WRB	1.113	NO	0.0	Pig	0.84				0.0	Pig	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach	Deep	0.867	1.127		ORG	1.00	1.113	0.382	0.0	0.0	Pork	3				0.0	Deep	0.0	0.00	0.0200	0.00	0.0050	Note 49
Year	N	33	1	0.0	0.0	0	100	11	0	0	0.0	32	0.0	0.0	0.0	0.0	0.0	33	0.0	0.00	0.00	0.00	0.00	Note 47
7	Vol/NH3	Pig	YES	0.0	0.0	NON	100.00	WWH	1.000	NO	0.0	Pig	0.67				0.0	Pig	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach	Deep	0.867	1.127		ORG	1.00	1.000	0.443	0.0	0.0	Pork	3				0.0	Deep	0.0	0.00	0.0200	0.00	0.0050	Note 49
Year	N	33	1	0.0	0.0	0	100	11	0	0	0.0	32	0.0	0.0	0.0	0.0	0.0	33	0.0	0.00	0.00	0.00	0.00	Note 47
8	Vol/NH3	Pig	YES	0.0	0.0	NON	100.00	WWH	1.000	NO	0.0	Pig	0.67				0.0	Pig	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach	Deep	0.867	1.127		ORG	1.00	1.000	0.443	0.0	0.0	Pork	3				0.0	Deep	0.0	0.00	0.0200	0.00	0.0050	Note 49
Year	N	33	1	0.0	0.0	0	100	1	0	0	0.0	32	0.0	0.0	0.0	0.0	0.0	33	0.0	0.00	0.00	0.00	0.00	Note 47
9	Vol/NH3	Pig	YES	0.0	0.0	NON	100.00	SBA	1.000	NO	0.0	Pig	0.65				0.0	Pig	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach	Deep	0.867	1.127		ORG	1.00	1.000	0.483	0.0	0.0	Pork	3				0.0	Deep	0.0	0.00	0.0200	0.00	0.0050	Note 49
Year	N	33	1	0.0	0.0	0	100	10	0	0	0.0	32	0.0	0.0	0.0	0.0	0.0	33	0.0	0.00	0.00	0.00	0.00	Note 47
10	Vol/NH3	Pig	YES	0.0	0.0	NON	100.00	WBA	1.000	NO	0.0	Pig	0.66				0.0	Pig	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach	Deep	0.867	1.127		ORG	1.00	1.000	0.483	0.0	0.0	Pork	3				0.0	Deep	0.0	0.00	0.0200	0.00	0.0050	Note 49

Year	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year10	Total	Total/year 1	
Area with crop, ha	0.77	0.11	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.90	1.17	Note 50

Possible additional non IPCC N2O-N emissions	Value												Kind of source	Total IPCC and non IPCC N2O		Note 51
N residues emissions, ratio of N2O-N to N:	0.0000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Current crops	3.65	2.22	Note 51
Increased soil N emissions, kg N2O-N/ha:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Total anthropogenic	3.65	2.22	Note 51
Natural background emissions, kg N2O-N/ha:	1.00	0.77	0.11	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.90	Total including natural	4.55	3.12	Note 51

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N CHAIN STARTING WITH N FERTILIZER TO PRODUCE WINTER RAPESEED FOR PPO/BIODIESEL AND PIG PORK Note 43
AND CONTINUING WITH MANURE FROM ROOTING PIGS TO PRODUCE WINTER WHEAT FOR PIG PORK Note 43

Year		Fertlizer/manure # Name	Store 1/0	Amounts Store	Field	Or-ganic 1/0	Nnorm propor tion, %	Crop # Name	Cereal benefit 1/0	Straw used 1/0	Crop use & leach	Use # Name	Fodder: Uses #21-61 Fed	Food	N crop #71/ #72	Food/ bev #8	Fuel/ other #9	Manure handling # Name	Final N a-mounts	N2O-N emission IPCC 1996 Each	Total	N2O-N emission IPCC 2006 Each	Total	Note 44 Note 44 Note 44
Total	N							RATIO OF N2O-N TO N IN FIRST CROP			TOTAL N AMOUNTS IN KG AND % ENDING AS FOOD/FUEL/OTHER/REMOVED							39.3	39.3	3.31	4.74	2.94	3.41	Note 45
Year	N NH3							ACCORDING TO	IPCC 1996	IPCC 2006	TOTAL N AMOUNTS IN KG AND % VOLATILISATION/NH3							6.0	6.0	0.06		0.06		Note 45
1-10	N leach							FIRST YEAR	0.0415	0.0315	TOTAL N AMOUNTS IN KG AND % LEACHED							54.6	54.6	1.37		0.41		Note 45
								TOTAL	0.0664	0.0478	TOTAL N AMOUNTS IN KG AND %							100.0	100.0					Note 45
N2O-N/N in food/beverage/fuel/other																					0.1205		0.0867	Note 46
Year	N	1	1	100.0	100.0	0	100	229	1	0	97.8	32	71.3	29.8	0.0	0.0	0.0	34	41.5	2.27	2.96	2.03	2.25	Note 47
1	Vol/NH3	N	YES	0.0	2.2	NON	100.00	WRB	1.113	NO	26.5	Pig	0.84				0.0	Pig	0.0	0.02	0.0125	0.02	0.0100	Note 48
	N leach		1.022	1.000		ORG	1.00	1.113	0.271	0.0	26.5	Pork	3				17.5	Root	0.0	0.66	0.0200	0.20	0.0200	Note 49
Year	N	34	1	41.5	41.5	0	100	11	0	0	38.6	32	17.3	7.2	0.0	0.0	0.0	34	10.1	0.79	1.35	0.69	0.88	Note 47
2	Vol/NH3	Pig	YES	0.0	2.9	NON	100.00	WWH	1.000	NO	21.3	Pig	0.67				0.0	Pig	0.0	0.03	0.0125	0.03	0.0100	Note 48
	N leach	Root	0.699	1.000		ORG	1.00	1.000	0.551	0.0	21.3	Pork	3				8.4	Root	0.0	0.53	0.0200	0.16	0.0200	Note 49
Year	N	34	1	10.1	10.1	0	100	11	0	0	9.4	32	4.2	1.8	0.0	0.0	0.0	34	2.5	0.19	0.33	0.17	0.21	Note 47
3	Vol/NH3	Pig	YES	0.0	0.7	NON	100.00	WWH	1.000	NO	5.2	Pig	0.67				0.0	Pig	0.0	0.01	0.0125	0.01	0.0100	Note 48
	N leach	Root	0.699	1.000		ORG	1.00	1.000	0.551	0.0	5.2	Pork	3				2.1	Root	0.0	0.13	0.0200	0.04	0.0200	Note 49
Year	N	34	1	2.5	2.5	0	100	1	0	0	2.3	32	1.0	0.4	0.0	0.0	0.0	34	0.6	0.05	0.08	0.04	0.05	Note 47
4	Vol/NH3	Pig	YES	0.0	0.2	NON	100.00	SBA	1.000	NO	1.3	Pig	0.65				0.0	Pig	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach	Root	0.699	1.000		ORG	1.00	1.000	0.583	0.0	1.3	Pork	3				0.5	Root	0.0	0.03	0.0200	0.01	0.0200	Note 49
Year	N	34	1	0.6	0.6	0	100	10	0	0	0.5	32	0.2	0.1	0.0	0.0	0.0	34	0.1	0.01	0.02	0.01	0.01	Note 47
5	Vol/NH3	Pig	YES	0.0	0.0	NON	100.00	WBA	1.000	NO	0.3	Pig	0.66				0.0	Pig	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach	Root	0.699	1.000		ORG	1.00	1.000	0.583	0.0	0.3	Pork	3				0.1	Root	0.0	0.01	0.0200	0.00	0.0200	Note 49
Year	N	34	1	0.1	0.1	0	100	229	1	0	0.1	32	0.1	0.0	0.0	0.0	0.0	34	0.0	0.00	0.00	0.00	0.00	Note 47
6	Vol/NH3	Pig	YES	0.0	0.0	NON	100.00	WRB	1.113	NO	0.1	Pig	0.84				0.0	Pig	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach	Root	0.699	1.000		ORG	1.00	1.113	0.502	0.0	0.1	Pork	3				0.0	Root	0.0	0.00	0.0200	0.00	0.0200	Note 49
Year	N	34	1	0.0	0.0	0	100	11	0	0	0.0	32	0.0	0.0	0.0	0.0	0.0	34	0.0	0.00	0.00	0.00	0.00	Note 47
7	Vol/NH3	Pig	YES	0.0	0.0	NON	100.00	WWH	1.000	NO	0.0	Pig	0.67				0.0	Pig	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach	Root	0.699	1.000		ORG	1.00	1.000	0.551	0.0	0.0	Pork	3				0.0	Root	0.0	0.00	0.0200	0.00	0.0200	Note 49
Year	N	34	1	0.0	0.0	0	100	11	0	0	0.0	32	0.0	0.0	0.0	0.0	0.0	34	0.0	0.00	0.00	0.00	0.00	Note 47
8	Vol/NH3	Pig	YES	0.0	0.0	NON	100.00	WWH	1.000	NO	0.0	Pig	0.67				0.0	Pig	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach	Root	0.699	1.000		ORG	1.00	1.000	0.551	0.0	0.0	Pork	3				0.0	Root	0.0	0.00	0.0200	0.00	0.0200	Note 49
Year	N	34	1	0.0	0.0	0	100	1	0	0	0.0	32	0.0	0.0	0.0	0.0	0.0	34	0.0	0.00	0.00	0.00	0.00	Note 47
9	Vol/NH3	Pig	YES	0.0	0.0	NON	100.00	SBA	1.000	NO	0.0	Pig	0.65				0.0	Pig	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach	Root	0.699	1.000		ORG	1.00	1.000	0.583	0.0	0.0	Pork	3				0.0	Root	0.0	0.00	0.0200	0.00	0.0200	Note 49
Year	N	34	1	0.0	0.0	0	100	10	0	0	0.0	32	0.0	0.0	0.0	0.0	0.0	34	0.0	0.00	0.00	0.00	0.00	Note 47
10	Vol/NH3	Pig	YES	0.0	0.0	NON	100.00	WBA	1.000	NO	0.0	Pig	0.66				0.0	Pig	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach	Root	0.699	1.000		ORG	1.00	1.000	0.583	0.0	0.0	Pork	3				0.0	Root	0.0	0.00	0.0200	0.00	0.0200	Note 49

Year	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year10	Total	Total/year 1	
Area with crop, ha	0.77	0.18	0.04	0.01	0.00	0.00	0.00	0.00	0.00	0.00	1.01	1.31	Note 50

Possible additional non IPCC N2O-N emissions	Value												Kind of source	Total IPCC and non IPCC N2O		Note 51
N residues emissions, ratio of N2O-N to N:	0.0000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Current crops	4.74	3.41	Note 51
Increased soil N emissions, kg N2O-N/ha:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Total anthropogenic	4.74	3.41	Note 51
Natural background emissions, kg N2O-N/ha:	1.00	0.77	0.18	0.04	0.01	0.00	0.00	0.00	0.00	0.00	0.00	1.01	Total including natural	5.75	4.42	Note 51

C2 N CHAIN CALCULATIONS SHEET C: N CHAINS BASED UPON DANISH VALUES CALCULATIONS By Jacob Bugge Available at www.ppo.bugge.com C2

N CHAIN STARTING WITH N FERTILIZER TO PRODUCE WINTER RAPESEED FOR PPO/BIODIESEL AND POULTRY MEAT Note 43
AND CONTINUING WITH LIQUID POULTRY MANURE TO PRODUCE WINTER WHEAT FOR POULTRY MEAT Note 43

Year	Fertlizer/manure # Name	Store 1/0	Amounts Store	Field	Or-ganic 1/0	Nnorm propor tion, %	Crop # Name	Cereal benefit 1/0	Straw used 1/0	Crop use & leach	Use # Name	Fodder: Uses #21-61 Fed	Food	N crop #71/ #72	Food/ bev #8	Fuel/ other #9	Manure handling # Name	Final N a-mounts	N2O-N emission IPCC 1996 Each	Total	N2O-N emission IPCC 2006 Each	Total	Note 44 Note 44 Note 44
Total N			RATIO OF N2O-N TO N IN FIRST CROP					TOTAL N AMOUNTS IN KG AND % ENDING AS FOOD/FUEL/OTHER/REMOVED						44.3	44.3	1.91	3.05	1.75	2.21	Note 45	
Year N NH3			ACCORDING TO		IPCC 1996	IPCC 2006		TOTAL N AMOUNTS IN KG AND % VOLATILISATION/NH3						16.6	16.6	0.17		0.17		Note 45	
1-10 N leach			FIRST YEAR		0.0307	0.0226		TOTAL N AMOUNTS IN KG AND % LEACHED						39.0	39.0	0.98		0.29		Note 45	
			TOTAL		0.0428	0.0309		TOTAL N AMOUNTS IN KG AND %						100.0	100.0					Note 45	
N2O-N/N in food/beverage/fuel/other																			0.0688		0.0497	Note 46	
Year	N	1	1	100.0	100.0	0	100	229	1	0	97.8	42	71.3	36.4	0.0	0.0	0.0	41	34.9	1.47	2.19	1.35	1.61 Note 47
1	Vol/NH3	N	YES	0.0	2.2	NON	100.00	WRB	1.113	NO	26.5	Poultry	0.84				0.0	Poultry	3.5	0.06	0.0125	0.06	0.0100 Note 48
	N leach		1.022	1.000		ORG	1.00	1.113	0.271	0.0	26.5	Meat	4				17.5	Liquid	0.0	0.66	0.0010	0.20	0.0050 Note 49
Year	N	41	1	31.4	30.8	0	100	11	0	0	23.1	42	12.9	6.6	0.0	0.0	0.0	41	6.3	0.36	0.70	0.32	0.49 Note 47
2	Vol/NH3	Poultry	YES	0.6	7.7	NON	100.00	WWH	1.000	NO	10.2	Poultry	0.67				0.0	Poultry	0.6	0.09	0.0125	0.09	0.0100 Note 48
	N leach	Liquid	0.867	1.000		ORG	1.00	1.000	0.443	0.0	10.2	Meat	4				5.1	Liquid	0.0	0.26	0.0010	0.08	0.0050 Note 49
Year	N	41	1	5.7	5.6	0	100	11	0	0	4.2	42	2.3	1.2	0.0	0.0	0.0	41	1.1	0.06	0.13	0.06	0.09 Note 47
3	Vol/NH3	Poultry	YES	0.1	1.4	NON	100.00	WWH	1.000	NO	1.8	Poultry	0.67				0.0	Poultry	0.1	0.02	0.0125	0.02	0.0100 Note 48
	N leach	Liquid	0.867	1.000		ORG	1.00	1.000	0.443	0.0	1.8	Meat	4				0.9	Liquid	0.0	0.05	0.0010	0.01	0.0050 Note 49
Year	N	41	1	1.0	1.0	0	100	1	0	0	0.8	42	0.4	0.2	0.0	0.0	0.0	41	0.2	0.01	0.02	0.01	0.02 Note 47
4	Vol/NH3	Poultry	YES	0.0	0.3	NON	100.00	SBA	1.000	NO	0.4	Poultry	0.65				0.0	Poultry	0.0	0.00	0.0125	0.00	0.0100 Note 48
	N leach	Liquid	0.867	1.000		ORG	1.00	1.000	0.483	0.0	0.4	Meat	4				0.2	Liquid	0.0	0.01	0.0010	0.00	0.0050 Note 49
Year	N	41	1	0.2	0.2	0	100	10	0	0	0.1	42	0.1	0.0	0.0	0.0	0.0	41	0.0	0.00	0.00	0.00	0.00 Note 47
5	Vol/NH3	Poultry	YES	0.0	0.0	NON	100.00	WBA	1.000	NO	0.1	Poultry	0.66				0.0	Poultry	0.0	0.00	0.0125	0.00	0.0100 Note 48
	N leach	Liquid	0.867	1.000		ORG	1.00	1.000	0.483	0.0	0.1	Meat	4				0.0	Liquid	0.0	0.00	0.0010	0.00	0.0050 Note 49
Year	N	41	1	0.0	0.0	0	100	229	1	0	0.0	42	0.0	0.0	0.0	0.0	0.0	41	0.0	0.00	0.00	0.00	0.00 Note 47
6	Vol/NH3	Poultry	YES	0.0	0.0	NON	100.00	WRB	1.113	NO	0.0	Poultry	0.84				0.0	Poultry	0.0	0.00	0.0125	0.00	0.0100 Note 48
	N leach	Liquid	0.867	1.000		ORG	1.00	1.113	0.382	0.0	0.0	Meat	4				0.0	Liquid	0.0	0.00	0.0010	0.00	0.0050 Note 49
Year	N	41	1	0.0	0.0	0	100	11	0	0	0.0	42	0.0	0.0	0.0	0.0	0.0	41	0.0	0.00	0.00	0.00	0.00 Note 47
7	Vol/NH3	Poultry	YES	0.0	0.0	NON	100.00	WWH	1.000	NO	0.0	Poultry	0.67				0.0	Poultry	0.0	0.00	0.0125	0.00	0.0100 Note 48
	N leach	Liquid	0.867	1.000		ORG	1.00	1.000	0.443	0.0	0.0	Meat	4				0.0	Liquid	0.0	0.00	0.0010	0.00	0.0050 Note 49
Year	N	41	1	0.0	0.0	0	100	11	0	0	0.0	42	0.0	0.0	0.0	0.0	0.0	41	0.0	0.00	0.00	0.00	0.00 Note 47
8	Vol/NH3	Poultry	YES	0.0	0.0	NON	100.00	WWH	1.000	NO	0.0	Poultry	0.67				0.0	Poultry	0.0	0.00	0.0125	0.00	0.0100 Note 48
	N leach	Liquid	0.867	1.000		ORG	1.00	1.000	0.443	0.0	0.0	Meat	4				0.0	Liquid	0.0	0.00	0.0010	0.00	0.0050 Note 49
Year	N	41	1	0.0	0.0	0	100	1	0	0	0.0	42	0.0	0.0	0.0	0.0	0.0	41	0.0	0.00	0.00	0.00	0.00 Note 47
9	Vol/NH3	Poultry	YES	0.0	0.0	NON	100.00	SBA	1.000	NO	0.0	Poultry	0.65				0.0	Poultry	0.0	0.00	0.0125	0.00	0.0100 Note 48
	N leach	Liquid	0.867	1.000		ORG	1.00	1.000	0.483	0.0	0.0	Meat	4				0.0	Liquid	0.0	0.00	0.0010	0.00	0.0050 Note 49
Year	N	41	1	0.0	0.0	0	100	10	0	0	0.0	42	0.0	0.0	0.0	0.0	0.0	41	0.0	0.00	0.00	0.00	0.00 Note 47
10	Vol/NH3	Poultry	YES	0.0	0.0	NON	100.00	WBA	1.000	NO	0.0	Poultry	0.66				0.0	Poultry	0.0	0.00	0.0125	0.00	0.0100 Note 48
	N leach	Liquid	0.867	1.000		ORG	1.00	1.000	0.483	0.0	0.0	Meat	4				0.0	Liquid	0.0	0.00	0.0010	0.00	0.0050 Note 49

Year	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year10	Total	Total/year 1	
Area with crop, ha	0.77	0.17	0.03	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.98	1.27	Note 50

Possible additional non IPCC N2O-N emissions	Value											Kind of source	Total IPCC and non IPCC N2O		
N residues emissions, ratio of N2O-N to N:	0.0000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Current crops	3.05	2.21	Note 51
Increased soil N emissions, kg N2O-N/ha:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Total anthropogenic	3.05	2.21	Note 51
Natural background emissions, kg N2O-N/ha:	1.00	0.77	0.17	0.03	0.01	0.00	0.00	0.00	0.00	0.00	0.98	Total including natural	4.03	3.18	Note 51

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N CHAIN STARTING WITH N FERTILIZER TO PRODUCE WINTER RAPESEED FOR PPO/BIODIESEL AND POULTRY MEAT Note 43
AND CONTINUING WITH SEPARATED POULTRY MANURE TO PRODUCE WINTER WHEAT FOR POULTRY MEAT Note 43

Year	Fertlizer/manure # Name	Store 1/0	Amounts Store	Field	Or-ganic 1/0	Nnorm propor tion, %	Crop # Name	Cereal benefit 1/0	Straw used 1/0	Crop use & leach	Use # Name	Fodder: Uses #21-61 Fed	Food	N crop #71/ #72	Food/ bev #8	Fuel/ other #9	Manure handling # Name	Final N a-mounts	N2O-N emission IPCC 1996 Each	Total	N2O-N emission IPCC 2006 Each	Total	Note 44 Note 44 Note 44
Total N			RATIO OF N2O-N TO N IN FIRST CROP				TOTAL N AMOUNTS IN KG AND % ENDING AS FOOD/FUEL/OTHER/REMOVED											41.8	41.8	2.05	3.16	1.59	2.09	Note 45
Year N NH3			ACCORDING TO		IPCC 1996		IPCC 2006				TOTAL N AMOUNTS IN KG AND % VOLATILISATION/NH3							23.2	23.2	0.23		0.23		Note 45
1-10 N leach			FIRST YEAR		0.0349		0.0229				TOTAL N AMOUNTS IN KG AND % LEACHED							35.0	35.0	0.88		0.26		Note 45
			TOTAL		0.0443		0.0293				TOTAL N AMOUNTS IN KG AND %							100.0	100.0					Note 45
N2O-N/N in food/beverage/fuel/other																					0.0755		0.0499	Note 46
Year	N	1	1	100.0	100.0	0	100	229	1	0	97.8	42	71.3	36.4	0.0	0.0	0.0	42	34.9	1.72	2.49	1.33	1.64	Note 47
1	Vol/NH3	N	YES	0.0	2.2	NON	100.00	WRB	1.113	NO	26.5	Poultry	0.84				0.0	Poultry	8.7	0.11	0.0125	0.11	0.0100	Note 48
	N leach		1.022	1.000		ORG	1.00	1.113	0.271	0.0	26.5	Meat	4				17.5	Sep	0.0	0.66	0.0105	0.20	0.0050	Note 49
Year	N	42	1	26.2	22.3	0	100	11	0	0	16.7	42	9.3	4.7	0.0	0.0	0.0	42	4.6	0.29	0.58	0.23	0.39	Note 47
2	Vol/NH3	Poultry	YES	3.9	5.6	NON	100.00	WWH	1.000	NO	7.4	Poultry	0.67				0.0	Poultry	1.1	0.11	0.0125	0.11	0.0100	Note 48
	N leach	Sep	0.867	1.000		ORG	1.00	1.000	0.443	0.0	7.4	Meat	4				3.7	Sep	0.0	0.18	0.0105	0.06	0.0050	Note 49
Year	N	42	1	3.4	2.9	0	100	11	0	0	2.2	42	1.2	0.6	0.0	0.0	0.0	42	0.6	0.04	0.08	0.03	0.05	Note 47
3	Vol/NH3	Poultry	YES	0.5	0.7	NON	100.00	WWH	1.000	NO	1.0	Poultry	0.67				0.0	Poultry	0.1	0.01	0.0125	0.01	0.0100	Note 48
	N leach	Sep	0.867	1.000		ORG	1.00	1.000	0.443	0.0	1.0	Meat	4				0.5	Sep	0.0	0.02	0.0105	0.01	0.0050	Note 49
Year	N	42	1	0.4	0.4	0	100	1	0	0	0.3	42	0.1	0.1	0.0	0.0	0.0	42	0.1	0.00	0.01	0.00	0.01	Note 47
4	Vol/NH3	Poultry	YES	0.1	0.1	NON	100.00	SBA	1.000	NO	0.1	Poultry	0.65				0.0	Poultry	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach	Sep	0.867	1.000		ORG	1.00	1.000	0.483	0.0	0.1	Meat	4				0.1	Sep	0.0	0.00	0.0105	0.00	0.0050	Note 49
Year	N	42	1	0.1	0.0	0	100	10	0	0	0.0	42	0.0	0.0	0.0	0.0	0.0	42	0.0	0.00	0.00	0.00	0.00	Note 47
5	Vol/NH3	Poultry	YES	0.0	0.0	NON	100.00	WBA	1.000	NO	0.0	Poultry	0.66				0.0	Poultry	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach	Sep	0.867	1.000		ORG	1.00	1.000	0.483	0.0	0.0	Meat	4				0.0	Sep	0.0	0.00	0.0105	0.00	0.0050	Note 49
Year	N	42	1	0.0	0.0	0	100	229	1	0	0.0	42	0.0	0.0	0.0	0.0	0.0	42	0.0	0.00	0.00	0.00	0.00	Note 47
6	Vol/NH3	Poultry	YES	0.0	0.0	NON	100.00	WRB	1.113	NO	0.0	Poultry	0.84				0.0	Poultry	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach	Sep	0.867	1.000		ORG	1.00	1.113	0.382	0.0	0.0	Meat	4				0.0	Sep	0.0	0.00	0.0105	0.00	0.0050	Note 49
Year	N	42	1	0.0	0.0	0	100	11	0	0	0.0	42	0.0	0.0	0.0	0.0	0.0	42	0.0	0.00	0.00	0.00	0.00	Note 47
7	Vol/NH3	Poultry	YES	0.0	0.0	NON	100.00	WWH	1.000	NO	0.0	Poultry	0.67				0.0	Poultry	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach	Sep	0.867	1.000		ORG	1.00	1.000	0.443	0.0	0.0	Meat	4				0.0	Sep	0.0	0.00	0.0105	0.00	0.0050	Note 49
Year	N	42	1	0.0	0.0	0	100	11	0	0	0.0	42	0.0	0.0	0.0	0.0	0.0	42	0.0	0.00	0.00	0.00	0.00	Note 47
8	Vol/NH3	Poultry	YES	0.0	0.0	NON	100.00	WWH	1.000	NO	0.0	Poultry	0.67				0.0	Poultry	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach	Sep	0.867	1.000		ORG	1.00	1.000	0.443	0.0	0.0	Meat	4				0.0	Sep	0.0	0.00	0.0105	0.00	0.0050	Note 49
Year	N	42	1	0.0	0.0	0	100	1	0	0	0.0	42	0.0	0.0	0.0	0.0	0.0	42	0.0	0.00	0.00	0.00	0.00	Note 47
9	Vol/NH3	Poultry	YES	0.0	0.0	NON	100.00	SBA	1.000	NO	0.0	Poultry	0.65				0.0	Poultry	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach	Sep	0.867	1.000		ORG	1.00	1.000	0.483	0.0	0.0	Meat	4				0.0	Sep	0.0	0.00	0.0105	0.00	0.0050	Note 49
Year	N	42	1	0.0	0.0	0	100	10	0	0	0.0	42	0.0	0.0	0.0	0.0	0.0	42	0.0	0.00	0.00	0.00	0.00	Note 47
10	Vol/NH3	Poultry	YES	0.0	0.0	NON	100.00	WBA	1.000	NO	0.0	Poultry	0.66				0.0	Poultry	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach	Sep	0.867	1.000		ORG	1.00	1.000	0.483	0.0	0.0	Meat	4				0.0	Sep	0.0	0.00	0.0105	0.00	0.0050	Note 49

Year	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year10	Total	Total/year 1	
Area with crop, ha	0.77	0.12	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.91	1.18	Note 50

Possible additional non IPCC N2O-N emissions	Value												Kind of source	Total IPCC and non IPCC N2O		Note 51
N residues emissions, ratio of N2O-N to N:	0.0000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Current crops	3.16	2.09	Note 51
Increased soil N emissions, kg N2O-N/ha:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Total anthropogenic	3.16	2.09	Note 51
Natural background emissions, kg N2O-N/ha:	1.00	0.77	0.12	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.91	Total including natural	4.07	3.00	Note 51

C2 N CHAIN CALCULATIONS SHEET C: N CHAINS BASED UPON DANISH VALUES CALCULATIONS By Jacob Bugge Available at www.ppo.bugge.com C2

N CHAIN STARTING WITH N FERTILIZER TO PRODUCE WINTER RAPESEED FOR PPO/BIODIESEL AND POULTRY MEAT Note 43
AND CONTINUING WITH POULTRY DEEP LITTER TO PRODUCE WINTER WHEAT FOR POULTRY MEAT Note 43

Year	Fertlizer/manure # Name	Store 1/0	Amounts Store	Field	Or-ganic 1/0	Nnorm propor tion, %	Crop # Name	Cereal benefit 1/0	Straw used 1/0	Crop use & leach	Use # Name	Fodder: Uses #21-61 Fed	Food	N crop #71/ #72	Food/ bev #8	Fuel/ other #9	Manure handling # Name	Final N a-mounts	N2O-N emission IPCC 1996 Each	Total	N2O-N emission IPCC 2006 Each	Total	Note 44 Note 44 Note 44
Total N			RATIO OF N2O-N TO N IN FIRST CROP				TOTAL N AMOUNTS IN KG AND % ENDING AS FOOD/FUEL/OTHER/REMOVED										39.1	39.0	2.11	3.25	1.49	2.01	Note 45
Year N NH3			ACCORDING TO		IPCC 1996		IPCC 2006		TOTAL N AMOUNTS IN KG AND % VOLATILISATION/NH3								26.0	25.9	0.26		0.26		Note 45
1-10 N leach			FIRST YEAR		0.0377		0.0233		TOTAL N AMOUNTS IN KG AND % LEACHED								35.2	35.1	0.88		0.26		Note 45
			TOTAL		0.0455		0.0282		TOTAL N AMOUNTS IN KG AND %								100.3	100.0					Note 45
N2O-N/N in food/beverage/fuel/other																				0.0830		0.0514	Note 46
Year	N	1	1	100.0	100.0	0	100	229	1	0	97.8	42	71.3	36.4	0.0	0.0	0.0	43	34.9	1.86	2.68	1.30	1.66	Note 47
1	Vol/NH3	N	YES	0.0	2.2	NON	100.00	WRB	1.113	NO	26.5	Poultry	0.84				0.0	Poultry	14.0	0.16	0.0125	0.16	0.0100	Note 48
	N leach		1.022	1.000		ORG	1.00	1.113	0.271	0.0	26.5	Meat	4				17.5	Deep	0.0	0.66	0.0200	0.20	0.0050	Note 49
Year	N	43	1	21.2	17.5	0	100	11	0	0	13.1	42	5.1	2.6	0.0	0.0	0.0	43	2.5	0.23	0.52	0.17	0.33	Note 47
2	Vol/NH3	Poultry	YES	3.7	4.4	NON	100.00	WWH	1.000	NO	8.1	Poultry	0.67				0.0	Poultry	1.0	0.09	0.0125	0.09	0.0100	Note 48
	N leach	Deep	0.600	1.013		ORG	1.00	1.000	0.614	0.0	8.1	Meat	4				2.9	Deep	0.0	0.20	0.0200	0.06	0.0050	Note 49
Year	N	43	1	1.5	1.2	0	100	11	0	0	0.9	42	0.4	0.2	0.0	0.0	0.0	43	0.2	0.02	0.04	0.01	0.02	Note 47
3	Vol/NH3	Poultry	YES	0.3	0.3	NON	100.00	WWH	1.000	NO	0.6	Poultry	0.67				0.0	Poultry	0.1	0.01	0.0125	0.01	0.0100	Note 48
	N leach	Deep	0.600	1.013		ORG	1.00	1.000	0.614	0.0	0.6	Meat	4				0.2	Deep	0.0	0.01	0.0200	0.00	0.0050	Note 49
Year	N	43	1	0.1	0.1	0	100	1	0	0	0.1	42	0.0	0.0	0.0	0.0	0.0	43	0.0	0.00	0.00	0.00	0.00	Note 47
4	Vol/NH3	Poultry	YES	0.0	0.0	NON	100.00	SBA	1.000	NO	0.0	Poultry	0.65				0.0	Poultry	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach	Deep	0.600	1.013		ORG	1.00	1.000	0.642	0.0	0.0	Meat	4				0.0	Deep	0.0	0.00	0.0200	0.00	0.0050	Note 49
Year	N	43	1	0.0	0.0	0	100	10	0	0	0.0	42	0.0	0.0	0.0	0.0	0.0	43	0.0	0.00	0.00	0.00	0.00	Note 47
5	Vol/NH3	Poultry	YES	0.0	0.0	NON	100.00	WBA	1.000	NO	0.0	Poultry	0.66				0.0	Poultry	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach	Deep	0.600	1.013		ORG	1.00	1.000	0.642	0.0	0.0	Meat	4				0.0	Deep	0.0	0.00	0.0200	0.00	0.0050	Note 49
Year	N	43	1	0.0	0.0	0	100	229	1	0	0.0	42	0.0	0.0	0.0	0.0	0.0	43	0.0	0.00	0.00	0.00	0.00	Note 47
6	Vol/NH3	Poultry	YES	0.0	0.0	NON	100.00	WRB	1.113	NO	0.0	Poultry	0.84				0.0	Poultry	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach	Deep	0.600	1.013		ORG	1.00	1.113	0.572	0.0	0.0	Meat	4				0.0	Deep	0.0	0.00	0.0200	0.00	0.0050	Note 49
Year	N	43	1	0.0	0.0	0	100	11	0	0	0.0	42	0.0	0.0	0.0	0.0	0.0	43	0.0	0.00	0.00	0.00	0.00	Note 47
7	Vol/NH3	Poultry	YES	0.0	0.0	NON	100.00	WWH	1.000	NO	0.0	Poultry	0.67				0.0	Poultry	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach	Deep	0.600	1.013		ORG	1.00	1.000	0.614	0.0	0.0	Meat	4				0.0	Deep	0.0	0.00	0.0200	0.00	0.0050	Note 49
Year	N	43	1	0.0	0.0	0	100	11	0	0	0.0	42	0.0	0.0	0.0	0.0	0.0	43	0.0	0.00	0.00	0.00	0.00	Note 47
8	Vol/NH3	Poultry	YES	0.0	0.0	NON	100.00	WWH	1.000	NO	0.0	Poultry	0.67				0.0	Poultry	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach	Deep	0.600	1.013		ORG	1.00	1.000	0.614	0.0	0.0	Meat	4				0.0	Deep	0.0	0.00	0.0200	0.00	0.0050	Note 49
Year	N	43	1	0.0	0.0	0	100	1	0	0	0.0	42	0.0	0.0	0.0	0.0	0.0	43	0.0	0.00	0.00	0.00	0.00	Note 47
9	Vol/NH3	Poultry	YES	0.0	0.0	NON	100.00	SBA	1.000	NO	0.0	Poultry	0.65				0.0	Poultry	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach	Deep	0.600	1.013		ORG	1.00	1.000	0.642	0.0	0.0	Meat	4				0.0	Deep	0.0	0.00	0.0200	0.00	0.0050	Note 49
Year	N	43	1	0.0	0.0	0	100	10	0	0	0.0	42	0.0	0.0	0.0	0.0	0.0	43	0.0	0.00	0.00	0.00	0.00	Note 47
10	Vol/NH3	Poultry	YES	0.0	0.0	NON	100.00	WBA	1.000	NO	0.0	Poultry	0.66				0.0	Poultry	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach	Deep	0.600	1.013		ORG	1.00	1.000	0.642	0.0	0.0	Meat	4				0.0	Deep	0.0	0.00	0.0200	0.00	0.0050	Note 49

Year	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year10	Total	Total/year 1	
Area with crop, ha	0.77	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.84	1.09	Note 50

Possible additional non IPCC N2O-N emissions	Value											Kind of source	Total IPCC and non IPCC N2O		
N residues emissions, ratio of N2O-N to N:	0.0000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Current crops	3.25	2.01	Note 51
Increased soil N emissions, kg N2O-N/ha:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Total anthropogenic	3.25	2.01	Note 51
Natural background emissions, kg N2O-N/ha:	1.00	0.77	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.84	Total including natural	4.09	2.86	Note 51

C2 N CHAIN CALCULATIONS SHEET C: N CHAINS BASED UPON DANISH VALUES CALCULATIONS By Jacob Bugge Available at www.ppo.bugge.com C2

N CHAIN STARTING WITH N FERTILIZER TO PRODUCE WINTER RAPESEED FOR PPO/BIODIESEL AND POULTRY MEAT Note 43
AND CONTINUING WITH MANURE FROM SCRAPING POULTRY TO PRODUCE WINTER WHEAT FOR POULTRY MEAT Note 43

Year	Fertlizer/manure # Name	Store 1/0	Amounts Store	Field	Or-ganic 1/0	Nnorm propor tion, %	Crop # Name	Cereal benefit 1/0	Straw used 1/0	Crop use & leach	Use # Name	Fodder: Uses #21-61 Fed	Food	N crop #71/ #72	Food/ bev #8	Fuel/ other #9	Manure handling # Name	Final N a-mounts	N2O-N emission IPCC 1996 Each	Total	N2O-N emission IPCC 2006 Each	Total	Note 44 Note 44 Note 44
Total N			RATIO OF N2O-N TO N IN FIRST CROP				TOTAL N AMOUNTS IN KG AND % ENDING AS FOOD/FUEL/OTHER/REMOVED							42.4	42.4	2.83	4.20	2.49	2.94	Note 45			
Year N NH3			ACCORDING TO		IPCC 1996	IPCC 2006	TOTAL N AMOUNTS IN KG AND % VOLATILISATION/NH3							5.0	5.0	0.05		0.05		Note 45			
1-10 N leach			FIRST YEAR		0.0396	0.0297	TOTAL N AMOUNTS IN KG AND % LEACHED							52.6	52.6	1.31		0.39		Note 45			
			TOTAL		0.0589	0.0412	TOTAL N AMOUNTS IN KG AND %							100.0	100.0					Note 45			
N2O-N/N in food/beverage/fuel/other																	0.0991		0.0693	Note 46			
Year	N	1	1	100.0	100.0	0	100	229	1	0	97.8	42	71.3	36.4	0.0	0.0	0.0	44	34.9	2.14	2.82	1.89	2.12	Note 47
1	Vol/NH3	N	YES	0.0	2.2	NON	100.00	WRB	1.113	NO	26.5	Poultry	0.84				0.0	Poultry	0.0	0.02	0.0125	0.02	0.0100	Note 48
	N leach		1.022	1.000		ORG	1.00	1.113	0.271	0.0	26.5	Meat	4				17.5	Scrap	0.0	0.66	0.0200	0.20	0.0200	Note 49
Year	N	44	1	34.9	34.9	0	100	11	0	0	32.5	42	10.1	5.2	0.0	0.0	0.0	44	5.0	0.59	1.18	0.51	0.71	Note 47
2	Vol/NH3	Poultry	YES	0.0	2.4	NON	100.00	WWH	1.000	NO	22.4	Poultry	0.67				0.0	Poultry	0.0	0.02	0.0125	0.02	0.0100	Note 48
	N leach	Scrap	0.484	1.000		ORG	1.00	1.000	0.689	0.0	22.4	Meat	4				7.1	Scrap	0.0	0.56	0.0200	0.17	0.0200	Note 49
Year	N	44	1	5.0	5.0	0	100	11	0	0	4.6	42	1.4	0.7	0.0	0.0	0.0	44	0.7	0.08	0.17	0.07	0.10	Note 47
3	Vol/NH3	Poultry	YES	0.0	0.3	NON	100.00	WWH	1.000	NO	3.2	Poultry	0.67				0.0	Poultry	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach	Scrap	0.484	1.000		ORG	1.00	1.000	0.689	0.0	3.2	Meat	4				1.0	Scrap	0.0	0.08	0.0200	0.02	0.0200	Note 49
Year	N	44	1	0.7	0.7	0	100	1	0	0	0.7	42	0.2	0.1	0.0	0.0	0.0	44	0.1	0.01	0.02	0.01	0.01	Note 47
4	Vol/NH3	Poultry	YES	0.0	0.0	NON	100.00	SBA	1.000	NO	0.5	Poultry	0.65				0.0	Poultry	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach	Scrap	0.484	1.000		ORG	1.00	1.000	0.711	0.0	0.5	Meat	4				0.1	Scrap	0.0	0.01	0.0200	0.00	0.0200	Note 49
Year	N	44	1	0.1	0.1	0	100	10	0	0	0.1	42	0.0	0.0	0.0	0.0	0.0	44	0.0	0.00	0.00	0.00	0.00	Note 47
5	Vol/NH3	Poultry	YES	0.0	0.0	NON	100.00	WBA	1.000	NO	0.1	Poultry	0.66				0.0	Poultry	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach	Scrap	0.484	1.000		ORG	1.00	1.000	0.712	0.0	0.1	Meat	4				0.0	Scrap	0.0	0.00	0.0200	0.00	0.0200	Note 49
Year	N	44	1	0.0	0.0	0	100	229	1	0	0.0	42	0.0	0.0	0.0	0.0	0.0	44	0.0	0.00	0.00	0.00	0.00	Note 47
6	Vol/NH3	Poultry	YES	0.0	0.0	NON	100.00	WRB	1.113	NO	0.0	Poultry	0.84				0.0	Poultry	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach	Scrap	0.484	1.000		ORG	1.00	1.113	0.655	0.0	0.0	Meat	4				0.0	Scrap	0.0	0.00	0.0200	0.00	0.0200	Note 49
Year	N	44	1	0.0	0.0	0	100	11	0	0	0.0	42	0.0	0.0	0.0	0.0	0.0	44	0.0	0.00	0.00	0.00	0.00	Note 47
7	Vol/NH3	Poultry	YES	0.0	0.0	NON	100.00	WWH	1.000	NO	0.0	Poultry	0.67				0.0	Poultry	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach	Scrap	0.484	1.000		ORG	1.00	1.000	0.689	0.0	0.0	Meat	4				0.0	Scrap	0.0	0.00	0.0200	0.00	0.0200	Note 49
Year	N	44	1	0.0	0.0	0	100	11	0	0	0.0	42	0.0	0.0	0.0	0.0	0.0	44	0.0	0.00	0.00	0.00	0.00	Note 47
8	Vol/NH3	Poultry	YES	0.0	0.0	NON	100.00	WWH	1.000	NO	0.0	Poultry	0.67				0.0	Poultry	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach	Scrap	0.484	1.000		ORG	1.00	1.000	0.689	0.0	0.0	Meat	4				0.0	Scrap	0.0	0.00	0.0200	0.00	0.0200	Note 49
Year	N	44	1	0.0	0.0	0	100	1	0	0	0.0	42	0.0	0.0	0.0	0.0	0.0	44	0.0	0.00	0.00	0.00	0.00	Note 47
9	Vol/NH3	Poultry	YES	0.0	0.0	NON	100.00	SBA	1.000	NO	0.0	Poultry	0.65				0.0	Poultry	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach	Scrap	0.484	1.000		ORG	1.00	1.000	0.711	0.0	0.0	Meat	4				0.0	Scrap	0.0	0.00	0.0200	0.00	0.0200	Note 49
Year	N	44	1	0.0	0.0	0	100	10	0	0	0.0	42	0.0	0.0	0.0	0.0	0.0	44	0.0	0.00	0.00	0.00	0.00	Note 47
10	Vol/NH3	Poultry	YES	0.0	0.0	NON	100.00	WBA	1.000	NO	0.0	Poultry	0.66				0.0	Poultry	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach	Scrap	0.484	1.000		ORG	1.00	1.000	0.712	0.0	0.0	Meat	4				0.0	Scrap	0.0	0.00	0.0200	0.00	0.0200	Note 49

Year	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year10	Total	Total/year 1	
Area with crop, ha	0.77	0.11	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.90	1.16	Note 50

Possible additional non IPCC N2O-N emissions	Value											Kind of source	Total IPCC and non IPCC N2O		Note 51
N residues emissions, ratio of N2O-N to N:	0.0000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Current crops	4.20	2.94	Note 51
Increased soil N emissions, kg N2O-N/ha:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Total anthropogenic	4.20	2.94	Note 51
Natural background emissions, kg N2O-N/ha:	1.00	0.77	0.11	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.90	Total including natural	5.09	3.83	Note 51

C2 N CHAIN CALCULATIONS SHEET C: N CHAINS BASED UPON DANISH VALUES CALCULATIONS By Jacob Bugge Available at www.ppo.bugge.com C2

N CHAIN STARTING WITH N FERTILIZER TO PRODUCE WINTER RAPESEED FOR PPO/BIODIESEL AND POULTRY EGGS Note 43
AND CONTINUING WITH LIQUID POULTRY MANURE TO PRODUCE WINTER WHEAT FOR POULTRY EGGS Note 43

Year	Fertlizer/manure # Name	Store 1/0	Amounts Store	Field	Or-ganic 1/0	Nnorm propor tion, %	Crop # Name	Cereal benefit 1/0	Straw used 1/0	Crop use & leach	Use # Name	Fodder: Uses #21-61 Fed	Food	N crop #71/ #72	Food/ bev #8	Fuel/ other #9	Manure handling # Name	Final N a-mounts	N2O-N emission IPCC 1996 Each	Total	N2O-N emission IPCC 2006 Each	Total	Note 44 Note 44 Note 44
Total N			RATIO OF N2O-N TO N IN FIRST CROP				TOTAL N AMOUNTS IN KG AND % ENDING AS FOOD/FUEL/OTHER/REMOVED											23.8	23.8	2.26	3.75	2.16	2.80	Note 45
Year N NH3			ACCORDING TO		IPCC 1996		IPCC 2006				TOTAL N AMOUNTS IN KG AND % VOLATILISATION/NH3							27.6	27.6	0.28		0.28		Note 45
1-10 N leach			FIRST YEAR		0.0313		0.0241				TOTAL N AMOUNTS IN KG AND % LEACHED							48.6	48.6	1.22		0.36		Note 45
			TOTAL		0.0527		0.0393				TOTAL N AMOUNTS IN KG AND %							100.0	100.0					Note 45
N2O-N/N in food/beverage/fuel/other																					0.1577		0.1178	Note 46
Year	N	1	1	100.0	100.0	0	100	229	1	0	97.8	43	71.3	17.2	0.0	0.0	0.0	41	54.1	1.49	2.23	1.44	1.71	Note 47
1	Vol/NH3	N	YES	0.0	2.2	NON	100.00	WRB	1.113	NO	26.5	Poultry	0.84				0.0	Poultry	5.4	0.08	0.0125	0.08	0.0100	Note 48
	N leach		1.022	1.000		ORG	1.00	1.113	0.271	0.0	26.5	Eggs	4				17.5	Liquid	0.0	0.66	0.0010	0.20	0.0050	Note 49
Year	N	41	1	48.7	47.7	0	100	11	0	0	35.8	43	19.9	4.8	0.0	0.0	0.0	41	15.1	0.56	1.10	0.52	0.79	Note 47
2	Vol/NH3	Poultry	YES	1.0	11.9	NON	100.00	WWH	1.000	NO	15.9	Poultry	0.67				0.0	Poultry	1.5	0.14	0.0125	0.14	0.0100	Note 48
	N leach	Liquid	0.867	1.000		ORG	1.00	1.000	0.443	0.0	15.9	Eggs	4				7.8	Liquid	0.0	0.40	0.0010	0.12	0.0050	Note 49
Year	N	41	1	13.6	13.3	0	100	11	0	0	10.0	43	5.6	1.3	0.0	0.0	0.0	41	4.2	0.16	0.31	0.15	0.22	Note 47
3	Vol/NH3	Poultry	YES	0.3	3.3	NON	100.00	WWH	1.000	NO	4.4	Poultry	0.67				0.0	Poultry	0.4	0.04	0.0125	0.04	0.0100	Note 48
	N leach	Liquid	0.867	1.000		ORG	1.00	1.000	0.443	0.0	4.4	Eggs	4				2.2	Liquid	0.0	0.11	0.0010	0.03	0.0050	Note 49
Year	N	41	1	3.8	3.7	0	100	1	0	0	2.8	43	1.4	0.3	0.0	0.0	0.0	41	1.1	0.04	0.09	0.04	0.06	Note 47
4	Vol/NH3	Poultry	YES	0.1	0.9	NON	100.00	SBA	1.000	NO	1.4	Poultry	0.65				0.0	Poultry	0.1	0.01	0.0125	0.01	0.0100	Note 48
	N leach	Liquid	0.867	1.000		ORG	1.00	1.000	0.483	0.0	1.4	Eggs	4				0.6	Liquid	0.0	0.03	0.0010	0.01	0.0050	Note 49
Year	N	41	1	1.0	1.0	0	100	10	0	0	0.7	43	0.4	0.1	0.0	0.0	0.0	41	0.3	0.01	0.02	0.01	0.02	Note 47
5	Vol/NH3	Poultry	YES	0.0	0.2	NON	100.00	WBA	1.000	NO	0.4	Poultry	0.66				0.0	Poultry	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach	Liquid	0.867	1.000		ORG	1.00	1.000	0.483	0.0	0.4	Eggs	4				0.1	Liquid	0.0	0.01	0.0010	0.00	0.0050	Note 49
Year	N	41	1	0.3	0.3	0	100	229	1	0	0.2	43	0.1	0.0	0.0	0.0	0.0	41	0.1	0.00	0.01	0.00	0.00	Note 47
6	Vol/NH3	Poultry	YES	0.0	0.1	NON	100.00	WRB	1.113	NO	0.1	Poultry	0.84				0.0	Poultry	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach	Liquid	0.867	1.000		ORG	1.00	1.113	0.382	0.0	0.1	Eggs	4				0.0	Liquid	0.0	0.00	0.0010	0.00	0.0050	Note 49
Year	N	41	1	0.1	0.1	0	100	11	0	0	0.1	43	0.0	0.0	0.0	0.0	0.0	41	0.0	0.00	0.00	0.00	0.00	Note 47
7	Vol/NH3	Poultry	YES	0.0	0.0	NON	100.00	WWH	1.000	NO	0.0	Poultry	0.67				0.0	Poultry	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach	Liquid	0.867	1.000		ORG	1.00	1.000	0.443	0.0	0.0	Eggs	4				0.0	Liquid	0.0	0.00	0.0010	0.00	0.0050	Note 49
Year	N	41	1	0.0	0.0	0	100	11	0	0	0.0	43	0.0	0.0	0.0	0.0	0.0	41	0.0	0.00	0.00	0.00	0.00	Note 47
8	Vol/NH3	Poultry	YES	0.0	0.0	NON	100.00	WWH	1.000	NO	0.0	Poultry	0.67				0.0	Poultry	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach	Liquid	0.867	1.000		ORG	1.00	1.000	0.443	0.0	0.0	Eggs	4				0.0	Liquid	0.0	0.00	0.0010	0.00	0.0050	Note 49
Year	N	41	1	0.0	0.0	0	100	1	0	0	0.0	43	0.0	0.0	0.0	0.0	0.0	41	0.0	0.00	0.00	0.00	0.00	Note 47
9	Vol/NH3	Poultry	YES	0.0	0.0	NON	100.00	SBA	1.000	NO	0.0	Poultry	0.65				0.0	Poultry	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach	Liquid	0.867	1.000		ORG	1.00	1.000	0.483	0.0	0.0	Eggs	4				0.0	Liquid	0.0	0.00	0.0010	0.00	0.0050	Note 49
Year	N	41	1	0.0	0.0	0	100	10	0	0	0.0	43	0.0	0.0	0.0	0.0	0.0	41	0.0	0.00	0.00	0.00	0.00	Note 47
10	Vol/NH3	Poultry	YES	0.0	0.0	NON	100.00	WBA	1.000	NO	0.0	Poultry	0.66				0.0	Poultry	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach	Liquid	0.867	1.000		ORG	1.00	1.000	0.483	0.0	0.0	Eggs	4				0.0	Liquid	0.0	0.00	0.0010	0.00	0.0050	Note 49

Year	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year10	Total	Total/year 1	
Area with crop, ha	0.77	0.26	0.07	0.03	0.01	0.00	0.00	0.00	0.00	0.00	1.14	1.47	Note 50

Possible additional non IPCC N2O-N emissions	Value											Kind of source	Total IPCC and non IPCC N2O		
N residues emissions, ratio of N2O-N to N:	0.0000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Current crops	3.75	2.80	Note 51
Increased soil N emissions, kg N2O-N/ha:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Total anthropogenic	3.75	2.80	Note 51
Natural background emissions, kg N2O-N/ha:	1.00	0.77	0.26	0.07	0.03	0.01	0.00	0.00	0.00	0.00	1.14	Total including natural	4.89	3.94	Note 51

C2 N CHAIN CALCULATIONS SHEET C: N CHAINS BASED UPON DANISH VALUES CALCULATIONS By Jacob Bugge Available at www.ppo.bugge.com C2

N CHAIN STARTING WITH N FERTILIZER TO PRODUCE WINTER RAPESEED FOR PPO/BIODIESEL AND POULTRY EGGS Note 43
AND CONTINUING WITH SEPARATED POULTRY MANURE TO PRODUCE WINTER WHEAT FOR POULTRY EGGS Note 43

Year		Fertlizer/manure # Name	Store 1/0	Amounts Store	Field	Or-ganic 1/0	Nnorm propor tion, %	Crop # Name	Cereal benefit 1/0	Straw used 1/0	Crop use & leach	Use # Name	Fodder: Uses #21-61 Fed	Food	N crop #71/ #72	Food/ bev #8	Fuel/ other #9	Manure handling # Name	Final N a-mounts	N2O-N emission IPCC 1996 Each	Total	N2O-N emission IPCC 2006 Each	Total	Note 44 Note 44 Note 44
Total	N							RATIO OF N2O-N TO N IN FIRST CROP			TOTAL N AMOUNTS IN KG AND % ENDING AS FOOD/FUEL/OTHER/REMOVED								21.5	21.5	2.47	3.87	1.86	2.55	Note 45
Year	N NH3							ACCORDING TO	IPCC 1996	IPCC 2006	TOTAL N AMOUNTS IN KG AND % VOLATILISATION/NH3								37.6	37.6	0.38		0.38		Note 45
1-10	N leach							FIRST YEAR	0.0377	0.0246	TOTAL N AMOUNTS IN KG AND % LEACHED								40.9	40.9	1.02		0.31		Note 45
								TOTAL	0.0542	0.0357	TOTAL N AMOUNTS IN KG AND %								100.0	100.0					Note 45
N2O-N/N in food/beverage/fuel/other																					0.1797		0.1183		Note 46
Year	N	1	1	100.0	100.0	0	100	229	1	0	97.8	43	71.3	17.2	0.0	0.0	0.0	42	54.1	1.87	2.69	1.40	1.76	Note 47
1	Vol/NH3	N	YES	0.0	2.2	NON	100.00	WRB	1.113	NO	26.5	Poultry	0.84					0.0	Poultry	13.5	0.16	0.0125	0.16	0.0100	Note 48
	N leach		1.022	1.000		ORG	1.00	1.113	0.271	0.0	26.5	Eggs	4					17.5	Sep	0.0	0.66	0.0105	0.20	0.0050	Note 49
Year	N	42	1	40.6	34.5	0	100	11	0	0	25.9	43	14.4	3.5	0.0	0.0	0.0	42	10.9	0.48	0.94	0.37	0.63	Note 47
2	Vol/NH3	Poultry	YES	6.1	8.6	NON	100.00	WWH	1.000	NO	11.5	Poultry	0.67					0.0	Poultry	2.7	0.17	0.0125	0.17	0.0100	Note 48
	N leach	Sep	0.867	1.000		ORG	1.00	1.000	0.443	0.0	11.5	Eggs	4					5.7	Sep	0.0	0.29	0.0105	0.09	0.0050	Note 49
Year	N	42	1	8.2	7.0	0	100	11	0	0	5.2	43	2.9	0.7	0.0	0.0	0.0	42	2.2	0.10	0.19	0.07	0.13	Note 47
3	Vol/NH3	Poultry	YES	1.2	1.7	NON	100.00	WWH	1.000	NO	2.3	Poultry	0.67					0.0	Poultry	0.6	0.04	0.0125	0.04	0.0100	Note 48
	N leach	Sep	0.867	1.000		ORG	1.00	1.000	0.443	0.0	2.3	Eggs	4					1.1	Sep	0.0	0.06	0.0105	0.02	0.0050	Note 49
Year	N	42	1	1.7	1.4	0	100	1	0	0	1.1	43	0.5	0.1	0.0	0.0	0.0	42	0.4	0.02	0.04	0.01	0.03	Note 47
4	Vol/NH3	Poultry	YES	0.2	0.4	NON	100.00	SBA	1.000	NO	0.5	Poultry	0.65					0.0	Poultry	0.1	0.01	0.0125	0.01	0.0100	Note 48
	N leach	Sep	0.867	1.000		ORG	1.00	1.000	0.483	0.0	0.5	Eggs	4					0.2	Sep	0.0	0.01	0.0105	0.00	0.0050	Note 49
Year	N	42	1	0.3	0.3	0	100	10	0	0	0.2	43	0.1	0.0	0.0	0.0	0.0	42	0.1	0.00	0.01	0.00	0.00	Note 47
5	Vol/NH3	Poultry	YES	0.0	0.1	NON	100.00	WBA	1.000	NO	0.1	Poultry	0.66					0.0	Poultry	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach	Sep	0.867	1.000		ORG	1.00	1.000	0.483	0.0	0.1	Eggs	4					0.0	Sep	0.0	0.00	0.0105	0.00	0.0050	Note 49
Year	N	42	1	0.1	0.0	0	100	229	1	0	0.0	43	0.0	0.0	0.0	0.0	0.0	42	0.0	0.00	0.00	0.00	0.00	Note 47
6	Vol/NH3	Poultry	YES	0.0	0.0	NON	100.00	WRB	1.113	NO	0.0	Poultry	0.84					0.0	Poultry	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach	Sep	0.867	1.000		ORG	1.00	1.113	0.382	0.0	0.0	Eggs	4					0.0	Sep	0.0	0.00	0.0105	0.00	0.0050	Note 49
Year	N	42	1	0.0	0.0	0	100	11	0	0	0.0	43	0.0	0.0	0.0	0.0	0.0	42	0.0	0.00	0.00	0.00	0.00	Note 47
7	Vol/NH3	Poultry	YES	0.0	0.0	NON	100.00	WWH	1.000	NO	0.0	Poultry	0.67					0.0	Poultry	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach	Sep	0.867	1.000		ORG	1.00	1.000	0.443	0.0	0.0	Eggs	4					0.0	Sep	0.0	0.00	0.0105	0.00	0.0050	Note 49
Year	N	42	1	0.0	0.0	0	100	11	0	0	0.0	43	0.0	0.0	0.0	0.0	0.0	42	0.0	0.00	0.00	0.00	0.00	Note 47
8	Vol/NH3	Poultry	YES	0.0	0.0	NON	100.00	WWH	1.000	NO	0.0	Poultry	0.67					0.0	Poultry	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach	Sep	0.867	1.000		ORG	1.00	1.000	0.443	0.0	0.0	Eggs	4					0.0	Sep	0.0	0.00	0.0105	0.00	0.0050	Note 49
Year	N	42	1	0.0	0.0	0	100	1	0	0	0.0	43	0.0	0.0	0.0	0.0	0.0	42	0.0	0.00	0.00	0.00	0.00	Note 47
9	Vol/NH3	Poultry	YES	0.0	0.0	NON	100.00	SBA	1.000	NO	0.0	Poultry	0.65					0.0	Poultry	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach	Sep	0.867	1.000		ORG	1.00	1.000	0.483	0.0	0.0	Eggs	4					0.0	Sep	0.0	0.00	0.0105	0.00	0.0050	Note 49
Year	N	42	1	0.0	0.0	0	100	10	0	0	0.0	43	0.0	0.0	0.0	0.0	0.0	42	0.0	0.00	0.00	0.00	0.00	Note 47
10	Vol/NH3	Poultry	YES	0.0	0.0	NON	100.00	WBA	1.000	NO	0.0	Poultry	0.66					0.0	Poultry	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach	Sep	0.867	1.000		ORG	1.00	1.000	0.483	0.0	0.0	Eggs	4					0.0	Sep	0.0	0.00	0.0105	0.00	0.0050	Note 49

Year	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year10	Total	Total/year 1	
Area with crop, ha	0.77	0.19	0.04	0.01	0.00	0.00	0.00	0.00	0.00	0.00	1.01	1.31	Note 50

Possible additional non IPCC N2O-N emissions	Value											Kind of source	Total IPCC and non IPCC N2O		
N residues emissions, ratio of N2O-N to N:	0.0000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Current crops	3.87	2.55	Note 51
Increased soil N emissions, kg N2O-N/ha:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Total anthropogenic	3.87	2.55	Note 51
Natural background emissions, kg N2O-N/ha:	1.00	0.77	0.19	0.04	0.01	0.00	0.00	0.00	0.00	0.00	1.01	Total including natural	4.87	3.55	Note 51

C2 N CHAIN CALCULATIONS SHEET C: N CHAINS BASED UPON DANISH VALUES CALCULATIONS By Jacob Bugge Available at www.ppo.bugge.com C2

N CHAIN STARTING WITH N FERTILIZER TO PRODUCE WINTER RAPESEED FOR PPO/BIODIESEL AND POULTRY EGGS Note 43
AND CONTINUING WITH POULTRY DEEP LITTER TO PRODUCE WINTER WHEAT FOR POULTRY EGGS Note 43

Year	Fertlizer/manure # Name	Store 1/0	Amounts Store	Field	Or-ganic 1/0	Nnorm propor tion, %	Crop # Name	Cereal benefit 1/0	Straw used 1/0	Crop use & leach	Use # Name	Fodder: Uses #21-61 Fed	Food	N crop #71/ #72	Food/ bev #8	Fuel/ other #9	Manure handling # Name	Final N a-mounts	N2O-N emission IPCC 1996 Each	Total	N2O-N emission IPCC 2006 Each	Total	Note 44 Note 44 Note 44
Total N			RATIO OF N2O-N TO N IN FIRST CROP				TOTAL N AMOUNTS IN KG AND % ENDING AS FOOD/FUEL/OTHER/REMOVED											19.3	19.2	2.52	3.94	1.67	2.38 Note 45
Year N NH3			ACCORDING TO		IPCC 1996		IPCC 2006		TOTAL N AMOUNTS IN KG AND % VOLATILISATION/NH3									40.6	40.4	0.41		0.41	Note 45
1-10 N leach			FIRST YEAR		0.0420		0.0252		TOTAL N AMOUNTS IN KG AND % LEACHED									40.6	40.4	1.01		0.30	Note 45
			TOTAL		0.0552		0.0334		TOTAL N AMOUNTS IN KG AND %									100.5	100.0				Note 45
N2O-N/N in food/beverage/fuel/other																				0.2040		0.1233	Note 46
Year	N	1	1	100.0	100.0	0	100	229	1	0	97.8	43	71.3	17.2	0.0	0.0	0.0	43	54.1	2.09	2.99	1.36	1.80 Note 47
1	Vol/NH3	N	YES	0.0	2.2	NON	100.00	WRB	1.113	NO	26.5	Poultry	0.84				0.0	Poultry	21.6	0.24	0.0125	0.24	0.0100 Note 48
	N leach		1.022	1.000		ORG	1.00	1.113	0.271	0.0	26.5	Eggs	4				17.5	Deep	0.0	0.66	0.0200	0.20	0.0050 Note 49
Year	N	43	1	32.9	27.1	0	100	11	0	0	20.3	43	7.8	1.9	0.0	0.0	0.0	43	6.0	0.38	0.84	0.28	0.52 Note 47
2	Vol/NH3	Poultry	YES	5.8	6.8	NON	100.00	WWH	1.000	NO	12.5	Poultry	0.67				0.0	Poultry	2.4	0.15	0.0125	0.15	0.0100 Note 48
	N leach	Deep	0.600	1.013		ORG	1.00	1.000	0.614	0.0	12.5	Eggs	4				4.4	Deep	0.0	0.31	0.0200	0.09	0.0050 Note 49
Year	N	43	1	3.6	3.0	0	100	11	0	0	2.2	43	0.9	0.2	0.0	0.0	0.0	43	0.7	0.04	0.09	0.03	0.06 Note 47
3	Vol/NH3	Poultry	YES	0.6	0.7	NON	100.00	WWH	1.000	NO	1.4	Poultry	0.67				0.0	Poultry	0.3	0.02	0.0125	0.02	0.0100 Note 48
	N leach	Deep	0.600	1.013		ORG	1.00	1.000	0.614	0.0	1.4	Eggs	4				0.5	Deep	0.0	0.03	0.0200	0.01	0.0050 Note 49
Year	N	43	1	0.4	0.3	0	100	1	0	0	0.2	43	0.1	0.0	0.0	0.0	0.0	43	0.1	0.00	0.01	0.00	0.01 Note 47
4	Vol/NH3	Poultry	YES	0.1	0.1	NON	100.00	SBA	1.000	NO	0.2	Poultry	0.65				0.0	Poultry	0.0	0.00	0.0125	0.00	0.0100 Note 48
	N leach	Deep	0.600	1.013		ORG	1.00	1.000	0.642	0.0	0.2	Eggs	4				0.1	Deep	0.0	0.00	0.0200	0.00	0.0050 Note 49
Year	N	43	1	0.0	0.0	0	100	10	0	0	0.0	43	0.0	0.0	0.0	0.0	0.0	43	0.0	0.00	0.00	0.00	0.00 Note 47
5	Vol/NH3	Poultry	YES	0.0	0.0	NON	100.00	WBA	1.000	NO	0.0	Poultry	0.66				0.0	Poultry	0.0	0.00	0.0125	0.00	0.0100 Note 48
	N leach	Deep	0.600	1.013		ORG	1.00	1.000	0.642	0.0	0.0	Eggs	4				0.0	Deep	0.0	0.00	0.0200	0.00	0.0050 Note 49
Year	N	43	1	0.0	0.0	0	100	229	1	0	0.0	43	0.0	0.0	0.0	0.0	0.0	43	0.0	0.00	0.00	0.00	0.00 Note 47
6	Vol/NH3	Poultry	YES	0.0	0.0	NON	100.00	WRB	1.113	NO	0.0	Poultry	0.84				0.0	Poultry	0.0	0.00	0.0125	0.00	0.0100 Note 48
	N leach	Deep	0.600	1.013		ORG	1.00	1.113	0.572	0.0	0.0	Eggs	4				0.0	Deep	0.0	0.00	0.0200	0.00	0.0050 Note 49
Year	N	43	1	0.0	0.0	0	100	11	0	0	0.0	43	0.0	0.0	0.0	0.0	0.0	43	0.0	0.00	0.00	0.00	0.00 Note 47
7	Vol/NH3	Poultry	YES	0.0	0.0	NON	100.00	WWH	1.000	NO	0.0	Poultry	0.67				0.0	Poultry	0.0	0.00	0.0125	0.00	0.0100 Note 48
	N leach	Deep	0.600	1.013		ORG	1.00	1.000	0.614	0.0	0.0	Eggs	4				0.0	Deep	0.0	0.00	0.0200	0.00	0.0050 Note 49
Year	N	43	1	0.0	0.0	0	100	11	0	0	0.0	43	0.0	0.0	0.0	0.0	0.0	43	0.0	0.00	0.00	0.00	0.00 Note 47
8	Vol/NH3	Poultry	YES	0.0	0.0	NON	100.00	WWH	1.000	NO	0.0	Poultry	0.67				0.0	Poultry	0.0	0.00	0.0125	0.00	0.0100 Note 48
	N leach	Deep	0.600	1.013		ORG	1.00	1.000	0.614	0.0	0.0	Eggs	4				0.0	Deep	0.0	0.00	0.0200	0.00	0.0050 Note 49
Year	N	43	1	0.0	0.0	0	100	1	0	0	0.0	43	0.0	0.0	0.0	0.0	0.0	43	0.0	0.00	0.00	0.00	0.00 Note 47
9	Vol/NH3	Poultry	YES	0.0	0.0	NON	100.00	SBA	1.000	NO	0.0	Poultry	0.65				0.0	Poultry	0.0	0.00	0.0125	0.00	0.0100 Note 48
	N leach	Deep	0.600	1.013		ORG	1.00	1.000	0.642	0.0	0.0	Eggs	4				0.0	Deep	0.0	0.00	0.0200	0.00	0.0050 Note 49
Year	N	43	1	0.0	0.0	0	100	10	0	0	0.0	43	0.0	0.0	0.0	0.0	0.0	43	0.0	0.00	0.00	0.00	0.00 Note 47
10	Vol/NH3	Poultry	YES	0.0	0.0	NON	100.00	WBA	1.000	NO	0.0	Poultry	0.66				0.0	Poultry	0.0	0.00	0.0125	0.00	0.0100 Note 48
	N leach	Deep	0.600	1.013		ORG	1.00	1.000	0.642	0.0	0.0	Eggs	4				0.0	Deep	0.0	0.00	0.0200	0.00	0.0050 Note 49

Year	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year10	Total	Total/year 1	
Area with crop, ha	0.77	0.10	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.89	1.15	Note 50

Possible additional non IPCC N2O-N emissions	Value											Kind of source	Total IPCC and non IPCC N2O		
N residues emissions, ratio of N2O-N to N:	0.0000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Current crops	3.94	2.38	Note 51
Increased soil N emissions, kg N2O-N/ha:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Total anthropogenic	3.94	2.38	Note 51
Natural background emissions, kg N2O-N/ha:	1.00	0.77	0.10	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.89	Total including natural	4.82	3.27	Note 51

N CHAIN STARTING WITH N FERTILIZER TO PRODUCE WINTER RAPESEED FOR PPO/BIODIESEL AND POULTRY EGGS Note 43
AND CONTINUING WITH MANURE FROM SCRAPING POULTRY TO PRODUCE WINTER WHEAT FOR POULTRY EGGS Note 43

Year	Fertlizer/manure # Name	Store 1/0	Amounts Store	Amounts Field	Or-ganic 1/0	Nnorm propor tion, %	Crop # Name	Cereal benefit 1/0	Straw used 1/0	Crop use & leach	Use # Name	Fodder: Uses #21-61 Fed	Fodder: Uses #21-61 Food	N crop #71/ #72	Food/ bev #8	Fuel/ other #9	Manure handling # Name	Final N a-mounts	N2O-N emission IPCC 1996 Each	N2O-N emission IPCC 1996 Total	N2O-N emission IPCC 2006 Each	N2O-N emission IPCC 2006 Total	Note 44
Total	N		RATIO OF N2O-N TO N IN FIRST CROP				TOTAL N AMOUNTS IN KG AND % ENDING AS FOOD/FUEL/OTHER/REMOVED							22.0	22.0				3.81	5.65	3.40	4.00	Note 45
Year	N NH3		ACCORDING TO		IPCC 1996	IPCC 2006	TOTAL N AMOUNTS IN KG AND % VOLATILISATION/NH3							7.0	7.0				0.07		0.07		Note 45
1-10	N leach		FIRST YEAR		0.0450	0.0351	TOTAL N AMOUNTS IN KG AND % LEACHED							71.0	71.0				1.77		0.53		Note 45
			TOTAL		0.0793	0.0562	TOTAL N AMOUNTS IN KG AND %							100.0	100.0								Note 45
N2O-N/N in food/beverage/fuel/other																				0.2569		0.1820	Note 46
Year	N	1	1	100.0	100.0	0	100	229	1	0	97.8	43	71.3	17.2	0.0	0.0	0.0	44	54.1	2.52	3.21	2.28	2.50	Note 47
1	Vol/NH3	N	YES	0.0	2.2	NON	100.00	WRB	1.113	NO	26.5	Poultry	0.84				0.0	Poultry	0.0	0.02	0.0125	0.02	0.0100	Note 48
	N leach		1.022	1.000		ORG	1.00	1.113	0.271	0.0	26.5	Eggs	4				17.5	Scrap	0.0	0.66	0.0200	0.20	0.0200	Note 49
Year	N	44	1	54.1	54.1	0	100	11	0	0	50.3	43	15.6	3.8	0.0	0.0	0.0	44	11.9	1.00	1.91	0.88	1.18	Note 47
2	Vol/NH3	Poultry	YES	0.0	3.8	NON	100.00	WWH	1.000	NO	34.7	Poultry	0.67				0.0	Poultry	0.0	0.04	0.0125	0.04	0.0100	Note 48
	N leach	Scrap	0.484	1.000		ORG	1.00	1.000	0.689	0.0	34.7	Eggs	4				11.0	Scrap	0.0	0.87	0.0200	0.26	0.0200	Note 49
Year	N	44	1	11.9	11.9	0	100	11	0	0	11.0	43	3.4	0.8	0.0	0.0	0.0	44	2.6	0.22	0.42	0.19	0.26	Note 47
3	Vol/NH3	Poultry	YES	0.0	0.8	NON	100.00	WWH	1.000	NO	7.6	Poultry	0.67				0.0	Poultry	0.0	0.01	0.0125	0.01	0.0100	Note 48
	N leach	Scrap	0.484	1.000		ORG	1.00	1.000	0.689	0.0	7.6	Eggs	4				2.4	Scrap	0.0	0.19	0.0200	0.06	0.0200	Note 49
Year	N	44	1	2.6	2.6	0	100	1	0	0	2.4	43	0.7	0.2	0.0	0.0	0.0	44	0.5	0.05	0.09	0.04	0.06	Note 47
4	Vol/NH3	Poultry	YES	0.0	0.2	NON	100.00	SBA	1.000	NO	1.7	Poultry	0.65				0.0	Poultry	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach	Scrap	0.484	1.000		ORG	1.00	1.000	0.711	0.0	1.7	Eggs	4				0.5	Scrap	0.0	0.04	0.0200	0.01	0.0200	Note 49
Year	N	44	1	0.5	0.5	0	100	10	0	0	0.5	43	0.1	0.0	0.0	0.0	0.0	44	0.1	0.01	0.02	0.01	0.01	Note 47
5	Vol/NH3	Poultry	YES	0.0	0.0	NON	100.00	WBA	1.000	NO	0.4	Poultry	0.66				0.0	Poultry	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach	Scrap	0.484	1.000		ORG	1.00	1.000	0.712	0.0	0.4	Eggs	4				0.1	Scrap	0.0	0.01	0.0200	0.00	0.0200	Note 49
Year	N	44	1	0.1	0.1	0	100	229	1	0	0.1	43	0.0	0.0	0.0	0.0	0.0	44	0.0	0.00	0.00	0.00	0.00	Note 47
6	Vol/NH3	Poultry	YES	0.0	0.0	NON	100.00	WRB	1.113	NO	0.1	Poultry	0.84				0.0	Poultry	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach	Scrap	0.484	1.000		ORG	1.00	1.113	0.655	0.0	0.1	Eggs	4				0.0	Scrap	0.0	0.00	0.0200	0.00	0.0200	Note 49
Year	N	44	1	0.0	0.0	0	100	11	0	0	0.0	43	0.0	0.0	0.0	0.0	0.0	44	0.0	0.00	0.00	0.00	0.00	Note 47
7	Vol/NH3	Poultry	YES	0.0	0.0	NON	100.00	WWH	1.000	NO	0.0	Poultry	0.67				0.0	Poultry	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach	Scrap	0.484	1.000		ORG	1.00	1.000	0.689	0.0	0.0	Eggs	4				0.0	Scrap	0.0	0.00	0.0200	0.00	0.0200	Note 49
Year	N	44	1	0.0	0.0	0	100	11	0	0	0.0	43	0.0	0.0	0.0	0.0	0.0	44	0.0	0.00	0.00	0.00	0.00	Note 47
8	Vol/NH3	Poultry	YES	0.0	0.0	NON	100.00	WWH	1.000	NO	0.0	Poultry	0.67				0.0	Poultry	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach	Scrap	0.484	1.000		ORG	1.00	1.000	0.689	0.0	0.0	Eggs	4				0.0	Scrap	0.0	0.00	0.0200	0.00	0.0200	Note 49
Year	N	44	1	0.0	0.0	0	100	1	0	0	0.0	43	0.0	0.0	0.0	0.0	0.0	44	0.0	0.00	0.00	0.00	0.00	Note 47
9	Vol/NH3	Poultry	YES	0.0	0.0	NON	100.00	SBA	1.000	NO	0.0	Poultry	0.65				0.0	Poultry	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach	Scrap	0.484	1.000		ORG	1.00	1.000	0.711	0.0	0.0	Eggs	4				0.0	Scrap	0.0	0.00	0.0200	0.00	0.0200	Note 49
Year	N	44	1	0.0	0.0	0	100	10	0	0	0.0	43	0.0	0.0	0.0	0.0	0.0	44	0.0	0.00	0.00	0.00	0.00	Note 47
10	Vol/NH3	Poultry	YES	0.0	0.0	NON	100.00	WBA	1.000	NO	0.0	Poultry	0.66				0.0	Poultry	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach	Scrap	0.484	1.000		ORG	1.00	1.000	0.712	0.0	0.0	Eggs	4				0.0	Scrap	0.0	0.00	0.0200	0.00	0.0200	Note 49

Year	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year10	Total	Total/year 1	
Area with crop, ha	0.77	0.16	0.04	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.98	1.27	Note 50

Possible additional non IPCC N2O-N emissions	Value											Kind of source	Total IPCC and non IPCC N2O		
N residues emissions, ratio of N2O-N to N:	0.0000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Current crops	5.65	4.00	Note 51
Increased soil N emissions, kg N2O-N/ha:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Total anthropogenic	5.65	4.00	Note 51
Natural background emissions, kg N2O-N/ha:	1.00	0.77	0.16	0.04	0.01	0.00	0.00	0.00	0.00	0.00	0.98	Total including natural	6.63	4.99	Note 51

C2 N CHAIN CALCULATIONS SHEET C: N CHAINS BASED UPON DANISH VALUES CALCULATIONS By Jacob Bugge Available at www.ppo.bugge.com C2

N CHAIN STARTING WITH N FERTILIZER TO PRODUCE WINTER RAPESEED FOR PPO/BIODIESEL AND SHEEP MILK/MUTTON Note 43
AND CONTINUING WITH SHEEP DEEP LITTER TO PRODUCE WINTER WHEAT FOR SHEEP MILK/MUTTON Note 43

Year	Fertlizer/manure # Name	Store 1/0	Amounts Store	Field	Or-ganic 1/0	Nnorm propor tion, %	Crop # Name	Cereal benefit 1/0	Straw used 1/0	Crop use & leach	Use # Name	Fodder: Uses #21-61 Fed	Food	N crop #71/ #72	Food/ bev #8	Fuel/ other #9	Manure handling # Name	Final N a-mounts	N2O-N emission IPCC 1996 Each	Total	N2O-N emission IPCC 2006 Each	Total	Note 44 Note 44 Note 44
Total N			RATIO OF N2O-N TO N IN FIRST CROP					TOTAL N AMOUNTS IN KG AND % ENDING AS FOOD/FUEL/OTHER/REMOVED						15.0	13.3	4.34	6.54	2.72	3.49	Note 45	
Year N NH3			ACCORDING TO		IPCC 1996	IPCC 2006		TOTAL N AMOUNTS IN KG AND % VOLATILISATION/NH3						15.8	14.0	0.16		0.16		Note 45	
1-10 N leach			FIRST YEAR		0.0457	0.0248		TOTAL N AMOUNTS IN KG AND % LEACHED						81.7	72.6	2.04		0.61		Note 45	
			TOTAL		0.0918	0.0489		TOTAL N AMOUNTS IN KG AND %						112.5	100.0					Note 45	
N2O-N/N in food/beverage/fuel/other																			0.4363		0.2327	Note 46	
Year	N	1	1	100.0	100.0	0	100	229	1	0	97.8	51	71.3	10.1	0.0	0.0	0.0	53	61.2	2.48	3.26	1.46	1.77 Note 47
1	Vol/NH3	N	YES	0.0	2.2	NON	100.00	WRB	1.113	NO	26.5	Sheep	0.84				0.0	Sheep	9.2	0.11	0.0125	0.11	0.0100 Note 48
	N leach		1.022	1.000		ORG	1.00	1.113	0.271	0.0	26.5	Milk/mutt	5				17.5	Deep	0.0	0.66	0.0200	0.20	0.0050 Note 49
Year	N	53	1	60.4	60.4	0	100	11	0	0	60.4	51	23.3	3.3	0.0	0.0	0.0	53	20.0	1.26	2.22	0.85	1.16 Note 47
2	Vol/NH3	Sheep	YES	0.0	0.0	NON	100.00	WWH	1.000	NO	37.1	Sheep	0.67				0.0	Sheep	3.0	0.03	0.0125	0.03	0.0100 Note 48
	N leach	Deep	0.600	1.162		ORG	1.00	1.000	0.614	0.0	37.1	Milk/mutt	5				13.2	Deep	0.0	0.93	0.0200	0.28	0.0050 Note 49
Year	N	53	1	19.7	19.7	0	100	11	0	0	19.7	51	7.6	1.1	0.0	0.0	0.0	53	6.5	0.41	0.72	0.28	0.38 Note 47
3	Vol/NH3	Sheep	YES	0.0	0.0	NON	100.00	WWH	1.000	NO	12.1	Sheep	0.67				0.0	Sheep	1.0	0.01	0.0125	0.01	0.0100 Note 48
	N leach	Deep	0.600	1.162		ORG	1.00	1.000	0.614	0.0	12.1	Milk/mutt	5				4.3	Deep	0.0	0.30	0.0200	0.09	0.0050 Note 49
Year	N	53	1	6.5	6.5	0	100	1	0	0	6.5	51	2.3	0.3	0.0	0.0	0.0	53	2.0	0.13	0.24	0.09	0.12 Note 47
4	Vol/NH3	Sheep	YES	0.0	0.0	NON	100.00	SBA	1.000	NO	4.1	Sheep	0.65				0.0	Sheep	0.3	0.00	0.0125	0.00	0.0100 Note 48
	N leach	Deep	0.600	1.162		ORG	1.00	1.000	0.642	0.0	4.1	Milk/mutt	5				1.3	Deep	0.0	0.10	0.0200	0.03	0.0050 Note 49
Year	N	53	1	2.0	2.0	0	100	10	0	0	2.0	51	0.7	0.1	0.0	0.0	0.0	53	0.6	0.04	0.07	0.03	0.04 Note 47
5	Vol/NH3	Sheep	YES	0.0	0.0	NON	100.00	WBA	1.000	NO	1.3	Sheep	0.66				0.0	Sheep	0.1	0.00	0.0125	0.00	0.0100 Note 48
	N leach	Deep	0.600	1.162		ORG	1.00	1.000	0.642	0.0	1.3	Milk/mutt	5				0.4	Deep	0.0	0.03	0.0200	0.01	0.0050 Note 49
Year	N	53	1	0.6	0.6	0	100	229	1	0	0.6	51	0.3	0.0	0.0	0.0	0.0	53	0.2	0.01	0.02	0.01	0.01 Note 47
6	Vol/NH3	Sheep	YES	0.0	0.0	NON	100.00	WRB	1.113	NO	0.3	Sheep	0.84				0.0	Sheep	0.0	0.00	0.0125	0.00	0.0100 Note 48
	N leach	Deep	0.600	1.162		ORG	1.00	1.113	0.572	0.0	0.3	Milk/mutt	5				0.1	Deep	0.0	0.01	0.0200	0.00	0.0050 Note 49
Year	N	53	1	0.2	0.2	0	100	11	0	0	0.2	51	0.1	0.0	0.0	0.0	0.0	53	0.1	0.00	0.01	0.00	0.00 Note 47
7	Vol/NH3	Sheep	YES	0.0	0.0	NON	100.00	WWH	1.000	NO	0.1	Sheep	0.67				0.0	Sheep	0.0	0.00	0.0125	0.00	0.0100 Note 48
	N leach	Deep	0.600	1.162		ORG	1.00	1.000	0.614	0.0	0.1	Milk/mutt	5				0.0	Deep	0.0	0.00	0.0200	0.00	0.0050 Note 49
Year	N	53	1	0.1	0.1	0	100	11	0	0	0.1	51	0.0	0.0	0.0	0.0	0.0	53	0.0	0.00	0.00	0.00	0.00 Note 47
8	Vol/NH3	Sheep	YES	0.0	0.0	NON	100.00	WWH	1.000	NO	0.0	Sheep	0.67				0.0	Sheep	0.0	0.00	0.0125	0.00	0.0100 Note 48
	N leach	Deep	0.600	1.162		ORG	1.00	1.000	0.614	0.0	0.0	Milk/mutt	5				0.0	Deep	0.0	0.00	0.0200	0.00	0.0050 Note 49
Year	N	53	1	0.0	0.0	0	100	1	0	0	0.0	51	0.0	0.0	0.0	0.0	0.0	53	0.0	0.00	0.00	0.00	0.00 Note 47
9	Vol/NH3	Sheep	YES	0.0	0.0	NON	100.00	SBA	1.000	NO	0.0	Sheep	0.65				0.0	Sheep	0.0	0.00	0.0125	0.00	0.0100 Note 48
	N leach	Deep	0.600	1.162		ORG	1.00	1.000	0.642	0.0	0.0	Milk/mutt	5				0.0	Deep	0.0	0.00	0.0200	0.00	0.0050 Note 49
Year	N	53	1	0.0	0.0	0	100	10	0	0	0.0	51	0.0	0.0	0.0	0.0	0.0	53	0.0	0.00	0.00	0.00	0.00 Note 47
10	Vol/NH3	Sheep	YES	0.0	0.0	NON	100.00	WBA	1.000	NO	0.0	Sheep	0.66				0.0	Sheep	0.0	0.00	0.0125	0.00	0.0100 Note 48
	N leach	Deep	0.600	1.162		ORG	1.00	1.000	0.642	0.0	0.0	Milk/mutt	5				0.0	Deep	0.0	0.00	0.0200	0.00	0.0050 Note 49

Year	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year10	Total	Total/year 1	
Area with crop, ha	0.77	0.23	0.07	0.03	0.01	0.00	0.00	0.00	0.00	0.00	1.11	1.44	Note 50

Possible additional non IPCC N2O-N emissions	Value											Kind of source	Total IPCC and non IPCC N2O		
N residues emissions, ratio of N2O-N to N:	0.0000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Current crops	6.54	3.49	Note 51
Increased soil N emissions, kg N2O-N/ha:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Total anthropogenic	6.54	3.49	Note 51
Natural background emissions, kg N2O-N/ha:	1.00	0.77	0.23	0.07	0.03	0.01	0.00	0.00	0.00	0.00	0.00	1.11 Total including natural	7.66	4.60	Note 51

C2 N CHAIN CALCULATIONS SHEET C: N CHAINS BASED UPON DANISH VALUES CALCULATIONS By Jacob Bugge Available at www.ppo.bugge.com C2

N CHAIN STARTING WITH N FERTILIZER TO PRODUCE WINTER RAPESEED FOR PPO/BIODIESEL AND SHEEP MILK/MUTTON Note 43
AND CONTINUING WITH MANURE FROM GRAZING SHEEP TO PRODUCE WINTER WHEAT FOR SHEEP MILK/MUTTON Note 43

Year	Fertlizer/manure # Name	Store 1/0	Amounts Store	Amounts Field	Or-ganic 1/0	Nnorm propor tion, %	Crop # Name	Cereal benefit 1/0	Straw used 1/0	Crop use & leach	Use # Name	Fodder: Uses #21-61 Fed	Fodder: Uses #21-61 Food	N crop #71/ #72	Food/ bev #8	Fuel/ other #9	Manure handling # Name	Final N a-mounts	N2O-N emission IPCC 1996 Each	N2O-N emission IPCC 1996 Total	N2O-N emission IPCC 2006 Each	N2O-N emission IPCC 2006 Total	Note 44
Total	N		RATIO OF N2O-N TO N IN FIRST CROP				TOTAL N AMOUNTS IN KG AND % ENDING AS FOOD/FUEL/OTHER/REMOVED											13.4	13.4	4.22	6.26	2.16	2.83	Note 45
Year	N NH3		ACCORDING TO		IPCC 1996	IPCC 2006	TOTAL N AMOUNTS IN KG AND % VOLATILISATION/NH3											7.9	7.9	0.08		0.08		Note 45
1-10	N leach		FIRST YEAR		0.0470	0.0199	TOTAL N AMOUNTS IN KG AND % LEACHED											78.7	78.7	1.97		0.59		Note 45
			TOTAL		0.0878	0.0396	TOTAL N AMOUNTS IN KG AND %											100.0	100.0					Note 45
N2O-N/N in food/beverage/fuel/other																					0.4656		0.2102	Note 46
Year	N	1	1	100.0	100.0	0	100	229	1	0	97.8	51	71.3	10.1	0.0	0.0	0.0	54	61.2	2.66	3.35	1.20	1.42	Note 47
1	Vol/NH3	N	YES	0.0	2.2	NON	100.00	WRB	1.113	NO	26.5	Sheep	0.84				0.0	Sheep	0.0	0.02	0.0125	0.02	0.0100	Note 48
	N leach		1.022	1.000		ORG	1.00	1.113	0.271	0.0	26.5	Milk/mutt	5				17.5	Graz	0.0	0.66	0.0200	0.20	0.0000	Note 49
Year	N	54	1	61.2	61.2	0	100	11	0	0	56.9	51	17.7	2.5	0.0	0.0	0.0	54	15.2	1.17	2.19	0.72	1.06	Note 47
2	Vol/NH3	Sheep	YES	0.0	4.3	NON	100.00	WWH	1.000	NO	39.2	Sheep	0.67				0.0	Sheep	0.0	0.04	0.0125	0.04	0.0100	Note 48
	N leach	Graz	0.484	1.000		ORG	1.00	1.000	0.689	0.0	39.2	Milk/mutt	5				12.4	Graz	0.0	0.98	0.0200	0.29	0.0000	Note 49
Year	N	54	1	15.2	15.2	0	100	11	0	0	14.1	51	4.4	0.6	0.0	0.0	0.0	54	3.8	0.29	0.54	0.18	0.26	Note 47
3	Vol/NH3	Sheep	YES	0.0	1.1	NON	100.00	WWH	1.000	NO	9.7	Sheep	0.67				0.0	Sheep	0.0	0.01	0.0125	0.01	0.0100	Note 48
	N leach	Graz	0.484	1.000		ORG	1.00	1.000	0.689	0.0	9.7	Milk/mutt	5				3.1	Graz	0.0	0.24	0.0200	0.07	0.0000	Note 49
Year	N	54	1	3.8	3.8	0	100	1	0	0	3.5	51	1.0	0.1	0.0	0.0	0.0	54	0.9	0.07	0.13	0.04	0.07	Note 47
4	Vol/NH3	Sheep	YES	0.0	0.3	NON	100.00	SBA	1.000	NO	2.5	Sheep	0.65				0.0	Sheep	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach	Graz	0.484	1.000		ORG	1.00	1.000	0.711	0.0	2.5	Milk/mutt	5				0.7	Graz	0.0	0.06	0.0200	0.02	0.0000	Note 49
Year	N	54	1	0.9	0.9	0	100	10	0	0	0.8	51	0.2	0.0	0.0	0.0	0.0	54	0.2	0.02	0.03	0.01	0.01	Note 47
5	Vol/NH3	Sheep	YES	0.0	0.1	NON	100.00	WBA	1.000	NO	0.6	Sheep	0.66				0.0	Sheep	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach	Graz	0.484	1.000		ORG	1.00	1.000	0.712	0.0	0.6	Milk/mutt	5				0.2	Graz	0.0	0.01	0.0200	0.00	0.0000	Note 49
Year	N	54	1	0.2	0.2	0	100	229	1	0	0.2	51	0.1	0.0	0.0	0.0	0.0	54	0.1	0.00	0.01	0.00	0.00	Note 47
6	Vol/NH3	Sheep	YES	0.0	0.0	NON	100.00	WRB	1.113	NO	0.1	Sheep	0.84				0.0	Sheep	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach	Graz	0.484	1.000		ORG	1.00	1.113	0.655	0.0	0.1	Milk/mutt	5				0.0	Graz	0.0	0.00	0.0200	0.00	0.0000	Note 49
Year	N	54	1	0.1	0.1	0	100	11	0	0	0.1	51	0.0	0.0	0.0	0.0	0.0	54	0.0	0.00	0.00	0.00	0.00	Note 47
7	Vol/NH3	Sheep	YES	0.0	0.0	NON	100.00	WWH	1.000	NO	0.0	Sheep	0.67				0.0	Sheep	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach	Graz	0.484	1.000		ORG	1.00	1.000	0.689	0.0	0.0	Milk/mutt	5				0.0	Graz	0.0	0.00	0.0200	0.00	0.0000	Note 49
Year	N	54	1	0.0	0.0	0	100	11	0	0	0.0	51	0.0	0.0	0.0	0.0	0.0	54	0.0	0.00	0.00	0.00	0.00	Note 47
8	Vol/NH3	Sheep	YES	0.0	0.0	NON	100.00	WWH	1.000	NO	0.0	Sheep	0.67				0.0	Sheep	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach	Graz	0.484	1.000		ORG	1.00	1.000	0.689	0.0	0.0	Milk/mutt	5				0.0	Graz	0.0	0.00	0.0200	0.00	0.0000	Note 49
Year	N	54	1	0.0	0.0	0	100	1	0	0	0.0	51	0.0	0.0	0.0	0.0	0.0	54	0.0	0.00	0.00	0.00	0.00	Note 47
9	Vol/NH3	Sheep	YES	0.0	0.0	NON	100.00	SBA	1.000	NO	0.0	Sheep	0.65				0.0	Sheep	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach	Graz	0.484	1.000		ORG	1.00	1.000	0.711	0.0	0.0	Milk/mutt	5				0.0	Graz	0.0	0.00	0.0200	0.00	0.0000	Note 49
Year	N	54	1	0.0	0.0	0	100	10	0	0	0.0	51	0.0	0.0	0.0	0.0	0.0	54	0.0	0.00	0.00	0.00	0.00	Note 47
10	Vol/NH3	Sheep	YES	0.0	0.0	NON	100.00	WBA	1.000	NO	0.0	Sheep	0.66				0.0	Sheep	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach	Graz	0.484	1.000		ORG	1.00	1.000	0.712	0.0	0.0	Milk/mutt	5				0.0	Graz	0.0	0.00	0.0200	0.00	0.0000	Note 49

Year	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year10	Total	Total/year 1	
Area with crop, ha	0.77	0.18	0.05	0.02	0.00	0.00	0.00	0.00	0.00	0.00	1.02	1.32	Note 50

Possible additional non IPCC N2O-N emissions	Value											Kind of source	Total IPCC and non IPCC N2O		
N residues emissions, ratio of N2O-N to N:	0.0000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Current crops	6.26	2.83	Note 51
Increased soil N emissions, kg N2O-N/ha:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Total anthropogenic	6.26	2.83	Note 51
Natural background emissions, kg N2O-N/ha:	1.00	0.77	0.18	0.05	0.02	0.00	0.00	0.00	0.00	0.00	1.02	Total including natural	7.28	3.85	Note 51

C2 N CHAIN CALCULATIONS SHEET C: N CHAINS BASED UPON DANISH VALUES CALCULATIONS By Jacob Bugge Available at www.ppo.bugge.com C2

N CHAIN STARTING WITH N FERTILIZER TO PRODUCE WINTER RAPESEED FOR PPO/BIODIESEL AND GOAT MILK/MEAT Note 43
AND CONTINUING WITH GOAT DEEP LITTER TO PRODUCE WINTER WHEAT FOR GOAT MILK/MEAT Note 43

Year	Fertlizer/manure # Name	Store 1/0	Amounts Store	Amounts Field	Or-ganic 1/0	Nnorm propor tion, %	Crop # Name	Cereal benefit 1/0	Straw used 1/0	Crop use & leach	Use # Name	Fodder: Uses #21-61 Fed	Fodder: Uses #21-61 Food	N crop #71/ #72	Food/ bev #8	Fuel/ other #9	Manure handling # Name	Final N a-mounts	N2O-N emission IPCC 1996 Each	N2O-N emission IPCC 1996 Total	N2O-N emission IPCC 2006 Each	N2O-N emission IPCC 2006 Total	Note 44
Total	N		RATIO OF N2O-N TO N IN FIRST CROP			TOTAL N AMOUNTS IN KG AND % ENDING AS FOOD/FUEL/OTHER/REMOVED											8.8	7.9	3.63	5.54	2.21	3.09	Note 45
Year	N NH3		ACCORDING TO		IPCC 1996	IPCC 2006		TOTAL N AMOUNTS IN KG AND % VOLATILISATION/NH3										44.1	39.6	0.44		0.44		Note 45
1-10	N leach		FIRST YEAR		0.0465	0.0251		TOTAL N AMOUNTS IN KG AND % LEACHED										58.5	52.5	1.46		0.44		Note 45
			TOTAL		0.0777	0.0433		TOTAL N AMOUNTS IN KG AND %										111.4	100.0					Note 45
N2O-N/N in food/beverage/fuel/other																				0.6320		0.3524	Note 46
Year	N	1	1	100.0	100.0	0	100	229	1	0	97.8	61	71.3	6.8	0.0	0.0	0.0	63	64.4	2.54	3.32	1.47	1.79	Note 47
1	Vol/NH3	N	YES	0.0	2.2	NON	100.00	WRB	1.113	NO	26.5	Goat	0.84				0.0	Goat	9.7	0.12	0.0125	0.12	0.0100	Note 48
	N leach		1.022	1.000		ORG	1.00	1.113	0.271	0.0	26.5	Milk/meat	6				17.5	Deep	0.0	0.66	0.0200	0.20	0.0050	Note 49
Year	N	63	1	63.7	54.1	0	100	11	0	0	40.6	61	15.6	1.5	0.0	0.0	0.0	63	14.1	0.86	1.73	0.58	1.02	Note 47
2	Vol/NH3	Goat	YES	9.5	13.5	NON	100.00	WWH	1.000	NO	24.9	Goat	0.67				0.0	Goat	2.1	0.25	0.0125	0.25	0.0100	Note 48
	N leach	Deep	0.600	1.162		ORG	1.00	1.000	0.614	0.0	24.9	Milk/meat	6				8.9	Deep	0.0	0.62	0.0200	0.19	0.0050	Note 49
Year	N	63	1	14.0	11.9	0	100	11	0	0	8.9	61	3.4	0.3	0.0	0.0	0.0	63	3.1	0.19	0.38	0.13	0.22	Note 47
3	Vol/NH3	Goat	YES	2.1	3.0	NON	100.00	WWH	1.000	NO	5.5	Goat	0.67				0.0	Goat	0.5	0.06	0.0125	0.06	0.0100	Note 48
	N leach	Deep	0.600	1.162		ORG	1.00	1.000	0.614	0.0	5.5	Milk/meat	6				1.9	Deep	0.0	0.14	0.0200	0.04	0.0050	Note 49
Year	N	63	1	3.1	2.6	0	100	1	0	0	2.0	61	0.7	0.1	0.0	0.0	0.0	63	0.6	0.04	0.08	0.03	0.05	Note 47
4	Vol/NH3	Goat	YES	0.5	0.7	NON	100.00	SBA	1.000	NO	1.3	Goat	0.65				0.0	Goat	0.1	0.01	0.0125	0.01	0.0100	Note 48
	N leach	Deep	0.600	1.162		ORG	1.00	1.000	0.642	0.0	1.3	Milk/meat	6				0.4	Deep	0.0	0.03	0.0200	0.01	0.0050	Note 49
Year	N	63	1	0.6	0.5	0	100	10	0	0	0.4	61	0.1	0.0	0.0	0.0	0.0	63	0.1	0.01	0.02	0.01	0.01	Note 47
5	Vol/NH3	Goat	YES	0.1	0.1	NON	100.00	WBA	1.000	NO	0.3	Goat	0.66				0.0	Goat	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach	Deep	0.600	1.162		ORG	1.00	1.000	0.642	0.0	0.3	Milk/meat	6				0.1	Deep	0.0	0.01	0.0200	0.00	0.0050	Note 49
Year	N	63	1	0.1	0.1	0	100	229	1	0	0.1	61	0.0	0.0	0.0	0.0	0.0	63	0.0	0.00	0.00	0.00	0.00	Note 47
6	Vol/NH3	Goat	YES	0.0	0.0	NON	100.00	WRB	1.113	NO	0.0	Goat	0.84				0.0	Goat	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach	Deep	0.600	1.162		ORG	1.00	1.113	0.572	0.0	0.0	Milk/meat	6				0.0	Deep	0.0	0.00	0.0200	0.00	0.0050	Note 49
Year	N	63	1	0.0	0.0	0	100	11	0	0	0.0	61	0.0	0.0	0.0	0.0	0.0	63	0.0	0.00	0.00	0.00	0.00	Note 47
7	Vol/NH3	Goat	YES	0.0	0.0	NON	100.00	WWH	1.000	NO	0.0	Goat	0.67				0.0	Goat	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach	Deep	0.600	1.162		ORG	1.00	1.000	0.614	0.0	0.0	Milk/meat	6				0.0	Deep	0.0	0.00	0.0200	0.00	0.0050	Note 49
Year	N	63	1	0.0	0.0	0	100	11	0	0	0.0	61	0.0	0.0	0.0	0.0	0.0	63	0.0	0.00	0.00	0.00	0.00	Note 47
8	Vol/NH3	Goat	YES	0.0	0.0	NON	100.00	WWH	1.000	NO	0.0	Goat	0.67				0.0	Goat	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach	Deep	0.600	1.162		ORG	1.00	1.000	0.614	0.0	0.0	Milk/meat	6				0.0	Deep	0.0	0.00	0.0200	0.00	0.0050	Note 49
Year	N	63	1	0.0	0.0	0	100	1	0	0	0.0	61	0.0	0.0	0.0	0.0	0.0	63	0.0	0.00	0.00	0.00	0.00	Note 47
9	Vol/NH3	Goat	YES	0.0	0.0	NON	100.00	SBA	1.000	NO	0.0	Goat	0.65				0.0	Goat	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach	Deep	0.600	1.162		ORG	1.00	1.000	0.642	0.0	0.0	Milk/meat	6				0.0	Deep	0.0	0.00	0.0200	0.00	0.0050	Note 49
Year	N	63	1	0.0	0.0	0	100	10	0	0	0.0	61	0.0	0.0	0.0	0.0	0.0	63	0.0	0.00	0.00	0.00	0.00	Note 47
10	Vol/NH3	Goat	YES	0.0	0.0	NON	100.00	WBA	1.000	NO	0.0	Goat	0.66				0.0	Goat	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach	Deep	0.600	1.162		ORG	1.00	1.000	0.642	0.0	0.0	Milk/meat	6				0.0	Deep	0.0	0.00	0.0200	0.00	0.0050	Note 49

Year	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year10	Total	Total/year 1	
Area with crop, ha	0.77	0.20	0.04	0.01	0.00	0.00	0.00	0.00	0.00	0.00	1.03	1.34	Note 50

Possible additional non IPCC N2O-N emissions	Value											Kind of source	Total IPCC and non IPCC N2O		Note 51
N residues emissions, ratio of N2O-N to N:	0.0000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Current crops	5.54	3.09	Note 51
Increased soil N emissions, kg N2O-N/ha:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Total anthropogenic	5.54	3.09	Note 51
Natural background emissions, kg N2O-N/ha:	1.00	0.77	0.20	0.04	0.01	0.00	0.00	0.00	0.00	0.00	1.03	Total including natural	6.57	4.12	Note 51

C2 N CHAIN CALCULATIONS SHEET C: N CHAINS BASED UPON DANISH VALUES CALCULATIONS By Jacob Bugge Available at www.ppo.bugge.com C2

N CHAIN STARTING WITH N FERTILIZER TO PRODUCE WINTER RAPESEED FOR PPO/BIODIESEL AND GOAT MILK/MEAT Note 43
AND CONTINUING WITH MANURE FROM GRAZING GOATS TO PRODUCE WINTER WHEAT FOR GOAT MILK/MEAT Note 43

Year	Fertlizer/manure # Name	Store 1/0	Amounts Store	Amounts Field	Or-ganic 1/0	Nnorm propor tion, %	Crop #	Crop Name	Cereal benefit 1/0	Straw used 1/0	Crop use & leach	Use #	Use Name	Fodder: Uses #21-61 Fed	Fodder: Uses #21-61 Food	N crop #71/ #72	Food/ bev #8	Fuel/ other #9	Manure handling #	Manure handling Name	Final N a-mounts	N2O-N emission IPCC 1996 Each	N2O-N emission IPCC 1996 Total	N2O-N emission IPCC 2006 Each	N2O-N emission IPCC 2006 Total	Note 44
Total	N		RATIO OF N2O-N TO N IN FIRST CROP				TOTAL N AMOUNTS IN KG AND % ENDING AS FOOD/FUEL/OTHER/REMOVED													9.3	9.3	4.42	6.56	3.10	3.80	Note 45
Year	N NH3		ACCORDING TO		IPCC 1996	IPCC 2006	TOTAL N AMOUNTS IN KG AND % VOLATILISATION/NH3													8.3	8.3	0.08		0.08		Note 45
1-10	N leach		FIRST YEAR		0.0479	0.0289	TOTAL N AMOUNTS IN KG AND % LEACHED													82.4	82.4	2.06		0.62		Note 45
			TOTAL		0.0920	0.0533	TOTAL N AMOUNTS IN KG AND %													100.0	100.0					Note 45
N2O-N/N in food/beverage/fuel/other																							0.7090		0.4106	Note 46
Year	N	1	1	100.0	100.0	0	100	229	1	0	97.8	61		71.3	6.8	0.0	0.0	0.0	64		64.4	2.73	3.41	1.84	2.06	Note 47
1	Vol/NH3	N	YES	0.0	2.2	NON	100.00	WRB	1.113	NO	26.5	Goat		0.84					0.0	Goat	0.0	0.02	0.0125	0.02	0.0100	Note 48
	N leach		1.022	1.000		ORG	1.00	1.113	0.271	0.0	26.5	Milk/meat		6					17.5	Graz	0.0	0.66	0.0200	0.20	0.0100	Note 49
Year	N	64	1	64.4	64.4	0	100	11	0	0	59.9	61		18.6	1.8	0.0	0.0	0.0	64		16.8	1.25	2.33	0.93	1.29	Note 47
2	Vol/NH3	Goat	YES	0.0	4.5	NON	100.00	WWH	1.000	NO	41.3	Goat		0.67					0.0	Goat	0.0	0.05	0.0125	0.05	0.0100	Note 48
	N leach	Graz	0.484	1.000		ORG	1.00	1.000	0.689	0.0	41.3	Milk/meat		6					13.1	Graz	0.0	1.03	0.0200	0.31	0.0100	Note 49
Year	N	64	1	16.8	16.8	0	100	11	0	0	15.7	61		4.9	0.5	0.0	0.0	0.0	64		4.4	0.33	0.61	0.24	0.34	Note 47
3	Vol/NH3	Goat	YES	0.0	1.2	NON	100.00	WWH	1.000	NO	10.8	Goat		0.67					0.0	Goat	0.0	0.01	0.0125	0.01	0.0100	Note 48
	N leach	Graz	0.484	1.000		ORG	1.00	1.000	0.689	0.0	10.8	Milk/meat		6					3.4	Graz	0.0	0.27	0.0200	0.08	0.0100	Note 49
Year	N	64	1	4.4	4.4	0	100	1	0	0	4.1	61		1.2	0.1	0.0	0.0	0.0	64		1.1	0.08	0.16	0.06	0.09	Note 47
4	Vol/NH3	Goat	YES	0.0	0.3	NON	100.00	SBA	1.000	NO	2.9	Goat		0.65					0.0	Goat	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach	Graz	0.484	1.000		ORG	1.00	1.000	0.711	0.0	2.9	Milk/meat		6					0.8	Graz	0.0	0.07	0.0200	0.02	0.0100	Note 49
Year	N	64	1	1.1	1.1	0	100	10	0	0	1.0	61		0.3	0.0	0.0	0.0	0.0	64		0.3	0.02	0.04	0.01	0.02	Note 47
5	Vol/NH3	Goat	YES	0.0	0.1	NON	100.00	WBA	1.000	NO	0.7	Goat		0.66					0.0	Goat	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach	Graz	0.484	1.000		ORG	1.00	1.000	0.712	0.0	0.7	Milk/meat		6					0.2	Graz	0.0	0.02	0.0200	0.01	0.0100	Note 49
Year	N	64	1	0.3	0.3	0	100	229	1	0	0.2	61		0.1	0.0	0.0	0.0	0.0	64		0.1	0.01	0.01	0.00	0.01	Note 47
6	Vol/NH3	Goat	YES	0.0	0.0	NON	100.00	WRB	1.113	NO	0.2	Goat		0.84					0.0	Goat	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach	Graz	0.484	1.000		ORG	1.00	1.113	0.655	0.0	0.2	Milk/meat		6					0.0	Graz	0.0	0.00	0.0200	0.00	0.0100	Note 49
Year	N	64	1	0.1	0.1	0	100	11	0	0	0.1	61		0.0	0.0	0.0	0.0	0.0	64		0.0	0.00	0.00	0.00	0.00	Note 47
7	Vol/NH3	Goat	YES	0.0	0.0	NON	100.00	WWH	1.000	NO	0.0	Goat		0.67					0.0	Goat	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach	Graz	0.484	1.000		ORG	1.00	1.000	0.689	0.0	0.0	Milk/meat		6					0.0	Graz	0.0	0.00	0.0200	0.00	0.0100	Note 49
Year	N	64	1	0.0	0.0	0	100	11	0	0	0.0	61		0.0	0.0	0.0	0.0	0.0	64		0.0	0.00	0.00	0.00	0.00	Note 47
8	Vol/NH3	Goat	YES	0.0	0.0	NON	100.00	WWH	1.000	NO	0.0	Goat		0.67					0.0	Goat	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach	Graz	0.484	1.000		ORG	1.00	1.000	0.689	0.0	0.0	Milk/meat		6					0.0	Graz	0.0	0.00	0.0200	0.00	0.0100	Note 49
Year	N	64	1	0.0	0.0	0	100	1	0	0	0.0	61		0.0	0.0	0.0	0.0	0.0	64		0.0	0.00	0.00	0.00	0.00	Note 47
9	Vol/NH3	Goat	YES	0.0	0.0	NON	100.00	SBA	1.000	NO	0.0	Goat		0.65					0.0	Goat	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach	Graz	0.484	1.000		ORG	1.00	1.000	0.711	0.0	0.0	Milk/meat		6					0.0	Graz	0.0	0.00	0.0200	0.00	0.0100	Note 49
Year	N	64	1	0.0	0.0	0	100	10	0	0	0.0	61		0.0	0.0	0.0	0.0	0.0	64		0.0	0.00	0.00	0.00	0.00	Note 47
10	Vol/NH3	Goat	YES	0.0	0.0	NON	100.00	WBA	1.000	NO	0.0	Goat		0.66					0.0	Goat	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach	Graz	0.484	1.000		ORG	1.00	1.000	0.712	0.0	0.0	Milk/meat		6					0.0	Graz	0.0	0.00	0.0200	0.00	0.0100	Note 49

Year	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year10	Total	Total/year 1	
Area with crop, ha	0.77	0.19	0.05	0.02	0.00	0.00	0.00	0.00	0.00	0.00	1.04	1.35	Note 50

Possible additional non IPCC N2O-N emissions	Value												Kind of source	Total IPCC and non IPCC N2O		Note 51
N residues emissions, ratio of N2O-N to N:	0.0000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Current crops	6.56	3.80	Note 51
Increased soil N emissions, kg N2O-N/ha:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Total anthropogenic	6.56	3.80	Note 51
Natural background emissions, kg N2O-N/ha:	1.00	0.77	0.19	0.05	0.02	0.00	0.00	0.00	0.00	0.00	0.00	1.04	Total including natural	7.60	4.84	Note 51

C2 N CHAIN CALCULATIONS SHEET C: N CHAINS BASED UPON DANISH VALUES CALCULATIONS By Jacob Bugge Available at www.ppo.bugge.com C2

N CHAIN STARTING WITH N FERTILIZER TO PRODUCE WINTER RAPESEED FOR PPO/BIODIESEL AND HIGH N CROP Note 43
AND CONTINUING WITH GREEN MANURE HIGH N TO PRODUCE WINTER WHEAT FOR CATTLE DAIRY Note 43

Year	Fertlizer/manure # Name	Store 1/0	Amounts Store	Field	Or-ganic 1/0	Nnorm propor tion, %	Crop # Name	Cereal benefit 1/0	Straw used 1/0	Crop use & leach	Use # Name	Fodder: Uses #21-61 Fed	Food	N crop #71/ #72	Food/ bev #8	Fuel/ other #9	Manure handling # Name	Final N a-mounts	N2O-N emission IPCC 1996 Each	Total	N2O-N emission IPCC 2006 Each	Total	Note 44 Note 44 Note 44
Total N			RATIO OF N2O-N TO N IN FIRST CROP					TOTAL N AMOUNTS IN KG AND % ENDING AS FOOD/FUEL/OTHER/REMOVED						10.8	10.8	2.66	4.42	2.35	3.10	Note 45
Year N NH3			ACCORDING TO		IPCC 1996	IPCC 2006		TOTAL N AMOUNTS IN KG AND % VOLATILISATION/NH3						31.7	31.6	0.32		0.32		Note 45
1-10 N leach			FIRST YEAR		0.0298	0.0199		TOTAL N AMOUNTS IN KG AND % LEACHED						58.0	57.7	1.45		0.43		Note 45
			TOTAL		0.0621	0.0435		TOTAL N AMOUNTS IN KG AND %						100.5	100.0					Note 45
N2O-N/N in food/beverage/fuel/other																			0.4080		0.2859	Note 46
Year	N	1	1	100.0	100.0	0	100	229	1	0	97.8	71	0.0	0.0	71.3	0.0	0.0	71	71.3	1.44	2.13	1.20	1.42 Note 47
1	Vol/NH3	N	YES	0.0	2.2	NON	100.00	WRB	1.113	NO	26.5	N crop	0.84				0.0	Green	0.0	0.02	0.0125	0.02	0.0100 Note 48
	N leach		1.022	1.000		ORG	1.00	1.113	0.271	0.0	26.5	high N	71				17.5	High	0.0	0.66	0.0000	0.20	0.0000 Note 49
Year	N	71	1	71.3	71.3	0	100	11	0	0	53.5	21	32.1	7.6	0.0	0.0	0.0	21	24.5	0.84	1.57	0.79	1.15 Note 47
2	Vol/NH3	Green	YES	0.0	17.8	NON	100.00	WWH	1.000	NO	21.4	Cattle	0.67				0.0	Cattle	2.0	0.20	0.0125	0.20	0.0100 Note 48
	N leach	High	0.933	1.000		ORG	1.00	1.000	0.400	0.0	21.4	Dairy	2				11.7	Liquid	0.0	0.53	0.0010	0.16	0.0050 Note 49
Year	N	21	1	22.9	22.4	0	100	11	0	0	16.8	21	10.1	2.4	0.0	0.0	0.0	21	7.7	0.26	0.50	0.25	0.37 Note 47
3	Vol/NH3	Cattle	YES	0.5	5.6	NON	100.00	WWH	1.000	NO	6.7	Cattle	0.67				0.0	Cattle	0.6	0.07	0.0125	0.07	0.0100 Note 48
	N leach	Liquid	0.933	1.016		ORG	1.00	1.000	0.400	0.0	6.7	Dairy	2				3.7	Liquid	0.0	0.17	0.0010	0.05	0.0050 Note 49
Year	N	21	1	7.2	7.0	0	100	1	0	0	5.3	21	2.9	0.7	0.0	0.0	0.0	21	2.3	0.08	0.16	0.08	0.12 Note 47
4	Vol/NH3	Cattle	YES	0.2	1.8	NON	100.00	SBA	1.000	NO	2.3	Cattle	0.65				0.0	Cattle	0.2	0.02	0.0125	0.02	0.0100 Note 48
	N leach	Liquid	0.933	1.016		ORG	1.00	1.000	0.443	0.0	2.3	Dairy	2				1.1	Liquid	0.0	0.06	0.0010	0.02	0.0050 Note 49
Year	N	21	1	2.1	2.1	0	100	10	0	0	1.6	21	0.9	0.2	0.0	0.0	0.0	21	0.7	0.02	0.05	0.02	0.03 Note 47
5	Vol/NH3	Cattle	YES	0.0	0.5	NON	100.00	WBA	1.000	NO	0.7	Cattle	0.66				0.0	Cattle	0.1	0.01	0.0125	0.01	0.0100 Note 48
	N leach	Liquid	0.933	1.016		ORG	1.00	1.000	0.444	0.0	0.7	Dairy	2				0.3	Liquid	0.0	0.02	0.0010	0.01	0.0050 Note 49
Year	N	21	1	0.6	0.6	0	100	229	1	0	0.5	71	0.0	0.0	0.3	0.0	0.0	71	0.3	0.01	0.01	0.01	0.01 Note 47
6	Vol/NH3	Cattle	YES	0.0	0.2	NON	100.00	WRB	1.113	NO	0.2	N crop	0.84				0.0	Green	0.0	0.00	0.0125	0.00	0.0100 Note 48
	N leach	Liquid	0.933	1.016		ORG	1.00	1.113	0.335	0.0	0.2	high N	71				0.1	High	0.0	0.00	0.0000	0.00	0.0000 Note 49
Year	N	71	1	0.3	0.3	0	100	11	0	0	0.2	21	0.1	0.0	0.0	0.0	0.0	21	0.1	0.00	0.01	0.00	0.00 Note 47
7	Vol/NH3	Green	YES	0.0	0.1	NON	100.00	WWH	1.000	NO	0.1	Cattle	0.67				0.0	Cattle	0.0	0.00	0.0125	0.00	0.0100 Note 48
	N leach	High	0.933	1.000		ORG	1.00	1.000	0.400	0.0	0.1	Dairy	2				0.0	Liquid	0.0	0.00	0.0010	0.00	0.0050 Note 49
Year	N	21	1	0.1	0.1	0	100	11	0	0	0.1	21	0.0	0.0	0.0	0.0	0.0	21	0.0	0.00	0.00	0.00	0.00 Note 47
8	Vol/NH3	Cattle	YES	0.0	0.0	NON	100.00	WWH	1.000	NO	0.0	Cattle	0.67				0.0	Cattle	0.0	0.00	0.0125	0.00	0.0100 Note 48
	N leach	Liquid	0.933	1.016		ORG	1.00	1.000	0.400	0.0	0.0	Dairy	2				0.0	Liquid	0.0	0.00	0.0010	0.00	0.0050 Note 49
Year	N	21	1	0.0	0.0	0	100	1	0	0	0.0	21	0.0	0.0	0.0	0.0	0.0	21	0.0	0.00	0.00	0.00	0.00 Note 47
9	Vol/NH3	Cattle	YES	0.0	0.0	NON	100.00	SBA	1.000	NO	0.0	Cattle	0.65				0.0	Cattle	0.0	0.00	0.0125	0.00	0.0100 Note 48
	N leach	Liquid	0.933	1.016		ORG	1.00	1.000	0.443	0.0	0.0	Dairy	2				0.0	Liquid	0.0	0.00	0.0010	0.00	0.0050 Note 49
Year	N	21	1	0.0	0.0	0	100	10	0	0	0.0	21	0.0	0.0	0.0	0.0	0.0	21	0.0	0.00	0.00	0.00	0.00 Note 47
10	Vol/NH3	Cattle	YES	0.0	0.0	NON	100.00	WBA	1.000	NO	0.0	Cattle	0.66				0.0	Cattle	0.0	0.00	0.0125	0.00	0.0100 Note 48
	N leach	Liquid	0.933	1.016		ORG	1.00	1.000	0.444	0.0	0.0	Dairy	2				0.0	Liquid	0.0	0.00	0.0010	0.00	0.0050 Note 49

Year	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year10	Total	Total/year 1	
Area with crop, ha	0.77	0.41	0.13	0.05	0.01	0.00	0.00	0.00	0.00	0.00	1.39	1.80	Note 50

Possible additional non IPCC N2O-N emissions	Value											Kind of source	Total IPCC and non IPCC N2O		
N residues emissions, ratio of N2O-N to N:	0.0000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Current crops	4.42	3.10	Note 51
Increased soil N emissions, kg N2O-N/ha:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Total anthropogenic	4.42	3.10	Note 51
Natural background emissions, kg N2O-N/ha:	1.00	0.77	0.41	0.13	0.05	0.01	0.00	0.00	0.00	0.00	1.39	Total including natural	5.81	4.49	Note 51

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N CHAIN STARTING WITH N FERTILIZER TO PRODUCE WINTER RAPESEED FOR PPO/BIODIESEL AND LOW N CROP Note 43
AND CONTINUING WITH GREEN MANURE LOW N TO PRODUCE WINTER WHEAT FOR CATTLE DAIRY Note 43

Year	Fertlizer/manure # Name	Store 1/0	Amounts Store	Field	Or-ganic 1/0	Nnorm propor tion, %	Crop # Name	Cereal benefit 1/0	Straw used 1/0	Crop use & leach	Use # Name	Fodder: Uses #21-61 Fed	Food	N crop #71/ #72	Food/ bev #8	Fuel/ other #9	Manure handling # Name	Final N a-mounts	N2O-N emission IPCC 1996 Each	Total	N2O-N emission IPCC 2006 Each	Total	Note 44 Note 44 Note 44
Total N			RATIO OF N2O-N TO N IN FIRST CROP					TOTAL N AMOUNTS IN KG AND % ENDING AS FOOD/FUEL/OTHER/REMOVED										6.2	6.2	2.49	4.44	2.15	2.92 Note 45
Year N NH3			ACCORDING TO		IPCC 1996		IPCC 2006			TOTAL N AMOUNTS IN KG AND % VOLATILISATION/NH3								26.7	26.6	0.27		0.27	Note 45
1-10 N leach			FIRST YEAR		0.0298		0.0199			TOTAL N AMOUNTS IN KG AND % LEACHED								67.4	67.2	1.69		0.51	Note 45
			TOTAL		0.0622		0.0409			TOTAL N AMOUNTS IN KG AND %								100.3	100.0				Note 45
N2O-N/N in food/beverage/fuel/other																					0.7174		0.4719 Note 46
Year	N	1	1	100.0	100.0	0	100	229	1	0	97.8	72	0.0	0.0	71.3	0.0	0.0	72	71.3	1.44	2.13	1.20	1.42 Note 47
1	Vol/NH3	N	YES	0.0	2.2	NON	100.00	WRB	1.113	NO	26.5	N crop	0.84				0.0	Green	0.0	0.02	0.0125	0.02	0.0100 Note 48
	N leach		1.022	1.000		ORG	1.00	1.113	0.271	0.0	26.5	low N	72				17.5	Low	0.0	0.66	0.0000	0.20	0.0000 Note 49
Year	N	72	1	71.3	71.3	0	100	11	0	0	53.5	21	18.3	4.3	0.0	0.0	0.0	21	14.0	0.83	1.90	0.75	1.20 Note 47
2	Vol/NH3	Green	YES	0.0	17.8	NON	100.00	WWH	1.000	NO	35.1	Cattle	0.67				0.0	Cattle	1.1	0.19	0.0125	0.19	0.0100 Note 48
	N leach	Low	0.533	1.000		ORG	1.00	1.000	0.657	0.0	35.1	Dairy	2				11.7	Liquid	0.0	0.88	0.0010	0.26	0.0050 Note 49
Year	N	21	1	13.1	12.8	0	100	11	0	0	9.6	21	5.8	1.4	0.0	0.0	0.0	21	4.4	0.15	0.28	0.14	0.21 Note 47
3	Vol/NH3	Cattle	YES	0.3	3.2	NON	100.00	WWH	1.000	NO	3.8	Cattle	0.67				0.0	Cattle	0.4	0.04	0.0125	0.04	0.0100 Note 48
	N leach	Liquid	0.933	1.016		ORG	1.00	1.000	0.400	0.0	3.8	Dairy	2				2.1	Liquid	0.0	0.10	0.0010	0.03	0.0050 Note 49
Year	N	21	1	4.1	4.0	0	100	1	0	0	3.0	21	1.7	0.4	0.0	0.0	0.0	21	1.3	0.05	0.09	0.04	0.07 Note 47
4	Vol/NH3	Cattle	YES	0.1	1.0	NON	100.00	SBA	1.000	NO	1.3	Cattle	0.65				0.0	Cattle	0.1	0.01	0.0125	0.01	0.0100 Note 48
	N leach	Liquid	0.933	1.016		ORG	1.00	1.000	0.443	0.0	1.3	Dairy	2				0.6	Liquid	0.0	0.03	0.0010	0.01	0.0050 Note 49
Year	N	21	1	1.2	1.2	0	100	10	0	0	0.9	21	0.5	0.1	0.0	0.0	0.0	21	0.4	0.01	0.03	0.01	0.02 Note 47
5	Vol/NH3	Cattle	YES	0.0	0.3	NON	100.00	WBA	1.000	NO	0.4	Cattle	0.66				0.0	Cattle	0.0	0.00	0.0125	0.00	0.0100 Note 48
	N leach	Liquid	0.933	1.016		ORG	1.00	1.000	0.444	0.0	0.4	Dairy	2				0.2	Liquid	0.0	0.01	0.0010	0.00	0.0050 Note 49
Year	N	21	1	0.4	0.3	0	100	229	1	0	0.3	72	0.0	0.0	0.2	0.0	0.0	72	0.2	0.00	0.01	0.00	0.00 Note 47
6	Vol/NH3	Cattle	YES	0.0	0.1	NON	100.00	WRB	1.113	NO	0.1	N crop	0.84				0.0	Green	0.0	0.00	0.0125	0.00	0.0100 Note 48
	N leach	Liquid	0.933	1.016		ORG	1.00	1.113	0.335	0.0	0.1	low N	72				0.0	Low	0.0	0.00	0.0000	0.00	0.0000 Note 49
Year	N	72	1	0.2	0.2	0	100	11	0	0	0.1	21	0.0	0.0	0.0	0.0	0.0	21	0.0	0.00	0.00	0.00	0.00 Note 47
7	Vol/NH3	Green	YES	0.0	0.0	NON	100.00	WWH	1.000	NO	0.1	Cattle	0.67				0.0	Cattle	0.0	0.00	0.0125	0.00	0.0100 Note 48
	N leach	Low	0.533	1.000		ORG	1.00	1.000	0.657	0.0	0.1	Dairy	2				0.0	Liquid	0.0	0.00	0.0010	0.00	0.0050 Note 49
Year	N	21	1	0.0	0.0	0	100	11	0	0	0.0	21	0.0	0.0	0.0	0.0	0.0	21	0.0	0.00	0.00	0.00	0.00 Note 47
8	Vol/NH3	Cattle	YES	0.0	0.0	NON	100.00	WWH	1.000	NO	0.0	Cattle	0.67				0.0	Cattle	0.0	0.00	0.0125	0.00	0.0100 Note 48
	N leach	Liquid	0.933	1.016		ORG	1.00	1.000	0.400	0.0	0.0	Dairy	2				0.0	Liquid	0.0	0.00	0.0010	0.00	0.0050 Note 49
Year	N	21	1	0.0	0.0	0	100	1	0	0	0.0	21	0.0	0.0	0.0	0.0	0.0	21	0.0	0.00	0.00	0.00	0.00 Note 47
9	Vol/NH3	Cattle	YES	0.0	0.0	NON	100.00	SBA	1.000	NO	0.0	Cattle	0.65				0.0	Cattle	0.0	0.00	0.0125	0.00	0.0100 Note 48
	N leach	Liquid	0.933	1.016		ORG	1.00	1.000	0.443	0.0	0.0	Dairy	2				0.0	Liquid	0.0	0.00	0.0010	0.00	0.0050 Note 49
Year	N	21	1	0.0	0.0	0	100	10	0	0	0.0	21	0.0	0.0	0.0	0.0	0.0	21	0.0	0.00	0.00	0.00	0.00 Note 47
10	Vol/NH3	Cattle	YES	0.0	0.0	NON	100.00	WBA	1.000	NO	0.0	Cattle	0.66				0.0	Cattle	0.0	0.00	0.0125	0.00	0.0100 Note 48
	N leach	Liquid	0.933	1.016		ORG	1.00	1.000	0.444	0.0	0.0	Dairy	2				0.0	Liquid	0.0	0.00	0.0010	0.00	0.0050 Note 49

Year	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year10	Total	Total/year 1	
Area with crop, ha	0.77	0.24	0.07	0.03	0.01	0.00	0.00	0.00	0.00	0.00	1.12	1.46	Note 50

Possible additional non IPCC N2O-N emissions	Value											Kind of source	Total IPCC and non IPCC N2O		
N residues emissions, ratio of N2O-N to N:	0.0000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Current crops	4.44	2.92	Note 51
Increased soil N emissions, kg N2O-N/ha:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Total anthropogenic	4.44	2.92	Note 51
Natural background emissions, kg N2O-N/ha:	1.00	0.77	0.24	0.07	0.03	0.01	0.00	0.00	0.00	0.00	1.12	Total including natural	5.56	4.04	Note 51

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N CHAIN STARTING WITH N FERTILIZER TO PRODUCE WINTER RAPESEED FOR PPO/BIODIESEL AND FOOD Note 43
AND CONTINUING WITH NO MANURE TO PRODUCE NOTHING FOR FOOD Note 43

Year	Fertlizer/manure # Name	Store 1/0	Amounts Store	Amounts Field	Or-ganic 1/0	Nnorm propor tion, %	Crop # Name	Cereal benefit 1/0	Straw used 1/0	Crop use & leach	Use # Name	Fodder: Uses #21-61 Fed	Fodder: Uses #21-61 Food	N crop #71/ #72	Food/ bev #8	Fuel/ other #9	Manure handling # Name	Final N a-mounts	N2O-N emission IPCC 1996 Each	N2O-N emission IPCC 1996 Total	N2O-N emission IPCC 2006 Each	N2O-N emission IPCC 2006 Total	Note 44
Total	N		RATIO OF N2O-N TO N IN FIRST CROP				TOTAL N AMOUNTS IN KG AND % ENDING AS FOOD/FUEL/OTHER/REMOVED											71.3	71.3	1.44	2.13	1.20	1.42	Note 45
Year	N NH3		ACCORDING TO		IPCC 1996	IPCC 2006	TOTAL N AMOUNTS IN KG AND % VOLATILISATION/NH3											2.2	2.2	0.02		0.02		Note 45
1-10	N leach		FIRST YEAR		0.0298	0.0199	TOTAL N AMOUNTS IN KG AND % LEACHED											26.5	26.5	0.66		0.20		Note 45
			TOTAL		0.0298	0.0199	TOTAL N AMOUNTS IN KG AND %											100.0	100.0					Note 45
N2O-N/N in food/beverage/fuel/other																					0.0298		0.0199	Note 46
Year	N	1	1	100.0	100.0	0	100	229	1	0	97.8	8	0.0	0.0	0.0	71.3	0.0	0	0.0	1.44	2.13	1.20	1.42	Note 47
1	Vol/NH3	N	YES	0.0	2.2	NON	100.00	WRB	1.113	NO	26.5	Food/	0.84				0.0	NONE	0.0	0.02	0.0125	0.02	0.0100	Note 48
	N leach		1.022	1.000		ORG	1.00	1.113	0.271	0.0	26.5	beverage	8				17.5		0.0	0.66	0.0000	0.20	0.0000	Note 49
Year	N	0	1	0.0	0.0	0	100	11	0	0	0.0	8	0.0	0.0	0.0	0.0	0.0	0	0.0	0.00	0.00	0.00	0.00	Note 47
2	Vol/NH3	None	YES	0.0	0.0	NON	100.00	NO	1.000	NO	0.0	Food/	0.67				0.0	NONE	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach		1.000	1.000		ORG	1.00	1.000	0.357	0.0	0.0	beverage	8				0.0		0.0	0.00	0.0000	0.00	0.0000	Note 49
Year	N	0	1	0.0	0.0	0	100	11	0	0	0.0	8	0.0	0.0	0.0	0.0	0.0	0	0.0	0.00	0.00	0.00	0.00	Note 47
3	Vol/NH3	None	YES	0.0	0.0	NON	100.00	NO	1.000	NO	0.0	Food/	0.67				0.0	NONE	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach		1.000	1.000		ORG	1.00	1.000	0.357	0.0	0.0	beverage	8				0.0		0.0	0.00	0.0000	0.00	0.0000	Note 49
Year	N	0	1	0.0	0.0	0	100	1	0	0	0.0	8	0.0	0.0	0.0	0.0	0.0	0	0.0	0.00	0.00	0.00	0.00	Note 47
4	Vol/NH3	None	YES	0.0	0.0	NON	100.00	NO	1.000	NO	0.0	Food/	0.65				0.0	NONE	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach		1.000	1.000		ORG	1.00	1.000	0.403	0.0	0.0	beverage	8				0.0		0.0	0.00	0.0000	0.00	0.0000	Note 49
Year	N	0	1	0.0	0.0	0	100	10	0	0	0.0	8	0.0	0.0	0.0	0.0	0.0	0	0.0	0.00	0.00	0.00	0.00	Note 47
5	Vol/NH3	None	YES	0.0	0.0	NON	100.00	NO	1.000	NO	0.0	Food/	0.66				0.0	NONE	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach		1.000	1.000		ORG	1.00	1.000	0.404	0.0	0.0	beverage	8				0.0		0.0	0.00	0.0000	0.00	0.0000	Note 49
Year	N	0	1	0.0	0.0	0	100	229	1	0	0.0	8	0.0	0.0	0.0	0.0	0.0	0	0.0	0.00	0.00	0.00	0.00	Note 47
6	Vol/NH3	None	YES	0.0	0.0	NON	100.00	NO	1.113	NO	0.0	Food/	0.84				0.0	NONE	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach		1.000	1.000		ORG	1.00	1.113	0.287	0.0	0.0	beverage	8				0.0		0.0	0.00	0.0000	0.00	0.0000	Note 49
Year	N	0	1	0.0	0.0	0	100	11	0	0	0.0	8	0.0	0.0	0.0	0.0	0.0	0	0.0	0.00	0.00	0.00	0.00	Note 47
7	Vol/NH3	None	YES	0.0	0.0	NON	100.00	NO	1.000	NO	0.0	Food/	0.67				0.0	NONE	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach		1.000	1.000		ORG	1.00	1.000	0.357	0.0	0.0	beverage	8				0.0		0.0	0.00	0.0000	0.00	0.0000	Note 49
Year	N	0	1	0.0	0.0	0	100	11	0	0	0.0	8	0.0	0.0	0.0	0.0	0.0	0	0.0	0.00	0.00	0.00	0.00	Note 47
8	Vol/NH3	None	YES	0.0	0.0	NON	100.00	NO	1.000	NO	0.0	Food/	0.67				0.0	NONE	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach		1.000	1.000		ORG	1.00	1.000	0.357	0.0	0.0	beverage	8				0.0		0.0	0.00	0.0000	0.00	0.0000	Note 49
Year	N	0	1	0.0	0.0	0	100	1	0	0	0.0	8	0.0	0.0	0.0	0.0	0.0	0	0.0	0.00	0.00	0.00	0.00	Note 47
9	Vol/NH3	None	YES	0.0	0.0	NON	100.00	NO	1.000	NO	0.0	Food/	0.65				0.0	NONE	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach		1.000	1.000		ORG	1.00	1.000	0.403	0.0	0.0	beverage	8				0.0		0.0	0.00	0.0000	0.00	0.0000	Note 49
Year	N	0	1	0.0	0.0	0	100	10	0	0	0.0	8	0.0	0.0	0.0	0.0	0.0	0	0.0	0.00	0.00	0.00	0.00	Note 47
10	Vol/NH3	None	YES	0.0	0.0	NON	100.00	NO	1.000	NO	0.0	Food/	0.66				0.0	NONE	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach		1.000	1.000		ORG	1.00	1.000	0.404	0.0	0.0	beverage	8				0.0		0.0	0.00	0.0000	0.00	0.0000	Note 49

Year	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year10	Total	Total/year 1	
Area with crop, ha	0.77	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.77	1.00	Note 50

Possible additional non IPCC N2O-N emissions	Value											Kind of source	Total IPCC and non IPCC N2O		Note 51
N residues emissions, ratio of N2O-N to N:	0.0000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Current crops	2.13	1.42	Note 51
Increased soil N emissions, kg N2O-N/ha:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Total anthropogenic	2.13	1.42	Note 51
Natural background emissions, kg N2O-N/ha:	1.00	0.77	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.77	Total including natural	2.90	2.19	Note 51

C2 N CHAIN CALCULATIONS SHEET C: N CHAINS BASED UPON DANISH VALUES CALCULATIONS By Jacob Bugge Available at www.ppo.bugge.com C2

N CHAIN STARTING WITH N FERTILIZER TO PRODUCE WINTER RAPESEED FOR PPO/BIODIESEL AND FUEL Note 43
AND CONTINUING WITH NO MANURE TO PRODUCE NOTHING FOR FUEL Note 43

Year	Fertlizer/manure # Name	Store 1/0	Amounts Store	Field	Or-ganic 1/0	Nnorm propor tion, %	Crop #	Cereal benefit 1/0	Straw used 1/0	Crop use & leach	Use #	Fodder: Uses #21-61 Fed	Food	N crop #71/ #72	Food/ bev #8	Fuel/ other #9	Manure handling # Name	Final N a-mounts	N2O-N emission IPCC 1996 Each	Total	N2O-N emission IPCC 2006 Each	Total	Note 44 Note 44 Note 44
Total	N		RATIO OF N2O-N TO N IN FIRST CROP					TOTAL N AMOUNTS IN KG AND % ENDING AS FOOD/FUEL/OTHER/REMOVED									71.3	71.3	1.44	2.13	1.20	1.42	Note 45
Year	N NH3		ACCORDING TO		IPCC 1996		IPCC 2006					TOTAL N AMOUNTS IN KG AND % VOLATILISATION/NH3						2.2	2.2	0.02		0.02		Note 45
1-10	N leach		FIRST YEAR		0.0298		0.0199					TOTAL N AMOUNTS IN KG AND % LEACHED						26.5	26.5	0.66		0.20		Note 45
			TOTAL		0.0298		0.0199					TOTAL N AMOUNTS IN KG AND %						100.0	100.0					Note 45
N2O-N/N in food/beverage/fuel/other																				0.0298		0.0199		Note 46
Year	N	1	1	100.0	100.0	0	100	229	1	0	97.8	9	0.0	0.0	0.0	0.0	71.3	0	0.0	1.44	2.13	1.20	1.42	Note 47
1	Vol/NH3	N	YES	0.0	2.2	NON	100.00	WRB	1.113	NO	26.5	Fuel/	0.84				0.0	NONE	0.0	0.02	0.0125	0.02	0.0100	Note 48
	N leach		1.022	1.000		ORG	1.00	1.113	0.271	0.0	26.5	other	9				17.5		0.0	0.66	0.0000	0.20	0.0000	Note 49
Year	N	0	1	0.0	0.0	0	100	11	0	0	0.0	9	0.0	0.0	0.0	0.0	0.0	0	0.0	0.00	0.00	0.00	0.00	Note 47
2	Vol/NH3	None	YES	0.0	0.0	NON	100.00	NO	1.000	NO	0.0	Fuel/	0.67				0.0	NONE	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach		1.000	1.000		ORG	1.00	1.000	0.357	0.0	0.0	other	9				0.0		0.0	0.00	0.0000	0.00	0.0000	Note 49
Year	N	0	1	0.0	0.0	0	100	11	0	0	0.0	9	0.0	0.0	0.0	0.0	0.0	0	0.0	0.00	0.00	0.00	0.00	Note 47
3	Vol/NH3	None	YES	0.0	0.0	NON	100.00	NO	1.000	NO	0.0	Fuel/	0.67				0.0	NONE	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach		1.000	1.000		ORG	1.00	1.000	0.357	0.0	0.0	other	9				0.0		0.0	0.00	0.0000	0.00	0.0000	Note 49
Year	N	0	1	0.0	0.0	0	100	1	0	0	0.0	9	0.0	0.0	0.0	0.0	0.0	0	0.0	0.00	0.00	0.00	0.00	Note 47
4	Vol/NH3	None	YES	0.0	0.0	NON	100.00	NO	1.000	NO	0.0	Fuel/	0.65				0.0	NONE	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach		1.000	1.000		ORG	1.00	1.000	0.403	0.0	0.0	other	9				0.0		0.0	0.00	0.0000	0.00	0.0000	Note 49
Year	N	0	1	0.0	0.0	0	100	10	0	0	0.0	9	0.0	0.0	0.0	0.0	0.0	0	0.0	0.00	0.00	0.00	0.00	Note 47
5	Vol/NH3	None	YES	0.0	0.0	NON	100.00	NO	1.000	NO	0.0	Fuel/	0.66				0.0	NONE	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach		1.000	1.000		ORG	1.00	1.000	0.404	0.0	0.0	other	9				0.0		0.0	0.00	0.0000	0.00	0.0000	Note 49
Year	N	0	1	0.0	0.0	0	100	229	1	0	0.0	9	0.0	0.0	0.0	0.0	0.0	0	0.0	0.00	0.00	0.00	0.00	Note 47
6	Vol/NH3	None	YES	0.0	0.0	NON	100.00	NO	1.113	NO	0.0	Fuel/	0.84				0.0	NONE	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach		1.000	1.000		ORG	1.00	1.113	0.287	0.0	0.0	other	9				0.0		0.0	0.00	0.0000	0.00	0.0000	Note 49
Year	N	0	1	0.0	0.0	0	100	11	0	0	0.0	9	0.0	0.0	0.0	0.0	0.0	0	0.0	0.00	0.00	0.00	0.00	Note 47
7	Vol/NH3	None	YES	0.0	0.0	NON	100.00	NO	1.000	NO	0.0	Fuel/	0.67				0.0	NONE	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach		1.000	1.000		ORG	1.00	1.000	0.357	0.0	0.0	other	9				0.0		0.0	0.00	0.0000	0.00	0.0000	Note 49
Year	N	0	1	0.0	0.0	0	100	11	0	0	0.0	9	0.0	0.0	0.0	0.0	0.0	0	0.0	0.00	0.00	0.00	0.00	Note 47
8	Vol/NH3	None	YES	0.0	0.0	NON	100.00	NO	1.000	NO	0.0	Fuel/	0.67				0.0	NONE	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach		1.000	1.000		ORG	1.00	1.000	0.357	0.0	0.0	other	9				0.0		0.0	0.00	0.0000	0.00	0.0000	Note 49
Year	N	0	1	0.0	0.0	0	100	1	0	0	0.0	9	0.0	0.0	0.0	0.0	0.0	0	0.0	0.00	0.00	0.00	0.00	Note 47
9	Vol/NH3	None	YES	0.0	0.0	NON	100.00	NO	1.000	NO	0.0	Fuel/	0.65				0.0	NONE	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach		1.000	1.000		ORG	1.00	1.000	0.403	0.0	0.0	other	9				0.0		0.0	0.00	0.0000	0.00	0.0000	Note 49
Year	N	0	1	0.0	0.0	0	100	10	0	0	0.0	9	0.0	0.0	0.0	0.0	0.0	0	0.0	0.00	0.00	0.00	0.00	Note 47
10	Vol/NH3	None	YES	0.0	0.0	NON	100.00	NO	1.000	NO	0.0	Fuel/	0.66				0.0	NONE	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach		1.000	1.000		ORG	1.00	1.000	0.404	0.0	0.0	other	9				0.0		0.0	0.00	0.0000	0.00	0.0000	Note 49

Year	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year10	Total	Total/year 1	
Area with crop, ha	0.77	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.77	1.00	Note 50

Possible additional non IPCC N2O-N emissions	Value											Kind of source	Total IPCC and non IPCC N2O		Note 51
N residues emissions, ratio of N2O-N to N:	0.0000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Current crops	2.13	1.42	Note 51
Increased soil N emissions, kg N2O-N/ha:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Total anthropogenic	2.13	1.42	Note 51
Natural background emissions, kg N2O-N/ha:	1.00	0.77	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.77	Total including natural	2.90	2.19	Note 51

C2 N CHAIN CALCULATIONS SHEET C: N CHAINS BASED UPON DANISH VALUES CALCULATIONS By Jacob Bugge Available at www.ppo.bugge.com C2

N CHAIN STARTING WITH N FERTILIZER TO PRODUCE WINTER RAPESEED FOR PPO/BIODIESEL AND WASTE DUMPED ELSEWHERE WITHOUT LEACHING Note 43
AND CONTINUING WITH NO MANURE TO PRODUCE NOTHING FOR WASTE, DUMPED ELSEWHERE Note 43

Year	Fertlizer/manure # Name	Store 1/0	Amounts Store	Field	Or-ganic 1/0	Nnorm propor tion, %	Crop # Name	Cereal benefit 1/0	Straw used 1/0	Crop use & leach	Use # Name	Fodder: Uses #21-61 Fed	Food	N crop #71/ #72	Food/ bev #8	Fuel/ other #9	Manure handling # Name	Final N a-mounts	N2O-N emission IPCC 1996 Each	Total	N2O-N emission IPCC 2006 Each	Total	Note 44 Note 44 Note 44
Total	N		RATIO OF N2O-N TO N IN FIRST CROP					TOTAL N AMOUNTS IN KG AND % ENDING AS FOOD/FUEL/OTHER/REMOVED										71.3	71.3	1.44	2.13	1.20	1.42	Note 45
Year	N NH3		ACCORDING TO		IPCC 1996		IPCC 2006	TOTAL N AMOUNTS IN KG AND % VOLATILISATION/NH3										2.2	2.2	0.02		0.02		Note 45
1-10	N leach		FIRST YEAR		0.0298		0.0199	TOTAL N AMOUNTS IN KG AND % LEACHED										26.5	26.5	0.66		0.20		Note 45
			TOTAL		0.0298		0.0199	TOTAL N AMOUNTS IN KG AND %										100.0	100.0					Note 45

N2O-N/N in food/beverage/fuel/other No use No use Note 46

Year	N	1	1	100.0	100.0	0	100	229	1	0	97.8	-1	0.0	0.0	0.0	0.0	0.0	0	0.0	1.44	2.13	1.20	1.42	Note 47
1	Vol/NH3	N	YES	0.0	2.2	NON	100.00	WRB	1.113	NO	26.5	Waste	0.84				0.0	None	0.0	0.02	0.0125	0.02	0.0100	Note 48
	N leach		1.022	1.000		ORG	1.00	1.113	0.271	0.0	26.5	moved	0				17.5		0.0	0.66	0.0000	0.20	0.0000	Note 49
Year	N	0	1	0.0	0.0	0	100	11	0	0	0.0	-1	0.0	0.0	0.0	0.0	0.0	0	0.0	0.00	0.00	0.00	0.00	Note 47
2	Vol/NH3	None	YES	0.0	0.0	NON	100.00	NO	1.000	NO	0.0	Waste	0.67				0.0	None	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach		1.000	1.000		ORG	1.00	1.000	0.357	0.0	0.0	moved	0				0.0		0.0	0.00	0.0000	0.00	0.0000	Note 49
Year	N	0	1	0.0	0.0	0	100	11	0	0	0.0	-1	0.0	0.0	0.0	0.0	0.0	0	0.0	0.00	0.00	0.00	0.00	Note 47
3	Vol/NH3	None	YES	0.0	0.0	NON	100.00	NO	1.000	NO	0.0	Waste	0.67				0.0	None	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach		1.000	1.000		ORG	1.00	1.000	0.357	0.0	0.0	moved	0				0.0		0.0	0.00	0.0000	0.00	0.0000	Note 49
Year	N	0	1	0.0	0.0	0	100	1	0	0	0.0	-1	0.0	0.0	0.0	0.0	0.0	0	0.0	0.00	0.00	0.00	0.00	Note 47
4	Vol/NH3	None	YES	0.0	0.0	NON	100.00	NO	1.000	NO	0.0	Waste	0.65				0.0	None	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach		1.000	1.000		ORG	1.00	1.000	0.403	0.0	0.0	moved	0				0.0		0.0	0.00	0.0000	0.00	0.0000	Note 49
Year	N	0	1	0.0	0.0	0	100	10	0	0	0.0	-1	0.0	0.0	0.0	0.0	0.0	0	0.0	0.00	0.00	0.00	0.00	Note 47
5	Vol/NH3	None	YES	0.0	0.0	NON	100.00	NO	1.000	NO	0.0	Waste	0.66				0.0	None	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach		1.000	1.000		ORG	1.00	1.000	0.404	0.0	0.0	moved	0				0.0		0.0	0.00	0.0000	0.00	0.0000	Note 49
Year	N	0	1	0.0	0.0	0	100	229	1	0	0.0	-1	0.0	0.0	0.0	0.0	0.0	0	0.0	0.00	0.00	0.00	0.00	Note 47
6	Vol/NH3	None	YES	0.0	0.0	NON	100.00	NO	1.113	NO	0.0	Waste	0.84				0.0	None	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach		1.000	1.000		ORG	1.00	1.113	0.287	0.0	0.0	moved	0				0.0		0.0	0.00	0.0000	0.00	0.0000	Note 49
Year	N	0	1	0.0	0.0	0	100	11	0	0	0.0	-1	0.0	0.0	0.0	0.0	0.0	0	0.0	0.00	0.00	0.00	0.00	Note 47
7	Vol/NH3	None	YES	0.0	0.0	NON	100.00	NO	1.000	NO	0.0	Waste	0.67				0.0	None	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach		1.000	1.000		ORG	1.00	1.000	0.357	0.0	0.0	moved	0				0.0		0.0	0.00	0.0000	0.00	0.0000	Note 49
Year	N	0	1	0.0	0.0	0	100	11	0	0	0.0	-1	0.0	0.0	0.0	0.0	0.0	0	0.0	0.00	0.00	0.00	0.00	Note 47
8	Vol/NH3	None	YES	0.0	0.0	NON	100.00	NO	1.000	NO	0.0	Waste	0.67				0.0	None	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach		1.000	1.000		ORG	1.00	1.000	0.357	0.0	0.0	moved	0				0.0		0.0	0.00	0.0000	0.00	0.0000	Note 49
Year	N	0	1	0.0	0.0	0	100	1	0	0	0.0	-1	0.0	0.0	0.0	0.0	0.0	0	0.0	0.00	0.00	0.00	0.00	Note 47
9	Vol/NH3	None	YES	0.0	0.0	NON	100.00	NO	1.000	NO	0.0	Waste	0.65				0.0	None	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach		1.000	1.000		ORG	1.00	1.000	0.403	0.0	0.0	moved	0				0.0		0.0	0.00	0.0000	0.00	0.0000	Note 49
Year	N	0	1	0.0	0.0	0	100	10	0	0	0.0	-1	0.0	0.0	0.0	0.0	0.0	0	0.0	0.00	0.00	0.00	0.00	Note 47
10	Vol/NH3	None	YES	0.0	0.0	NON	100.00	NO	1.000	NO	0.0	Waste	0.66				0.0	None	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach		1.000	1.000		ORG	1.00	1.000	0.404	0.0	0.0	moved	0				0.0		0.0	0.00	0.0000	0.00	0.0000	Note 49

Year	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year10	Total	Total/year 1	
Area with crop, ha	0.77	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.77	1.00	Note 50

Possible additional non IPCC N2O-N emissions	Value											Kind of source	Total IPCC and non IPCC N2O		Note 51
N residues emissions, ratio of N2O-N to N:	0.0000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Current crops	2.13	1.42	Note 51
Increased soil N emissions, kg N2O-N/ha:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Total anthropogenic	2.13	1.42	Note 51
Natural background emissions, kg N2O-N/ha:	1.00	0.77	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.77	Total including natural	2.90	2.19	Note 51

C2 N CHAIN CALCULATIONS SHEET C: N CHAINS BASED UPON DANISH VALUES CALCULATIONS By Jacob Bugge Available at www.ppo.bugge.com C2

N CHAIN STARTING WITH N FERTILIZER TO PRODUCE WINTER RAPESEED FOR PPO/BIODIESEL AND WASTE DUMPED IN FIELD AND LOST TO LEACH Note 43
AND CONTINUING WITH NO MANURE TO PRODUCE NOTHING FOR WASTE DUMPED IN FIELD Note 43

Year	Fertlizer/manure # Name	Store 1/0	Amounts Store	Field	Or-ganic 1/0	Nnorm propor tion, %	Crop #	Cereal benefit 1/0	Straw used 1/0	Crop use & leach	Use # Name	Fodder: Uses #21-61 Fed	Food	N crop #71/ #72	Food/ bev #8	Fuel/ other #9	Manure handling # Name	Final N a-mounts	N2O-N emission IPCC 1996 Each	Total	N2O-N emission IPCC 2006 Each	Total	Note 44 Note 44 Note 44
Total	N		RATIO OF N2O-N TO N IN FIRST CROP					TOTAL N AMOUNTS IN KG AND % ENDING AS FOOD/FUEL/OTHER/REMOVED									0.0	0.0	1.44	3.91	1.20	1.95	Note 45
Year	N NH3		ACCORDING TO		IPCC 1996		IPCC 2006			TOTAL N AMOUNTS IN KG AND % VOLATILISATION/NH3								2.2	2.2	0.02		0.02		Note 45
1-10	N leach		FIRST YEAR		0.0548		0.0274			TOTAL N AMOUNTS IN KG AND % LEACHED								97.8	97.8	2.45		0.73		Note 45
			TOTAL		0.0548		0.0274			TOTAL N AMOUNTS IN KG AND %								100.0	100.0					Note 45

N2O-N/N in food/beverage/fuel/other No use No use Note 46

Year	N	1	1	100.0	100.0	0	100	229	1	0	97.8	0	0.0	0.0	0.0	0.0	0.0	0	71.3	1.44	3.91	1.20	1.95	Note 47
1	Vol/NH3	N	YES	0.0	2.2	NON	100.00	WRB	1.113	NO	26.5	Waste	0.84				0.0	None	0.0	0.02	0.0125	0.02	0.0100	Note 48
	N leach		1.022	1.000		ORG	1.00	1.113	0.271	0.0	26.5	in field	0				17.5		71.3	2.45	0.0000	0.73	0.0000	Note 49
Year	N	0	1	0.0	0.0	0	100	11	0	0	0.0	0	0.0	0.0	0.0	0.0	0.0	0	0.0	0.00	0.00	0.00	0.00	Note 47
2	Vol/NH3	None	YES	0.0	0.0	NON	100.00	NO	1.000	NO	0.0	Waste	0.67				0.0	None	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach		1.000	1.000		ORG	1.00	1.000	0.357	0.0	0.0	in field	0				0.0		0.0	0.00	0.0000	0.00	0.0000	Note 49
Year	N	0	1	0.0	0.0	0	100	11	0	0	0.0	0	0.0	0.0	0.0	0.0	0.0	0	0.0	0.00	0.00	0.00	0.00	Note 47
3	Vol/NH3	None	YES	0.0	0.0	NON	100.00	NO	1.000	NO	0.0	Waste	0.67				0.0	None	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach		1.000	1.000		ORG	1.00	1.000	0.357	0.0	0.0	in field	0				0.0		0.0	0.00	0.0000	0.00	0.0000	Note 49
Year	N	0	1	0.0	0.0	0	100	1	0	0	0.0	0	0.0	0.0	0.0	0.0	0.0	0	0.0	0.00	0.00	0.00	0.00	Note 47
4	Vol/NH3	None	YES	0.0	0.0	NON	100.00	NO	1.000	NO	0.0	Waste	0.65				0.0	None	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach		1.000	1.000		ORG	1.00	1.000	0.403	0.0	0.0	in field	0				0.0		0.0	0.00	0.0000	0.00	0.0000	Note 49
Year	N	0	1	0.0	0.0	0	100	10	0	0	0.0	0	0.0	0.0	0.0	0.0	0.0	0	0.0	0.00	0.00	0.00	0.00	Note 47
5	Vol/NH3	None	YES	0.0	0.0	NON	100.00	NO	1.000	NO	0.0	Waste	0.66				0.0	None	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach		1.000	1.000		ORG	1.00	1.000	0.404	0.0	0.0	in field	0				0.0		0.0	0.00	0.0000	0.00	0.0000	Note 49
Year	N	0	1	0.0	0.0	0	100	229	1	0	0.0	0	0.0	0.0	0.0	0.0	0.0	0	0.0	0.00	0.00	0.00	0.00	Note 47
6	Vol/NH3	None	YES	0.0	0.0	NON	100.00	NO	1.113	NO	0.0	Waste	0.84				0.0	None	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach		1.000	1.000		ORG	1.00	1.113	0.287	0.0	0.0	in field	0				0.0		0.0	0.00	0.0000	0.00	0.0000	Note 49
Year	N	0	1	0.0	0.0	0	100	11	0	0	0.0	0	0.0	0.0	0.0	0.0	0.0	0	0.0	0.00	0.00	0.00	0.00	Note 47
7	Vol/NH3	None	YES	0.0	0.0	NON	100.00	NO	1.000	NO	0.0	Waste	0.67				0.0	None	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach		1.000	1.000		ORG	1.00	1.000	0.357	0.0	0.0	in field	0				0.0		0.0	0.00	0.0000	0.00	0.0000	Note 49
Year	N	0	1	0.0	0.0	0	100	11	0	0	0.0	0	0.0	0.0	0.0	0.0	0.0	0	0.0	0.00	0.00	0.00	0.00	Note 47
8	Vol/NH3	None	YES	0.0	0.0	NON	100.00	NO	1.000	NO	0.0	Waste	0.67				0.0	None	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach		1.000	1.000		ORG	1.00	1.000	0.357	0.0	0.0	in field	0				0.0		0.0	0.00	0.0000	0.00	0.0000	Note 49
Year	N	0	1	0.0	0.0	0	100	1	0	0	0.0	0	0.0	0.0	0.0	0.0	0.0	0	0.0	0.00	0.00	0.00	0.00	Note 47
9	Vol/NH3	None	YES	0.0	0.0	NON	100.00	NO	1.000	NO	0.0	Waste	0.65				0.0	None	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach		1.000	1.000		ORG	1.00	1.000	0.403	0.0	0.0	in field	0				0.0		0.0	0.00	0.0000	0.00	0.0000	Note 49
Year	N	0	1	0.0	0.0	0	100	10	0	0	0.0	0	0.0	0.0	0.0	0.0	0.0	0	0.0	0.00	0.00	0.00	0.00	Note 47
10	Vol/NH3	None	YES	0.0	0.0	NON	100.00	NO	1.000	NO	0.0	Waste	0.66				0.0	None	0.0	0.00	0.0125	0.00	0.0100	Note 48
	N leach		1.000	1.000		ORG	1.00	1.000	0.404	0.0	0.0	in field	0				0.0		0.0	0.00	0.0000	0.00	0.0000	Note 49

Year	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year10	Total	Total/year 1	
Area with crop, ha	0.77	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.77	1.00	Note 50

Possible additional non IPCC N2O-N emissions	Value											Kind of source	Total IPCC and non IPCC N2O		Note 51
N residues emissions, ratio of N2O-N to N:	0.0000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Current crops	3.91	1.95	Note 51
Increased soil N emissions, kg N2O-N/ha:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Total anthropogenic	3.91	1.95	Note 51
Natural background emissions, kg N2O-N/ha:	1.00	0.77	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.77	Total including natural	4.68	2.72	Note 51

SUMMARY CATTLE DAIRY

N CHAIN STARTING WITH	N FERTILIZER			TO PRODUCE	WINTER RAPESEED FOR PPO/BIODIESEL AND			CATTLE DAIRY					Note 43
AND CONTINUING WITH	LIQUID CATTLE MANURE			TO PRODUCE	WINTER WHEAT FOR			CATTLE DAIRY					Note 43
Total N	RATIO OF N2O-N TO N IN FIRST CROP			TOTAL N AMOUNTS IN KG AND % ENDING AS FOOD/FUEL/OTHER/REMOVED				28.08	27.78	2.27	3.70	2.17	2.78 Note 45
Year N NH3	ACCORDING TO	IPCC 1996	IPCC 2006	TOTAL N AMOUNTS IN KG AND % VOLATILISATION/NH3				26.26	25.98	0.26		0.26	Note 45
1-10 N leach	FIRST YEAR	0.0310	0.0237	TOTAL N AMOUNTS IN KG AND % LEACHED				46.74	46.24	1.17		0.35	Note 45
	TOTAL	0.0519	0.0390	TOTAL N AMOUNTS IN KG AND %				101.08	100.00				Note 45
N2O-N/N in food/beverage/fuel/other											0.1318		0.0991 Note 46
									Total/year 1				
Area with crop, ha								1.17	1.52				Note 50
Natural background emissions, kg N2O-N/ha:								1.17			4.87		3.95 Note 51
N CHAIN STARTING WITH	N FERTILIZER			TO PRODUCE	WINTER RAPESEED FOR PPO/BIODIESEL AND			CATTLE DAIRY					Note 43
AND CONTINUING WITH	SEPARATED CATTLE MANURE			TO PRODUCE	WINTER WHEAT FOR			CATTLE DAIRY					Note 43
Total N	RATIO OF N2O-N TO N IN FIRST CROP			TOTAL N AMOUNTS IN KG AND % ENDING AS FOOD/FUEL/OTHER/REMOVED				27.08	26.79	2.84	4.29	2.12	2.74 Note 45
Year N NH3	ACCORDING TO	IPCC 1996	IPCC 2006	TOTAL N AMOUNTS IN KG AND % VOLATILISATION/NH3				26.85	26.57	0.27		0.27	Note 45
1-10 N leach	FIRST YEAR	0.0372	0.0236	TOTAL N AMOUNTS IN KG AND % LEACHED				47.13	46.64	1.18		0.35	Note 45
	TOTAL	0.0602	0.0384	TOTAL N AMOUNTS IN KG AND %				101.06	100.00				Note 45
N2O-N/N in food/beverage/fuel/other											0.1584		0.1011 Note 46
									Total/year 1				
Area with crop, ha								1.11	1.44				Note 50
Natural background emissions, kg N2O-N/ha:								1.11			5.40		3.85 Note 51
N CHAIN STARTING WITH	N FERTILIZER			TO PRODUCE	WINTER RAPESEED FOR PPO/BIODIESEL AND			CATTLE DAIRY					Note 43
AND CONTINUING WITH	CATTLE DEEP LITTER			TO PRODUCE	WINTER WHEAT FOR			CATTLE DAIRY					Note 43
Total N	RATIO OF N2O-N TO N IN FIRST CROP			TOTAL N AMOUNTS IN KG AND % ENDING AS FOOD/FUEL/OTHER/REMOVED				24.17	22.17	3.10	4.67	1.92	2.65 Note 45
Year N NH3	ACCORDING TO	IPCC 1996	IPCC 2006	TOTAL N AMOUNTS IN KG AND % VOLATILISATION/NH3				37.09	34.02	0.37		0.37	Note 45
1-10 N leach	FIRST YEAR	0.0435	0.0236	TOTAL N AMOUNTS IN KG AND % LEACHED				47.77	43.81	1.19		0.36	Note 45
	TOTAL	0.0655	0.0372	TOTAL N AMOUNTS IN KG AND %				109.03	100.00				Note 45
N2O-N/N in food/beverage/fuel/other											0.1931		0.1096 Note 46
									Total/year 1				
Area with crop, ha								0.95	1.22				Note 50
Natural background emissions, kg N2O-N/ha:								0.95			5.61		3.59 Note 51
N CHAIN STARTING WITH	N FERTILIZER			TO PRODUCE	WINTER RAPESEED FOR PPO/BIODIESEL AND			CATTLE DAIRY					Note 43
AND CONTINUING WITH	MANURE FROM GRAZING CATTLE			TO PRODUCE	WINTER WHEAT FOR			CATTLE DAIRY					Note 43
Total N	RATIO OF N2O-N TO N IN FIRST CROP			TOTAL N AMOUNTS IN KG AND % ENDING AS FOOD/FUEL/OTHER/REMOVED				25.41	25.41	3.64	5.41	3.25	3.82 Note 45
Year N NH3	ACCORDING TO	IPCC 1996	IPCC 2006	TOTAL N AMOUNTS IN KG AND % VOLATILISATION/NH3				6.71	6.71	0.07		0.07	Note 45
1-10 N leach	FIRST YEAR	0.0439	0.0340	TOTAL N AMOUNTS IN KG AND % LEACHED				67.87	67.87	1.70		0.51	Note 45
	TOTAL	0.0758	0.0536	TOTAL N AMOUNTS IN KG AND %				100.00	100.00				Note 45
N2O-N/N in food/beverage/fuel/other											0.2127		0.1505 Note 46
									Total/year 1				
Area with crop, ha								0.97	1.25				Note 50
Natural background emissions, kg N2O-N/ha:								0.97			6.38		4.79 Note 51

SUMMARY CATTLE BEEF

N CHAIN STARTING WITH	N FERTILIZER			TO PRODUCE	WINTER RAPESEED FOR PPO/BIODIESEL AND		CATTLE BEEF					Note 43
AND CONTINUING WITH	LIQUID CATTLE MANURE			TO PRODUCE	WINTER WHEAT FOR		CATTLE BEEF					Note 43
Total N	RATIO OF N2O-N TO N IN FIRST CROP			TOTAL N AMOUNTS IN KG AND % ENDING AS FOOD/FUEL/OTHER/REMOVED			25.17	24.89	2.33	3.81	2.23	2.87 Note 45
Year N NH3	ACCORDING TO	IPCC 1996	IPCC 2006	TOTAL N AMOUNTS IN KG AND % VOLATILISATION/NH3			27.87	27.56	0.28		0.28	Note 45
1-10 N leach	FIRST YEAR	0.0311	0.0239	TOTAL N AMOUNTS IN KG AND % LEACHED			48.10	47.56	1.20		0.36	Note 45
	TOTAL	0.0534	0.0403	TOTAL N AMOUNTS IN KG AND %			101.15	100.00				Note 45
N2O-N/N in food/beverage/fuel/other										0.1512		0.1142 Note 46
							Total/year 1					
Area with crop, ha							1.20	1.55				Note 50
Natural background emissions, kg N2O-N/ha:							1.20			5.00		4.07 Note 51

N CHAIN STARTING WITH	N FERTILIZER			TO PRODUCE	WINTER RAPESEED FOR PPO/BIODIESEL AND		CATTLE BEEF					Note 43
AND CONTINUING WITH	SEPARATED CATTLE MANURE			TO PRODUCE	WINTER WHEAT FOR		CATTLE BEEF					Note 43
Total N	RATIO OF N2O-N TO N IN FIRST CROP			TOTAL N AMOUNTS IN KG AND % ENDING AS FOOD/FUEL/OTHER/REMOVED			24.22	23.95	2.93	4.43	2.18	2.82 Note 45
Year N NH3	ACCORDING TO	IPCC 1996	IPCC 2006	TOTAL N AMOUNTS IN KG AND % VOLATILISATION/NH3			28.44	28.12	0.28		0.28	Note 45
1-10 N leach	FIRST YEAR	0.0376	0.0238	TOTAL N AMOUNTS IN KG AND % LEACHED			48.47	47.93	1.21		0.36	Note 45
	TOTAL	0.0621	0.0396	TOTAL N AMOUNTS IN KG AND %			101.13	100.00				Note 45
N2O-N/N in food/beverage/fuel/other										0.1828		0.1166 Note 46
							Total/year 1					
Area with crop, ha							1.13	1.47				Note 50
Natural background emissions, kg N2O-N/ha:							0.95			5.56		3.96 Note 51

N CHAIN STARTING WITH	N FERTILIZER			TO PRODUCE	WINTER RAPESEED FOR PPO/BIODIESEL AND		CATTLE BEEF					Note 43
AND CONTINUING WITH	CATTLE DEEP LITTER			TO PRODUCE	WINTER WHEAT FOR		CATTLE BEEF					Note 43
Total N	RATIO OF N2O-N TO N IN FIRST CROP			TOTAL N AMOUNTS IN KG AND % ENDING AS FOOD/FUEL/OTHER/REMOVED			21.47	19.60	3.20	4.81	1.96	2.72 Note 45
Year N NH3	ACCORDING TO	IPCC 1996	IPCC 2006	TOTAL N AMOUNTS IN KG AND % VOLATILISATION/NH3			39.09	35.68	0.39		0.39	Note 45
1-10 N leach	FIRST YEAR	0.0442	0.0238	TOTAL N AMOUNTS IN KG AND % LEACHED			48.98	44.72	1.22		0.37	Note 45
	TOTAL	0.0675	0.0382	TOTAL N AMOUNTS IN KG AND %			109.55	100.00				Note 45
N2O-N/N in food/beverage/fuel/other										0.2242		0.1267 Note 46
							Total/year 1					
Area with crop, ha							0.96	1.24				Note 50
Natural background emissions, kg N2O-N/ha:							0.96			5.77		3.68 Note 51

N CHAIN STARTING WITH	N FERTILIZER			TO PRODUCE	WINTER RAPESEED FOR PPO/BIODIESEL AND		CATTLE BEEF					Note 43
AND CONTINUING WITH	MANURE FROM GRAZING CATTLE			TO PRODUCE	WINTER WHEAT FOR		CATTLE BEEF					Note 43
Total N	RATIO OF N2O-N TO N IN FIRST CROP			TOTAL N AMOUNTS IN KG AND % ENDING AS FOOD/FUEL/OTHER/REMOVED			22.64	22.64	3.78	5.60	3.37	3.97 Note 45
Year N NH3	ACCORDING TO	IPCC 1996	IPCC 2006	TOTAL N AMOUNTS IN KG AND % VOLATILISATION/NH3			6.98	6.98	0.07		0.07	Note 45
1-10 N leach	FIRST YEAR	0.0446	0.0347	TOTAL N AMOUNTS IN KG AND % LEACHED			70.37	70.37	1.76		0.53	Note 45
	TOTAL	0.0786	0.0557	TOTAL N AMOUNTS IN KG AND %			100.00	100.00				Note 45
N2O-N/N in food/beverage/fuel/other										0.2475		0.1753 Note 46
							Total/year 1					
Area with crop, ha							0.98	1.27				Note 50
Natural background emissions, kg N2O-N/ha:							0.98			6.59		4.95 Note 51

SUMMARY PIG PORK

N CHAIN STARTING WITH	N FERTILIZER			TO PRODUCE	WINTER RAPESEED FOR PPO/BIODIESEL AND	PIG PORK						Note 43
AND CONTINUING WITH	LIQUID PIG MANURE			TO PRODUCE	WINTER WHEAT FOR	PIG PORK						Note 43
Total N	RATIO OF N2O-N TO N IN FIRST CROP			TOTAL N AMOUNTS IN KG AND % ENDING AS FOOD/FUEL/OTHER/REMOVED		38.90	38.90	2.00	3.20	1.86	2.38	Note 45
Year N NH3	ACCORDING TO	IPCC 1996	IPCC 2006	TOTAL N AMOUNTS IN KG AND % VOLATILISATION/NH3		22.37	22.37	0.22		0.22		Note 45
1-10 N leach	FIRST YEAR	0.0311	0.0232	TOTAL N AMOUNTS IN KG AND % LEACHED		38.73	38.73	0.97		0.29		Note 45
	TOTAL	0.0448	0.0333	TOTAL N AMOUNTS IN KG AND %		100.00	100.00					Note 45
N2O-N/N in food/beverage/fuel/other									0.0822		0.0611	Note 46
							Total/year 1					
Area with crop, ha						1.06	1.37					Note 50
Natural background emissions, kg N2O-N/ha:						1.06			4.25		3.43	Note 51

N CHAIN STARTING WITH	N FERTILIZER			TO PRODUCE	WINTER RAPESEED FOR PPO/BIODIESEL AND	PIG PORK						Note 43
AND CONTINUING WITH	SEPARATED PIG MANURE			TO PRODUCE	WINTER WHEAT FOR	PIG PORK						Note 43
Total N	RATIO OF N2O-N TO N IN FIRST CROP			TOTAL N AMOUNTS IN KG AND % ENDING AS FOOD/FUEL/OTHER/REMOVED		35.48	35.14	2.24	3.45	1.71	2.27	Note 45
Year N NH3	ACCORDING TO	IPCC 1996	IPCC 2006	TOTAL N AMOUNTS IN KG AND % VOLATILISATION/NH3		28.12	27.85	0.28		0.28		Note 45
1-10 N leach	FIRST YEAR	0.0359	0.0233	TOTAL N AMOUNTS IN KG AND % LEACHED		37.37	37.01	0.93		0.28		Note 45
	TOTAL	0.0484	0.0319	TOTAL N AMOUNTS IN KG AND %		100.97	100.00					Note 45
N2O-N/N in food/beverage/fuel/other									0.0973		0.0640	Note 46
							Total/year 1					
Area with crop, ha						0.95	1.23					Note 50
Natural background emissions, kg N2O-N/ha:						0.95			4.40		3.22	Note 51

N CHAIN STARTING WITH	N FERTILIZER			TO PRODUCE	WINTER RAPESEED FOR PPO/BIODIESEL AND	PIG PORK						Note 43
AND CONTINUING WITH	PIG DEEP LITTER			TO PRODUCE	WINTER WHEAT FOR	PIG PORK						Note 43
Total N	RATIO OF N2O-N TO N IN FIRST CROP			TOTAL N AMOUNTS IN KG AND % ENDING AS FOOD/FUEL/OTHER/REMOVED		33.99	32.52	2.42	3.65	1.60	2.22	Note 45
Year N NH3	ACCORDING TO	IPCC 1996	IPCC 2006	TOTAL N AMOUNTS IN KG AND % VOLATILISATION/NH3		36.03	34.47	0.36		0.36		Note 45
1-10 N leach	FIRST YEAR	0.0400	0.0235	TOTAL N AMOUNTS IN KG AND % LEACHED		34.49	33.00	0.86		0.26		Note 45
	TOTAL	0.0512	0.0312	TOTAL N AMOUNTS IN KG AND %		104.51	100.00					Note 45
N2O-N/N in food/beverage/fuel/other									0.1073		0.0654	Note 46
							Total/year 1					
Area with crop, ha						0.90	1.17					Note 50
Natural background emissions, kg N2O-N/ha:						0.90			4.55		3.12	Note 51

N CHAIN STARTING WITH	N FERTILIZER			TO PRODUCE	WINTER RAPESEED FOR PPO/BIODIESEL AND	PIG PORK						Note 43
AND CONTINUING WITH	MANURE FROM ROOTING PIGS			TO PRODUCE	WINTER WHEAT FOR	PIG PORK						Note 43
Total N	RATIO OF N2O-N TO N IN FIRST CROP			TOTAL N AMOUNTS IN KG AND % ENDING AS FOOD/FUEL/OTHER/REMOVED		39.33	39.33	3.31	4.74	2.94	3.41	Note 45
Year N NH3	ACCORDING TO	IPCC 1996	IPCC 2006	TOTAL N AMOUNTS IN KG AND % VOLATILISATION/NH3		6.03	6.03	0.06		0.06		Note 45
1-10 N leach	FIRST YEAR	0.0415	0.0315	TOTAL N AMOUNTS IN KG AND % LEACHED		54.64	54.64	1.37		0.41		Note 45
	TOTAL	0.0664	0.0478	TOTAL N AMOUNTS IN KG AND %		100.00	100.00					Note 45
N2O-N/N in food/beverage/fuel/other									0.1205		0.0867	Note 46
							Total/year 1					
Area with crop, ha						1.01	1.31					Note 50
Natural background emissions, kg N2O-N/ha:						1.01			5.75		4.42	Note 51

SUMMARY POULTRY MEAT

N CHAIN STARTING WITH	N FERTILIZER			TO PRODUCE	WINTER RAPESEED FOR PPO/BIODIESEL AND		POULTRY MEAT						Note 43
AND CONTINUING WITH	LIQUID POULTRY MANURE			TO PRODUCE	WINTER WHEAT FOR		POULTRY MEAT						Note 43
Total N	RATIO OF N2O-N TO N IN FIRST CROP			TOTAL N AMOUNTS IN KG AND % ENDING AS FOOD/FUEL/OTHER/REMOVED			44.35	44.35	1.91	3.05	1.75	2.21	Note 45
Year N NH3	ACCORDING TO	IPCC 1996	IPCC 2006	TOTAL N AMOUNTS IN KG AND % VOLATILISATION/NH3			16.62	16.62	0.17		0.17		Note 45
1-10 N leach	FIRST YEAR	0.0307	0.0226	TOTAL N AMOUNTS IN KG AND % LEACHED			39.03	39.03	0.98		0.29		Note 45
	TOTAL	0.0428	0.0309	TOTAL N AMOUNTS IN KG AND %			100.00	100.00					Note 45
N2O-N/N in food/beverage/fuel/other										0.0688		0.0497	Note 46
							Total/year 1						
Area with crop, ha						0.98	1.27						Note 50
Natural background emissions, kg N2O-N/ha:						0.98				4.03		3.18	Note 51
N CHAIN STARTING WITH	N FERTILIZER			TO PRODUCE	WINTER RAPESEED FOR PPO/BIODIESEL AND		POULTRY MEAT						Note 43
AND CONTINUING WITH	SEPARATED POULTRY MANURE			TO PRODUCE	WINTER WHEAT FOR		POULTRY MEAT						Note 43
Total N	RATIO OF N2O-N TO N IN FIRST CROP			TOTAL N AMOUNTS IN KG AND % ENDING AS FOOD/FUEL/OTHER/REMOVED			41.81	41.81	2.05	3.16	1.59	2.09	Note 45
Year N NH3	ACCORDING TO	IPCC 1996	IPCC 2006	TOTAL N AMOUNTS IN KG AND % VOLATILISATION/NH3			23.16	23.16	0.23		0.23		Note 45
1-10 N leach	FIRST YEAR	0.0349	0.0229	TOTAL N AMOUNTS IN KG AND % LEACHED			35.03	35.03	0.88		0.26		Note 45
	TOTAL	0.0443	0.0293	TOTAL N AMOUNTS IN KG AND %			100.00	100.00					Note 45
N2O-N/N in food/beverage/fuel/other										0.0755		0.0499	Note 46
							Total/year 1						
Area with crop, ha						0.91	1.18						Note 50
Natural background emissions, kg N2O-N/ha:						0.91				4.07		3.00	Note 51
N CHAIN STARTING WITH	N FERTILIZER			TO PRODUCE	WINTER RAPESEED FOR PPO/BIODIESEL AND		POULTRY MEAT						Note 43
AND CONTINUING WITH	POULTRY DEEP LITTER			TO PRODUCE	WINTER WHEAT FOR		POULTRY MEAT						Note 43
Total N	RATIO OF N2O-N TO N IN FIRST CROP			TOTAL N AMOUNTS IN KG AND % ENDING AS FOOD/FUEL/OTHER/REMOVED			39.14	39.02	2.11	3.25	1.49	2.01	Note 45
Year N NH3	ACCORDING TO	IPCC 1996	IPCC 2006	TOTAL N AMOUNTS IN KG AND % VOLATILISATION/NH3			25.96	25.88	0.26		0.26		Note 45
1-10 N leach	FIRST YEAR	0.0377	0.0233	TOTAL N AMOUNTS IN KG AND % LEACHED			35.20	35.10	0.88		0.26		Note 45
	TOTAL	0.0455	0.0282	TOTAL N AMOUNTS IN KG AND %			100.29	100.00					Note 45
N2O-N/N in food/beverage/fuel/other										0.0830		0.0514	Note 46
							Total/year 1						
Area with crop, ha						0.84	1.09						Note 50
Natural background emissions, kg N2O-N/ha:						0.84				4.09		2.86	Note 51
N CHAIN STARTING WITH	N FERTILIZER			TO PRODUCE	WINTER RAPESEED FOR PPO/BIODIESEL AND		POULTRY MEAT						Note 43
AND CONTINUING WITH	MANURE FROM SCRAPING POULTRY			TO PRODUCE	WINTER WHEAT FOR		POULTRY MEAT						Note 43
Total N	RATIO OF N2O-N TO N IN FIRST CROP			TOTAL N AMOUNTS IN KG AND % ENDING AS FOOD/FUEL/OTHER/REMOVED			42.35	42.35	2.83	4.20	2.49	2.94	Note 45
Year N NH3	ACCORDING TO	IPCC 1996	IPCC 2006	TOTAL N AMOUNTS IN KG AND % VOLATILISATION/NH3			5.05	5.05	0.05		0.05		Note 45
1-10 N leach	FIRST YEAR	0.0396	0.0297	TOTAL N AMOUNTS IN KG AND % LEACHED			52.60	52.60	1.31		0.39		Note 45
	TOTAL	0.0589	0.0412	TOTAL N AMOUNTS IN KG AND %			100.00	100.00					Note 45
N2O-N/N in food/beverage/fuel/other										0.0991		0.0693	Note 46
Area with crop, ha	Total/year 1					0.90	1.16						Note 50
Natural background emissions, kg N2O-N/ha:						0.90				5.09		3.83	Note 51

SUMMARY POULTRY EGGS

N CHAIN STARTING WITH	N FERTILIZER			TO PRODUCE	WINTER RAPESEED FOR PPO/BIODIESEL AND		POULTRY EGGS					Note 43
AND CONTINUING WITH	LIQUID POULTRY MANURE			TO PRODUCE	WINTER WHEAT FOR		POULTRY EGGS					Note 43
Total N	RATIO OF N2O-N TO N IN FIRST CROP			TOTAL N AMOUNTS IN KG AND % ENDING AS FOOD/FUEL/OTHER/REMOVED			23.81	23.81	2.26	3.75	2.16	2.80 Note 45
Year N NH3	ACCORDING TO	IPCC 1996	IPCC 2006	TOTAL N AMOUNTS IN KG AND % VOLATILISATION/NH3			27.58	27.58	0.28		0.28	Note 45
1-10 N leach	FIRST YEAR	0.0313	0.0241	TOTAL N AMOUNTS IN KG AND % LEACHED			48.61	48.61	1.22		0.36	Note 45
	TOTAL	0.0527	0.0393	TOTAL N AMOUNTS IN KG AND %			100.00	100.00				Note 45
N2O-N/N in food/beverage/fuel/other										0.1577		0.1178 Note 46
								Total/year 1				
Area with crop, ha							1.14	1.47				Note 50
Natural background emissions, kg N2O-N/ha:							1.14			4.89		3.94 Note 51
N CHAIN STARTING WITH	N FERTILIZER			TO PRODUCE	WINTER RAPESEED FOR PPO/BIODIESEL AND		POULTRY EGGS					Note 43
AND CONTINUING WITH	SEPARATED POULTRY MANURE			TO PRODUCE	WINTER WHEAT FOR		POULTRY EGGS					Note 43
Total N	RATIO OF N2O-N TO N IN FIRST CROP			TOTAL N AMOUNTS IN KG AND % ENDING AS FOOD/FUEL/OTHER/REMOVED			21.52	21.52	2.47	3.87	1.86	2.55 Note 45
Year N NH3	ACCORDING TO	IPCC 1996	IPCC 2006	TOTAL N AMOUNTS IN KG AND % VOLATILISATION/NH3			37.57	37.57	0.38		0.38	Note 45
1-10 N leach	FIRST YEAR	0.0377	0.0246	TOTAL N AMOUNTS IN KG AND % LEACHED			40.91	40.91	1.02		0.31	Note 45
	TOTAL	0.0542	0.0357	TOTAL N AMOUNTS IN KG AND %			100.00	100.00				Note 45
N2O-N/N in food/beverage/fuel/other										0.1797		0.1183 Note 46
								Total/year 1				
Area with crop, ha							1.01	1.31				Note 50
Natural background emissions, kg N2O-N/ha:							1.01			4.87		3.55 Note 51
N CHAIN STARTING WITH	N FERTILIZER			TO PRODUCE	WINTER RAPESEED FOR PPO/BIODIESEL AND		POULTRY EGGS					Note 43
AND CONTINUING WITH	POULTRY DEEP LITTER			TO PRODUCE	WINTER WHEAT FOR		POULTRY EGGS					Note 43
Total N	RATIO OF N2O-N TO N IN FIRST CROP			TOTAL N AMOUNTS IN KG AND % ENDING AS FOOD/FUEL/OTHER/REMOVED			19.30	19.21	2.52	3.94	1.67	2.38 Note 45
Year N NH3	ACCORDING TO	IPCC 1996	IPCC 2006	TOTAL N AMOUNTS IN KG AND % VOLATILISATION/NH3			40.61	40.42	0.41		0.41	Note 45
1-10 N leach	FIRST YEAR	0.0420	0.0252	TOTAL N AMOUNTS IN KG AND % LEACHED			40.56	40.37	1.01		0.30	Note 45
	TOTAL	0.0552	0.0334	TOTAL N AMOUNTS IN KG AND %			100.47	100.00				Note 45
N2O-N/N in food/beverage/fuel/other										0.2040		0.1233 Note 46
								Total/year 1				
Area with crop, ha							0.89	1.15				Note 50
Natural background emissions, kg N2O-N/ha:							0.89			4.82		3.27 Note 51
N CHAIN STARTING WITH	N FERTILIZER			TO PRODUCE	WINTER RAPESEED FOR PPO/BIODIESEL AND		POULTRY EGGS					Note 43
AND CONTINUING WITH	MANURE FROM SCRAPING POULTRY			TO PRODUCE	WINTER WHEAT FOR		POULTRY EGGS					Note 43
Total N	RATIO OF N2O-N TO N IN FIRST CROP			TOTAL N AMOUNTS IN KG AND % ENDING AS FOOD/FUEL/OTHER/REMOVED			21.99	21.99	3.81	5.65	3.40	4.00 Note 45
Year N NH3	ACCORDING TO	IPCC 1996	IPCC 2006	TOTAL N AMOUNTS IN KG AND % VOLATILISATION/NH3			7.05	7.05	0.07		0.07	Note 45
1-10 N leach	FIRST YEAR	0.0450	0.0351	TOTAL N AMOUNTS IN KG AND % LEACHED			70.96	70.96	1.77		0.53	Note 45
	TOTAL	0.0793	0.0562	TOTAL N AMOUNTS IN KG AND %			100.00	100.00				Note 45
N2O-N/N in food/beverage/fuel/other										0.2569		0.1820 Note 46
								Total/year 1				
Area with crop, ha							0.98	1.27				Note 50
Natural background emissions, kg N2O-N/ha:							0.98			6.63		4.99 Note 51

SUMMARY SHEEP AND GOATS

N CHAIN STARTING WITH	N FERTILIZER			TO PRODUCE	WINTER RAPESEED FOR PPO/BIODIESEL AND			SHEEP MILK/MUTTON					Note 43
AND CONTINUING WITH	SHEEP DEEP LITTER			TO PRODUCE	WINTER WHEAT FOR			SHEEP MILK/MUTTON					Note 43
Total N	RATIO OF N2O-N TO N IN FIRST CROP			TOTAL N AMOUNTS IN KG AND % ENDING AS FOOD/FUEL/OTHER/REMOVED				14.99	13.33	4.34	6.54	2.72	3.49 Note 45
Year N NH3	ACCORDING TO	IPCC 1996	IPCC 2006	TOTAL N AMOUNTS IN KG AND % VOLATILISATION/NH3				15.79	14.04	0.16		0.16	Note 45
1-10 N leach	FIRST YEAR	0.0457	0.0248	TOTAL N AMOUNTS IN KG AND % LEACHED				81.69	72.63	2.04		0.61	Note 45
	TOTAL	0.0918	0.0489	TOTAL N AMOUNTS IN KG AND %				112.47	100.00				Note 45
N2O-N/N in food/beverage/fuel/other											0.4363		0.2327 Note 46
								Total/year 1					
Area with crop, ha								1.11	1.44				Note 50
Natural background emissions, kg N2O-N/ha:								1.11			7.66		4.60 Note 51
N CHAIN STARTING WITH	N FERTILIZER			TO PRODUCE	WINTER RAPESEED FOR PPO/BIODIESEL AND			SHEEP MILK/MUTTON					Note 43
AND CONTINUING WITH	MANURE FROM GRAZING SHEEP			TO PRODUCE	WINTER WHEAT FOR			SHEEP MILK/MUTTON					Note 43
Total N	RATIO OF N2O-N TO N IN FIRST CROP			TOTAL N AMOUNTS IN KG AND % ENDING AS FOOD/FUEL/OTHER/REMOVED				13.45	13.45	4.22	6.26	2.16	2.83 Note 45
Year N NH3	ACCORDING TO	IPCC 1996	IPCC 2006	TOTAL N AMOUNTS IN KG AND % VOLATILISATION/NH3				7.89	7.89	0.08		0.08	Note 45
1-10 N leach	FIRST YEAR	0.0470	0.0199	TOTAL N AMOUNTS IN KG AND % LEACHED				78.66	78.66	1.97		0.59	Note 45
	TOTAL	0.0878	0.0396	TOTAL N AMOUNTS IN KG AND %				100.00	100.00				Note 45
N2O-N/N in food/beverage/fuel/other											0.4656		0.2102 Note 46
								Total/year 1					
Area with crop, ha								1.02	1.32				Note 50
Natural background emissions, kg N2O-N/ha:								1.02			7.28		3.85 Note 51
N CHAIN STARTING WITH	N FERTILIZER			TO PRODUCE	WINTER RAPESEED FOR PPO/BIODIESEL AND			GOAT MILK/MEAT					Note 43
AND CONTINUING WITH	GOAT DEEP LITTER			TO PRODUCE	WINTER WHEAT FOR			GOAT MILK/MEAT					Note 43
Total N	RATIO OF N2O-N TO N IN FIRST CROP			TOTAL N AMOUNTS IN KG AND % ENDING AS FOOD/FUEL/OTHER/REMOVED				8.76	7.87	3.63	5.54	2.21	3.09 Note 45
Year N NH3	ACCORDING TO	IPCC 1996	IPCC 2006	TOTAL N AMOUNTS IN KG AND % VOLATILISATION/NH3				44.11	39.61	0.44		0.44	Note 45
1-10 N leach	FIRST YEAR	0.0465	0.0251	TOTAL N AMOUNTS IN KG AND % LEACHED				58.49	52.52	1.46		0.44	Note 45
	TOTAL	0.0777	0.0433	TOTAL N AMOUNTS IN KG AND %				111.36	100.00				Note 45
N2O-N/N in food/beverage/fuel/other											0.6320		0.3524 Note 46
								Total/year 1					
Area with crop, ha								1.03	1.34				Note 50
Natural background emissions, kg N2O-N/ha:								1.03			6.57		4.12 Note 51
N CHAIN STARTING WITH	N FERTILIZER			TO PRODUCE	WINTER RAPESEED FOR PPO/BIODIESEL AND			GOAT MILK/MEAT					Note 43
AND CONTINUING WITH	MANURE FROM GRAZING GOATS			TO PRODUCE	WINTER WHEAT FOR			GOAT MILK/MEAT					Note 43
Total N	RATIO OF N2O-N TO N IN FIRST CROP			TOTAL N AMOUNTS IN KG AND % ENDING AS FOOD/FUEL/OTHER/REMOVED				9.25	9.25	4.42	6.56	3.10	3.80 Note 45
Year N NH3	ACCORDING TO	IPCC 1996	IPCC 2006	TOTAL N AMOUNTS IN KG AND % VOLATILISATION/NH3				8.30	8.30	0.08		0.08	Note 45
1-10 N leach	FIRST YEAR	0.0479	0.0289	TOTAL N AMOUNTS IN KG AND % LEACHED				82.45	82.45	2.06		0.62	Note 45
	TOTAL	0.0920	0.0533	TOTAL N AMOUNTS IN KG AND %				100.00	100.00				Note 45
N2O-N/N in food/beverage/fuel/other											0.7090		0.4106 Note 46
								Total/year 1					
Area with crop, ha								1.04	1.35				Note 50
Natural background emissions, kg N2O-N/ha:								1.04			7.60		4.84 Note 51

SUMMARY N CROP

N CHAIN STARTING WITH	N FERTILIZER			TO PRODUCE	WINTER RAPESEED FOR PPO/BIODIESEL AND	HIGH N CROP						Note 43
AND CONTINUING WITH	GREEN MANURE HIGH N			TO PRODUCE	WINTER WHEAT FOR	CATTLE DAIRY						Note 43
Total N	RATIO OF N2O-N TO N IN FIRST CROP			TOTAL N AMOUNTS IN KG AND % ENDING AS FOOD/FUEL/OTHER/REMOVED		10.84	10.79	2.66	4.42	2.35	3.10	Note 45
Year N NH3	ACCORDING TO	IPCC 1996	IPCC 2006	TOTAL N AMOUNTS IN KG AND % VOLATILISATION/NH3		31.72	31.56	0.32		0.32		Note 45
1-10 N leach	FIRST YEAR	0.0298	0.0199	TOTAL N AMOUNTS IN KG AND % LEACHED		57.95	57.65	1.45		0.43		Note 45
	TOTAL	0.0621	0.0435	TOTAL N AMOUNTS IN KG AND %		100.52	100.00					Note 45
N2O-N/N in food/beverage/fuel/other									0.4080		0.2859	Note 46
							Total/year 1					
Area with crop, ha						1.39	1.80					Note 50
Natural background emissions, kg N2O-N/ha:						1.39			5.81		4.49	Note 51

N amount in reference crop year 2 after use of N crop as green manure, kg	32.07	Note 47
N amount in reference crop year 1 after synthetic N fertilizer, kg	71.29	Note 47
Relative value of green manure, %	44.99	

N CHAIN STARTING WITH	N FERTILIZER			TO PRODUCE	WINTER RAPESEED FOR PPO/BIODIESEL AND	LOW N CROP						Note 43
AND CONTINUING WITH	GREEN MANURE LOW N			TO PRODUCE	WINTER WHEAT FOR	CATTLE DAIRY						Note 43
Total N	RATIO OF N2O-N TO N IN FIRST CROP			TOTAL N AMOUNTS IN KG AND % ENDING AS FOOD/FUEL/OTHER/REMOVED		6.19	6.17	2.49	4.44	2.15	2.92	Note 45
Year N NH3	ACCORDING TO	IPCC 1996	IPCC 2006	TOTAL N AMOUNTS IN KG AND % VOLATILISATION/NH3		26.70	26.62	0.27		0.27		Note 45
1-10 N leach	FIRST YEAR	0.0298	0.0199	TOTAL N AMOUNTS IN KG AND % LEACHED		67.41	67.21	1.69		0.51		Note 45
	TOTAL	0.0622	0.0409	TOTAL N AMOUNTS IN KG AND %		100.30	100.00					Note 45
N2O-N/N in food/beverage/fuel/other									0.7174		0.4719	Note 46
							Total/year 1					
Area with crop, ha						1.12	1.46					Note 50
Natural background emissions, kg N2O-N/ha:						1.12			5.56		4.04	Note 51

N amount in reference crop year 2 after use of N crop as green manure, kg	18.33	Note 47
N amount in reference crop year 1 after synthetic N fertilizer, kg	71.29	Note 47
Relative value of green manure, %	25.71	

SUMMARY FOOD, FUEL, AND WASTE

N CHAIN STARTING WITH	N FERTILIZER			TO PRODUCE	WINTER RAPESEED FOR PPO/BIODIESEL AND	FOOD						Note 43
AND CONTINUING WITH	NO MANURE			TO PRODUCE	NOTHING FOR	FOOD						Note 43
Total N	RATIO OF N2O-N TO N IN FIRST CROP			TOTAL N AMOUNTS IN KG AND % ENDING AS FOOD/FUEL/OTHER/REMOVED		71.29	71.29	1.44	2.13	1.20	1.42	Note 45
Year N NH3	ACCORDING TO	IPCC 1996	IPCC 2006	TOTAL N AMOUNTS IN KG AND % VOLATILISATION/NH3		2.20	2.20	0.02		0.02		Note 45
1-10 N leach	FIRST YEAR	0.0298	0.0199	TOTAL N AMOUNTS IN KG AND % LEACHED		26.51	26.51	0.66		0.20		Note 45
	TOTAL	0.0298	0.0199	TOTAL N AMOUNTS IN KG AND %		100.00	100.00					Note 45
N2O-N/N in food/beverage/fuel/other									0.0298		0.0199	Note 46
							Total/year 1					
Area with crop, ha						0.77	1.00					Note 50
Natural background emissions, kg N2O-N/ha:						0.77			2.90		2.19	Note 51
N CHAIN STARTING WITH	N FERTILIZER			TO PRODUCE	WINTER RAPESEED FOR PPO/BIODIESEL AND	FUEL						Note 43
AND CONTINUING WITH	NO MANURE			TO PRODUCE	NOTHING FOR	FUEL						Note 43
Total N	RATIO OF N2O-N TO N IN FIRST CROP			TOTAL N AMOUNTS IN KG AND % ENDING AS FOOD/FUEL/OTHER/REMOVED		71.29	71.29	1.44	2.13	1.20	1.42	Note 45
Year N NH3	ACCORDING TO	IPCC 1996	IPCC 2006	TOTAL N AMOUNTS IN KG AND % VOLATILISATION/NH3		2.20	2.20	0.02		0.02		Note 45
1-10 N leach	FIRST YEAR	0.0298	0.0199	TOTAL N AMOUNTS IN KG AND % LEACHED		26.51	26.51	0.66		0.20		Note 45
	TOTAL	0.0298	0.0199	TOTAL N AMOUNTS IN KG AND %		100.00	100.00					Note 45
N2O-N/N in food/beverage/fuel/other									0.0298		0.0199	Note 46
							Total/year 1					
Area with crop, ha						0.77	1.00					Note 50
Natural background emissions, kg N2O-N/ha:						0.77			2.90		2.19	Note 51
N CHAIN STARTING WITH	N FERTILIZER			TO PRODUCE	WINTER RAPESEED FOR PPO/BIODIESEL AND	WASTE DUMPED ELSEWHERE WITHOUT LEACHING						Note 43
AND CONTINUING WITH	NO MANURE			TO PRODUCE	NOTHING FOR	WASTE, DUMPED ELSEWHERE						Note 43
Total N	RATIO OF N2O-N TO N IN FIRST CROP			TOTAL N AMOUNTS IN KG AND % ENDING AS FOOD/FUEL/OTHER/REMOVED		71.29	71.29	1.44	2.13	1.20	1.42	Note 45
Year N NH3	ACCORDING TO	IPCC 1996	IPCC 2006	TOTAL N AMOUNTS IN KG AND % VOLATILISATION/NH3		2.20	2.20	0.02		0.02		Note 45
1-10 N leach	FIRST YEAR	0.0298	0.0199	TOTAL N AMOUNTS IN KG AND % LEACHED		26.51	26.51	0.66		0.20		Note 45
	TOTAL	0.0298	0.0199	TOTAL N AMOUNTS IN KG AND %		100.00	100.00					Note 45
N2O-N/N in food/beverage/fuel/other									No use		No use	Note 46
							Total/year 1					
Area with crop, ha						0.77	1.00					Note 50
Natural background emissions, kg N2O-N/ha:						0.77			2.90		2.19	Note 51
N CHAIN STARTING WITH	N FERTILIZER			TO PRODUCE	WINTER RAPESEED FOR PPO/BIODIESEL AND	WASTE DUMPED IN FIELD AND LOST TO LEACH						Note 43
AND CONTINUING WITH	NO MANURE			TO PRODUCE	NOTHING FOR	WASTE DUMPED IN FIELD						Note 43
Total N	RATIO OF N2O-N TO N IN FIRST CROP			TOTAL N AMOUNTS IN KG AND % ENDING AS FOOD/FUEL/OTHER/REMOVED		0.00	0.00	1.44	3.91	1.20	1.95	Note 45
Year N NH3	ACCORDING TO	IPCC 1996	IPCC 2006	TOTAL N AMOUNTS IN KG AND % VOLATILISATION/NH3		2.20	2.20	0.02		0.02		Note 45
1-10 N leach	FIRST YEAR	0.0548	0.0274	TOTAL N AMOUNTS IN KG AND % LEACHED		97.80	97.80	2.45		0.73		Note 45
	TOTAL	0.0548	0.0274	TOTAL N AMOUNTS IN KG AND %		100.00	100.00					Note 45
N2O-N/N in food/beverage/fuel/other									No use		No use	Note 46
							Total/year 1					
Area with crop, ha						0.77	1.00					Note 50
Natural background emissions, kg N2O-N/ha:						0.77			4.68		2.72	Note 51

SUMMARY CATTLE

RATIO OF N2O-N TO N IN FIRST CROP ACCORDING TO	IPCC 1996 MIN	IPCC 1996 MAX	IPCC 2006 MIN	IPCC 2006 MAX
FIRST YEAR	0.0310	0.0446	0.0236	0.0347
TOTAL	0.0519	0.0786	0.0372	0.0557

N2O-N emission IPCC 1996 MIN	MAX	N2O-N emission IPCC 2006 MIN	MAX
3.70	5.60	2.65	3.97

N2O-N/N in food/beverage/fuel/other	MIN	MAX	MIN	MAX
	0.1318	0.2475	0.0991	0.1753

Natural background emissions in kg N2O-N/ha, area with crop in ha, and total emissions in kg N2O-N/ha:	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX
	0.95	1.20	0.95	1.27	4.87	6.59	3.59	4.95

SUMMARY PIGS

RATIO OF N2O-N TO N IN FIRST CROP ACCORDING TO	IPCC 1996 MIN	IPCC 1996 MAX	IPCC 2006 MIN	IPCC 2006 MAX
FIRST YEAR	0.0311	0.0415	0.0232	0.0315
TOTAL	0.0448	0.0664	0.0312	0.0478

N2O-N emission IPCC 1996 MIN	MAX	N2O-N emission IPCC 2006 MIN	MAX
3.2	4.74	2.22	3.41

N2O-N/N in food/beverage/fuel/other	MIN	MAX	MIN	MAX
	0.0822	0.1205	0.0611	0.0867

Natural background emissions in kg N2O-N/ha, area with crop in ha, and total emissions in kg N2O-N/ha:	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX
	0.90	1.06	0.90	1.06	4.25	5.75	3.12	4.42

SUMMARY POULTRY

RATIO OF N2O-N TO N IN FIRST CROP ACCORDING TO	IPCC 1996 MIN	IPCC 1996 MAX	IPCC 2006 MIN	IPCC 2006 MAX
FIRST YEAR	0.0307	0.0450	0.0226	0.0351
TOTAL	0.0428	0.0793	0.0282	0.0562

N2O-N emission IPCC 1996 MIN	MAX	N2O-N emission IPCC 2006 MIN	MAX
3.05	5.65	2.01	4

N2O-N/N in food/beverage/fuel/other	MIN	MAX	MIN	MAX
	0.0688	0.2569	0.0497	0.1820

Natural background emissions in kg N2O-N/ha, area with crop in ha, and total emissions in kg N2O-N/ha:	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX
	0.84	1.14	0.84	1.14	4.03	6.63	2.86	4.99

SUMMARY SHEEP AND GOATS

RATIO OF N2O-N TO N IN FIRST CROP ACCORDING TO	IPCC 1996 MIN	IPCC 1996 MAX	IPCC 2006 MIN	IPCC 2006 MAX
FIRST YEAR	0.0457	0.0479	0.0199	0.0289
TOTAL	0.0777	0.0920	0.0396	0.0533

N2O-N emission IPCC 1996 MIN	MAX	N2O-N emission IPCC 2006 MIN	MAX
5.54	6.56	2.83	3.8

N2O-N/N in food/beverage/fuel/other	MIN	MAX	MIN	MAX
	0.4363	0.7090	0.2102	0.4106

Natural background emissions in kg N2O-N/ha, area with crop in ha, and total emissions in kg N2O-N/ha:	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX
	1.02	1.11	1.02	1.11	6.57	7.66	3.85	4.84

SUMMARY FODDER

RATIO OF N2O-N TO N IN FIRST CROP ACCORDING TO	IPCC 1996 MIN	IPCC 1996 MAX	IPCC 2006 MIN	IPCC 2006 MAX
FIRST YEAR	0.0307	0.0479	0.0199	0.0351
TOTAL	0.0428	0.0920	0.0282	0.0562

N2O-N emission IPCC 1996 MIN	MAX	N2O-N emission IPCC 2006 MIN	MAX
3.05	6.56	2.01	4.00

N2O-N/N in food/beverage/fuel/other	MIN	MAX	MIN	MAX
	0.0688	0.7090	0.0497	0.4106

Natural background emissions in kg N2O-N/ha, area with crop in ha, and total emissions in kg N2O-N/ha:	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX
	0.84	1.20	0.84	1.27	4.03	7.66	2.86	4.99