The Cool Farm Tool

Version 2.0 - beta 3

YOUR RESULTS SO
by land
by produ

HOME | GENERAL | CROPS | SEQUESTRATION | LIVESTOCK | E

on this page: 1. License 2. Disclaimer 3. General Use 4. Credits

License

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General Use

Contents of this Calculator

1. **General Information:** Location, Climate, Farm Size

2. Crop Management: agricultural operations, crop protection, fertilis
3. Sequestration: changes to longer term carbon stocks in the syste
4. Livestock: feed mix, enteric fermentation, N excretion, manure ma
5. Field energy use: irrigation, farm machinery, etc
6. Primary processing: factory storage, etc
7. Transport: by road, rail, ship, or air, of produce from the farm
8. Results and Graphs: detailed summary of results from your input
9. Default Factors: This page includes editable default values.

Legend

Average Annual Temperature	xyz	**A light orange cell color indicates a pl**
Average Annual Temperature*	xyz	**An asterisk (*) and/or a dark orange ir**
Average annual temperature	xyz	**Areas enclosed by a dashed green bo available for this entry. Click on these**

Data entry and editing

You may complete whichever sections you have data for, bearing in r analyses are only available when the relevant input sections are com|

Some worksheets are locked by default to prevent users from accide password to unlock them is "StayCool"

Credits

It is a development of the Cool Farm Tool Version 2.0 beta 3 based on

FAR

area: 1,630,541.8 kg CO2 eq Per hectare

ction: 20.6 kg CO2 eq Per kilogram

ENERGY USE	PROCESSING	TRANSPORT	RESULTS

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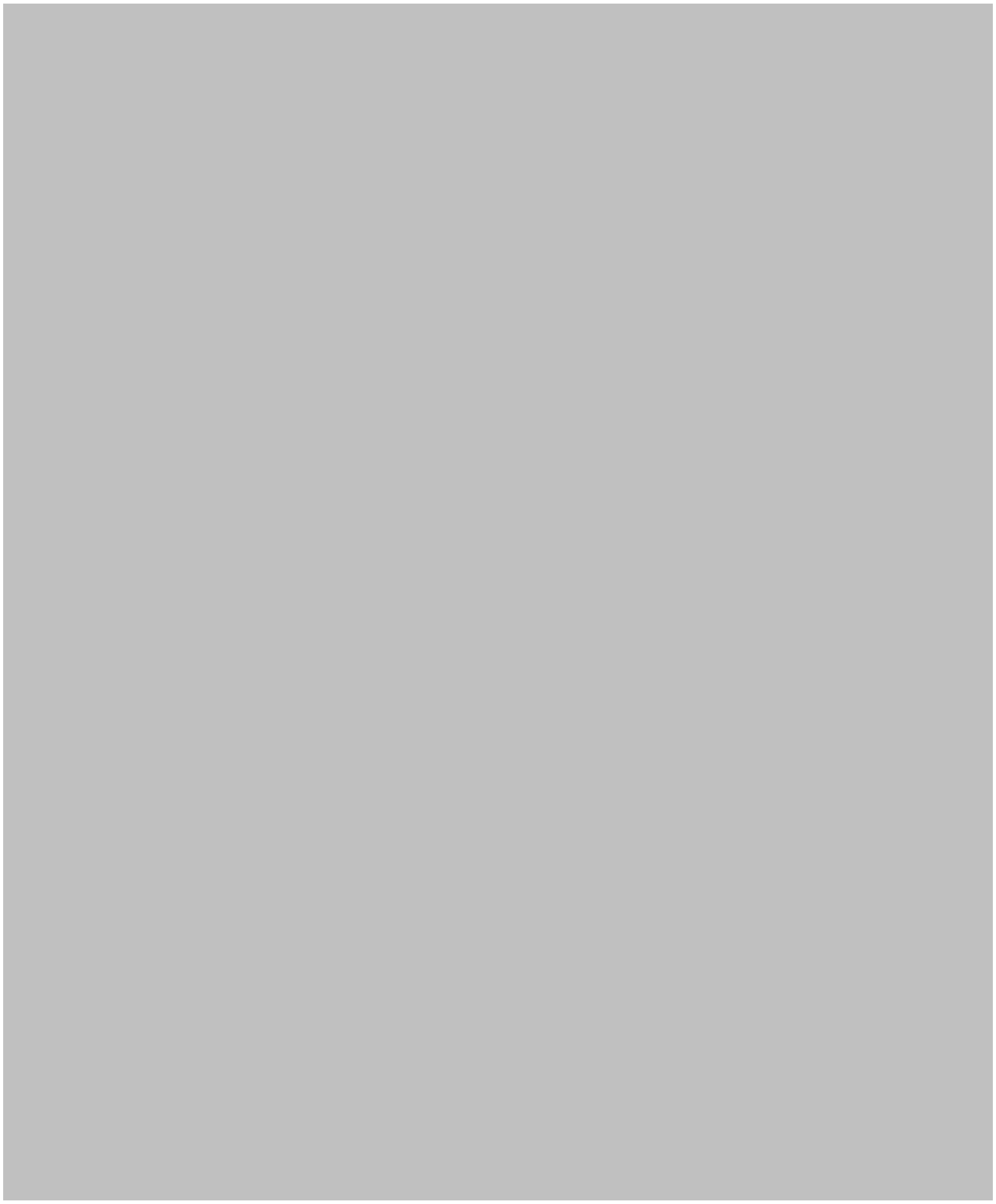
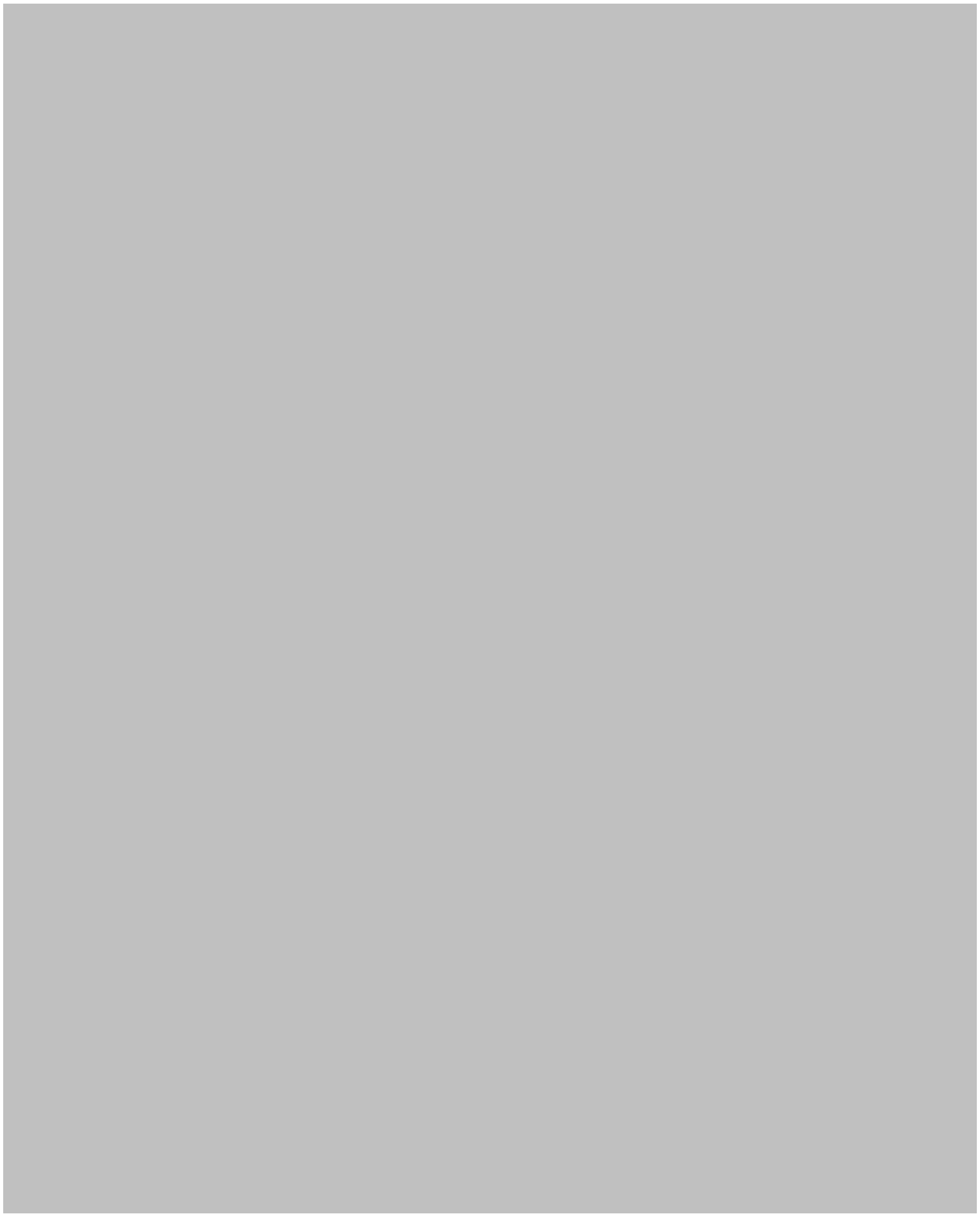
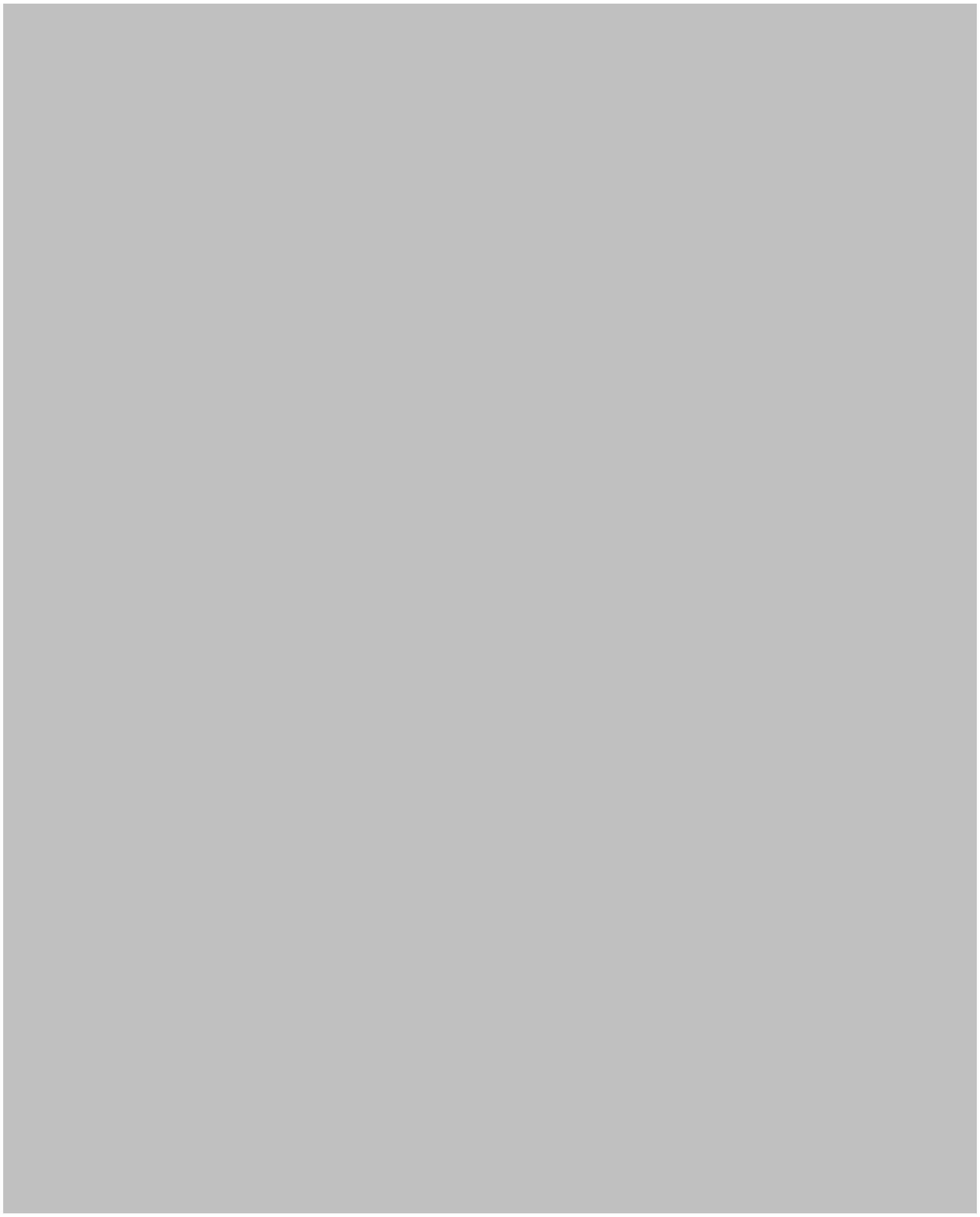
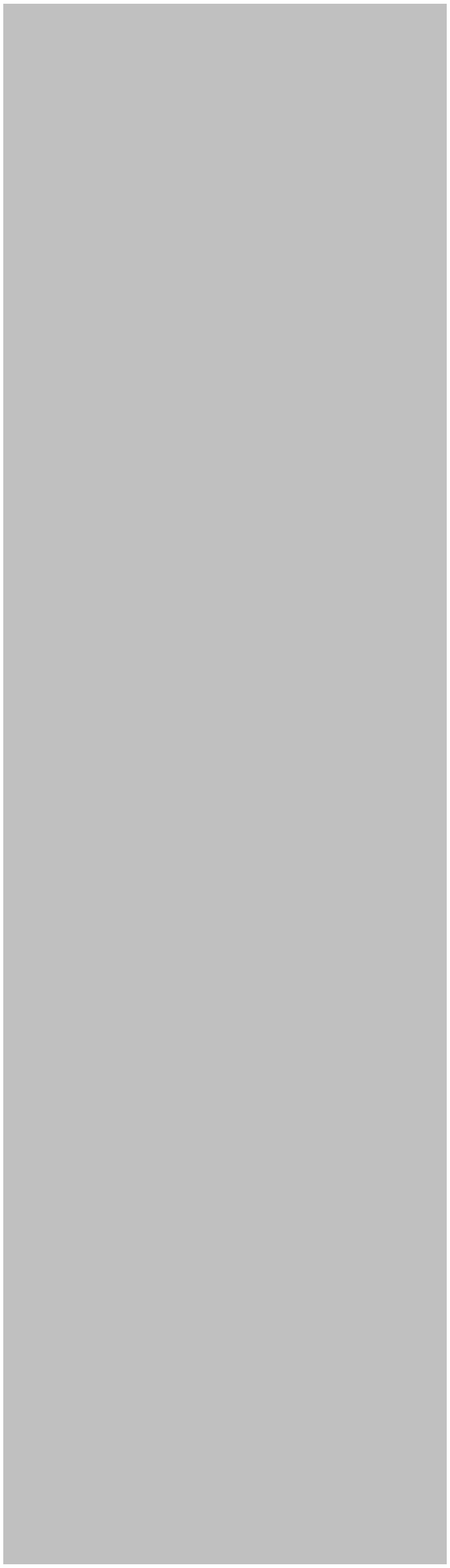
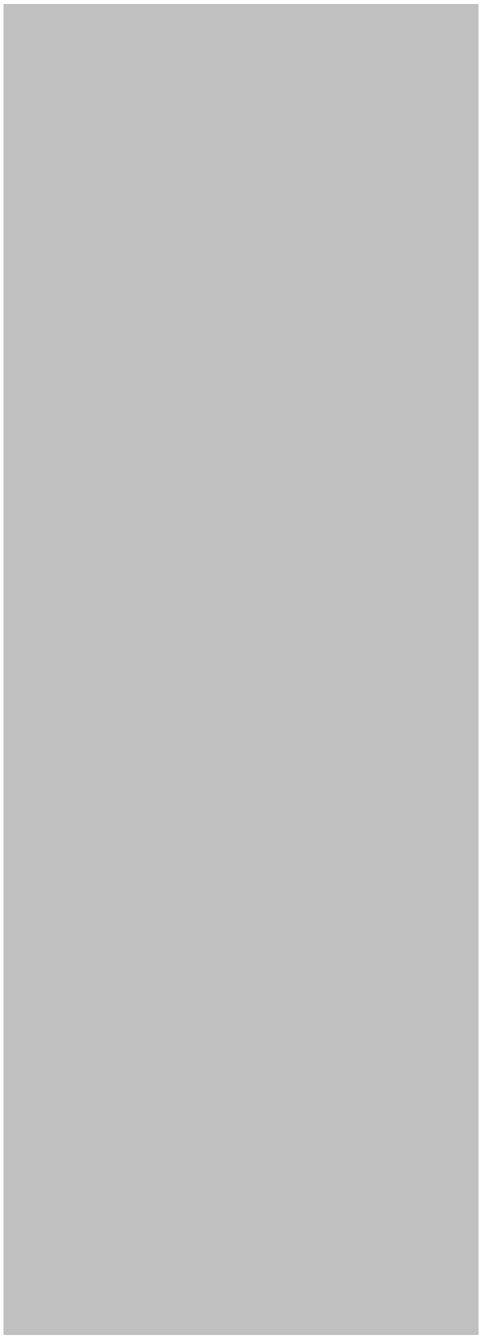










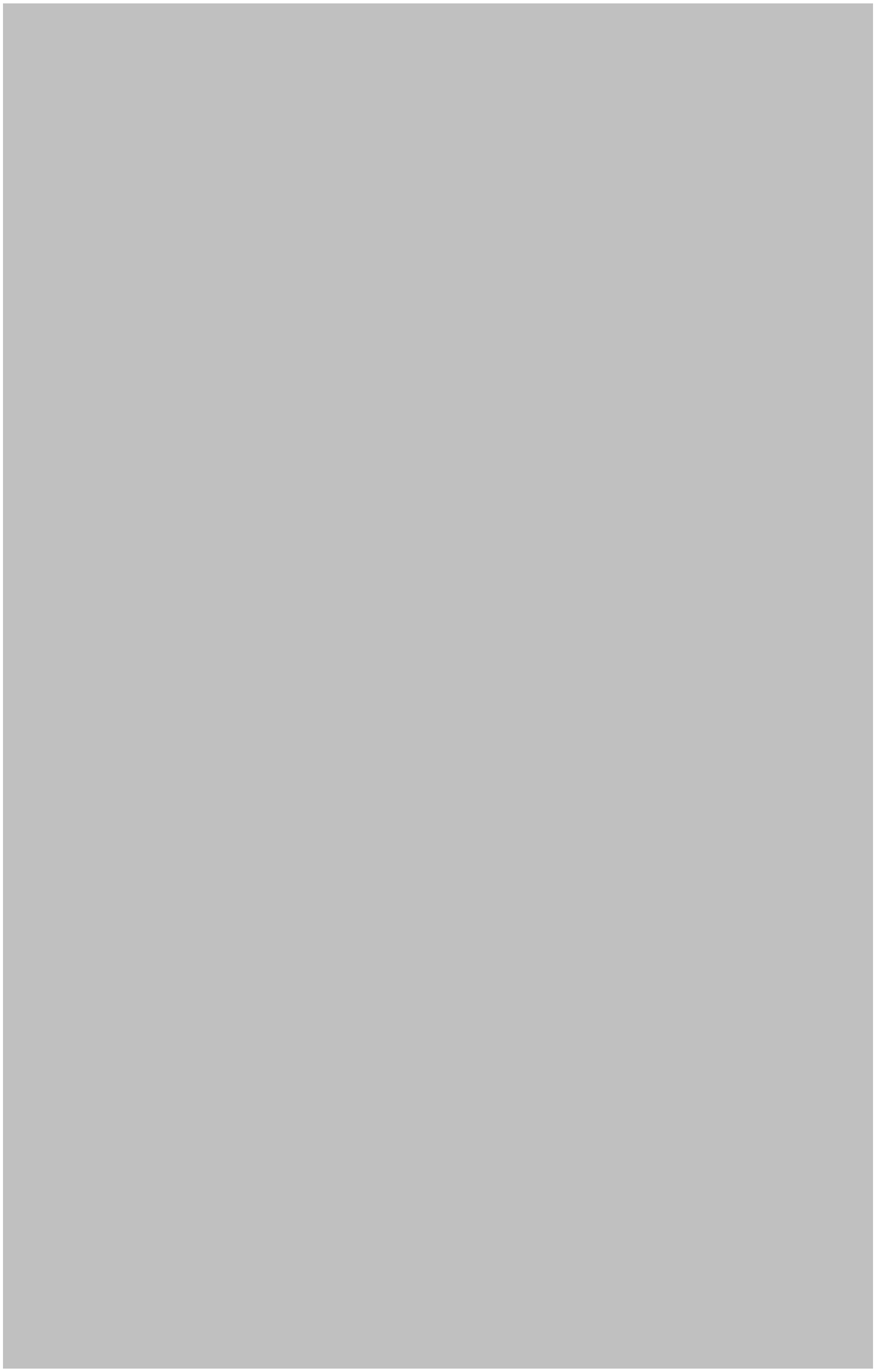
General Info

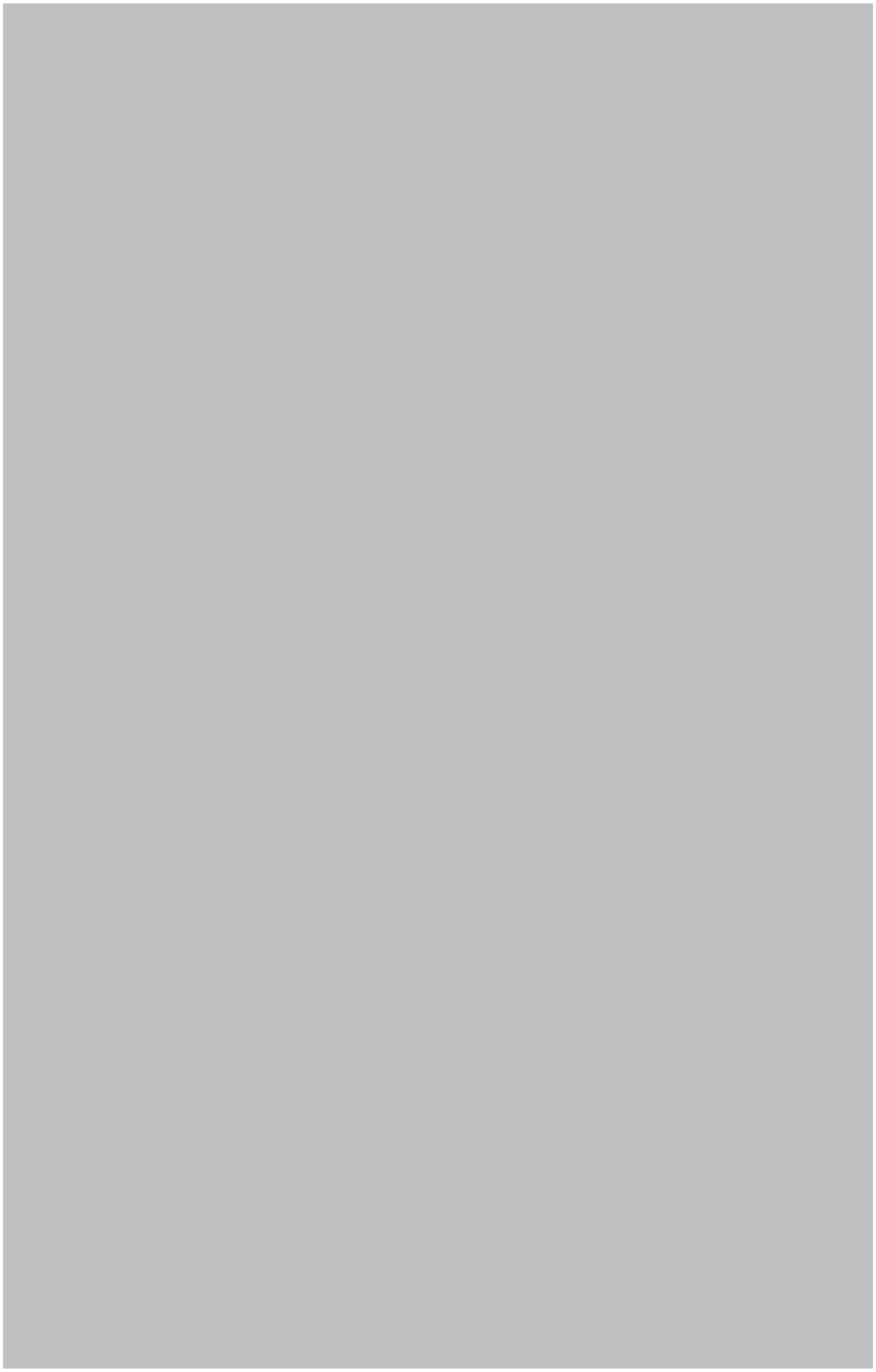
YOUR R

HOME | GENERAL | CROPS | SEQUESTRATION | LIVESTOC

on this page: 1. Location 2. Area 3. Climate

Location	**Location**	Boyaca Santa Sofia
	Year	2016
	Country/U.S. State*	- Colombia
	Default Unit system*	Metric
Area	**Product**	Tomate
	Production Area*	1
	Fresh product from production area*	78987.6
	Finished product from total area*	78987.6
Climate	**Climate***	Temperate
	Average annual temperature (if known)	17.30





ESULTS SO FAR

by land area:	1,630,541.8	kg CO2 eq	Per hectare
by production:	20.6	kg CO2 eq	Per kilogram

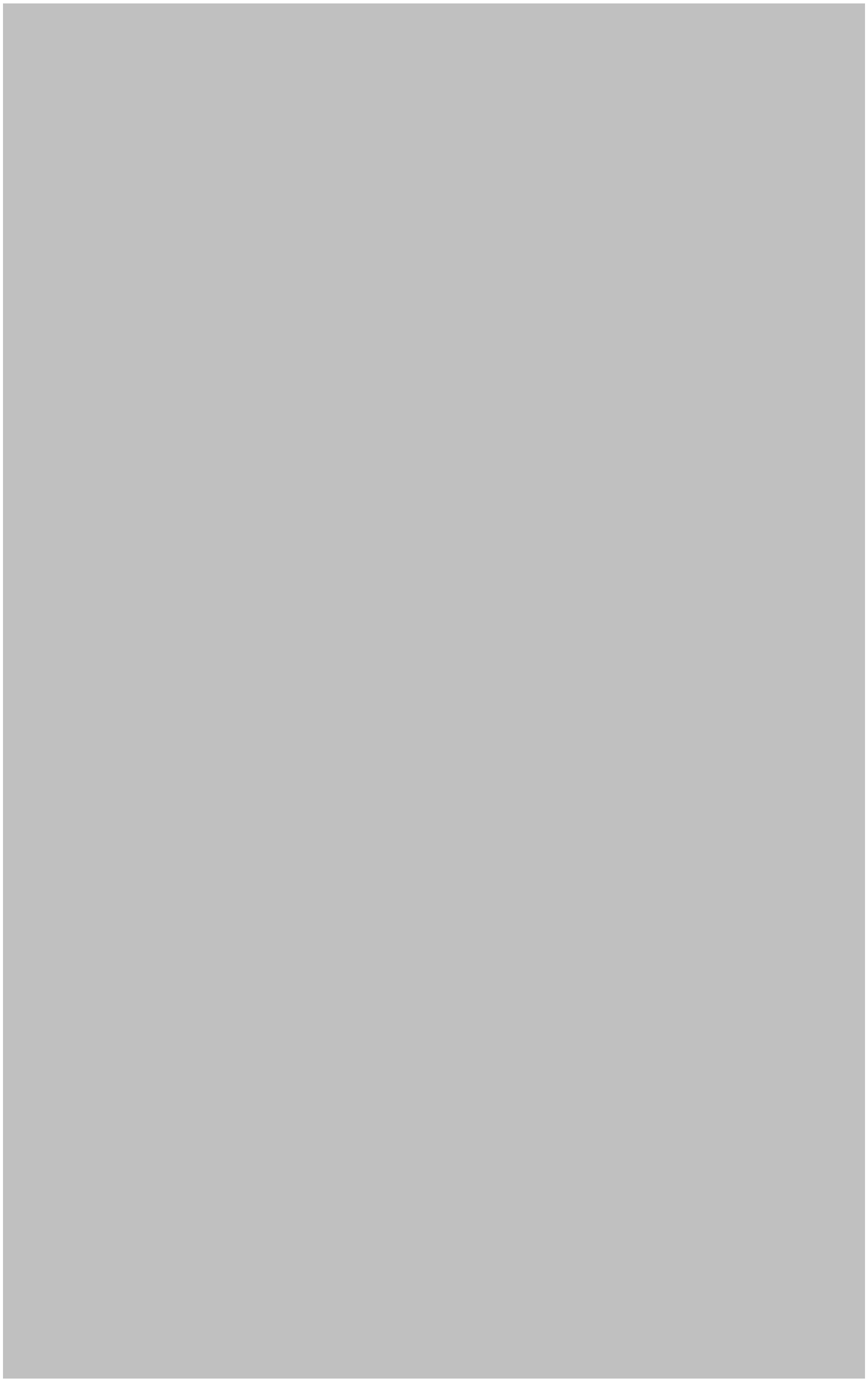
CK | ENERGY USE | PROCESSING | TRANSPORT | RESULTS

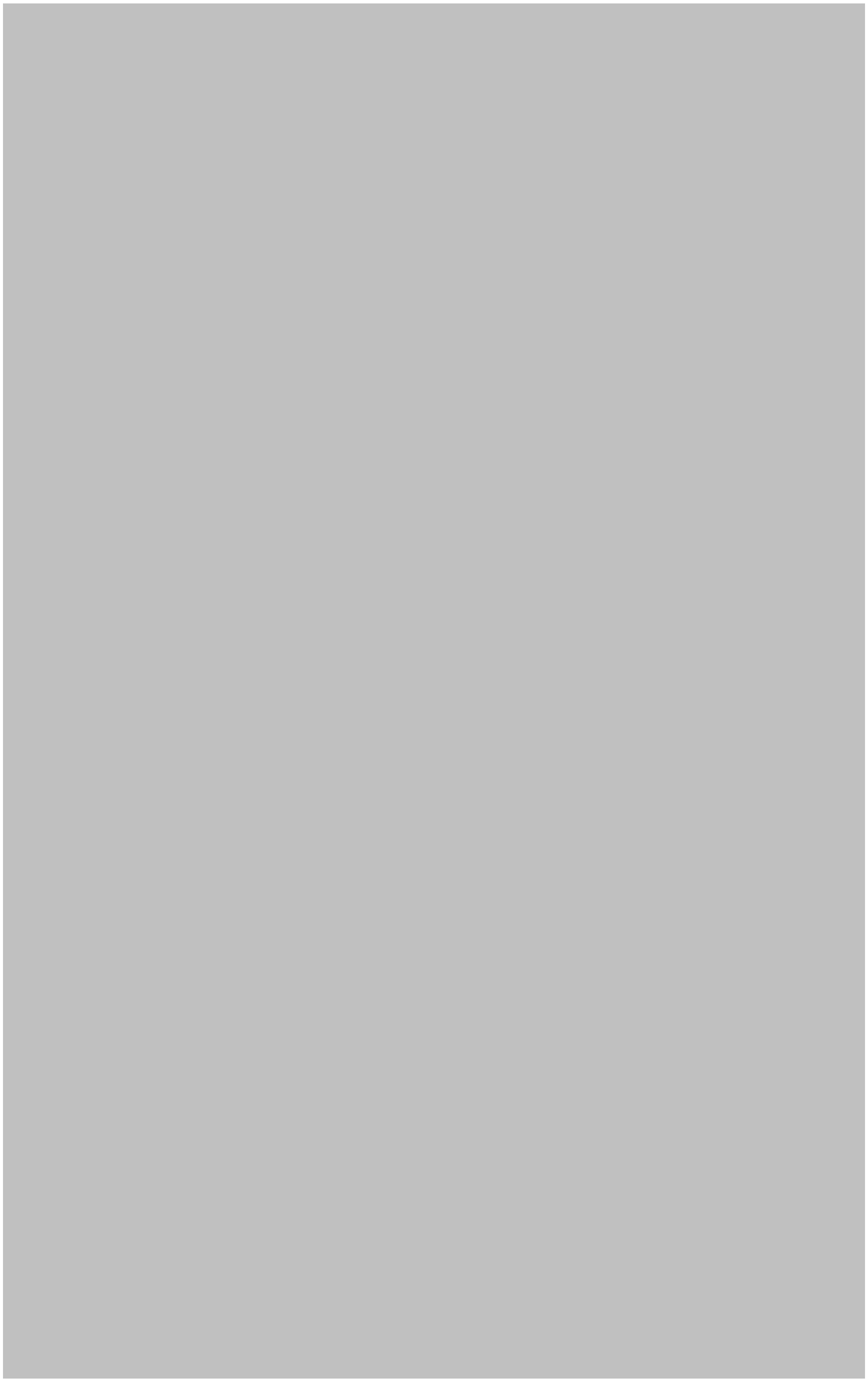
Optional -

Unit
hectares
kgs
kgs

	Name
Co-product 1	
Co-product 2	
Co-product 3	
Co-product 4	

Unit
°C





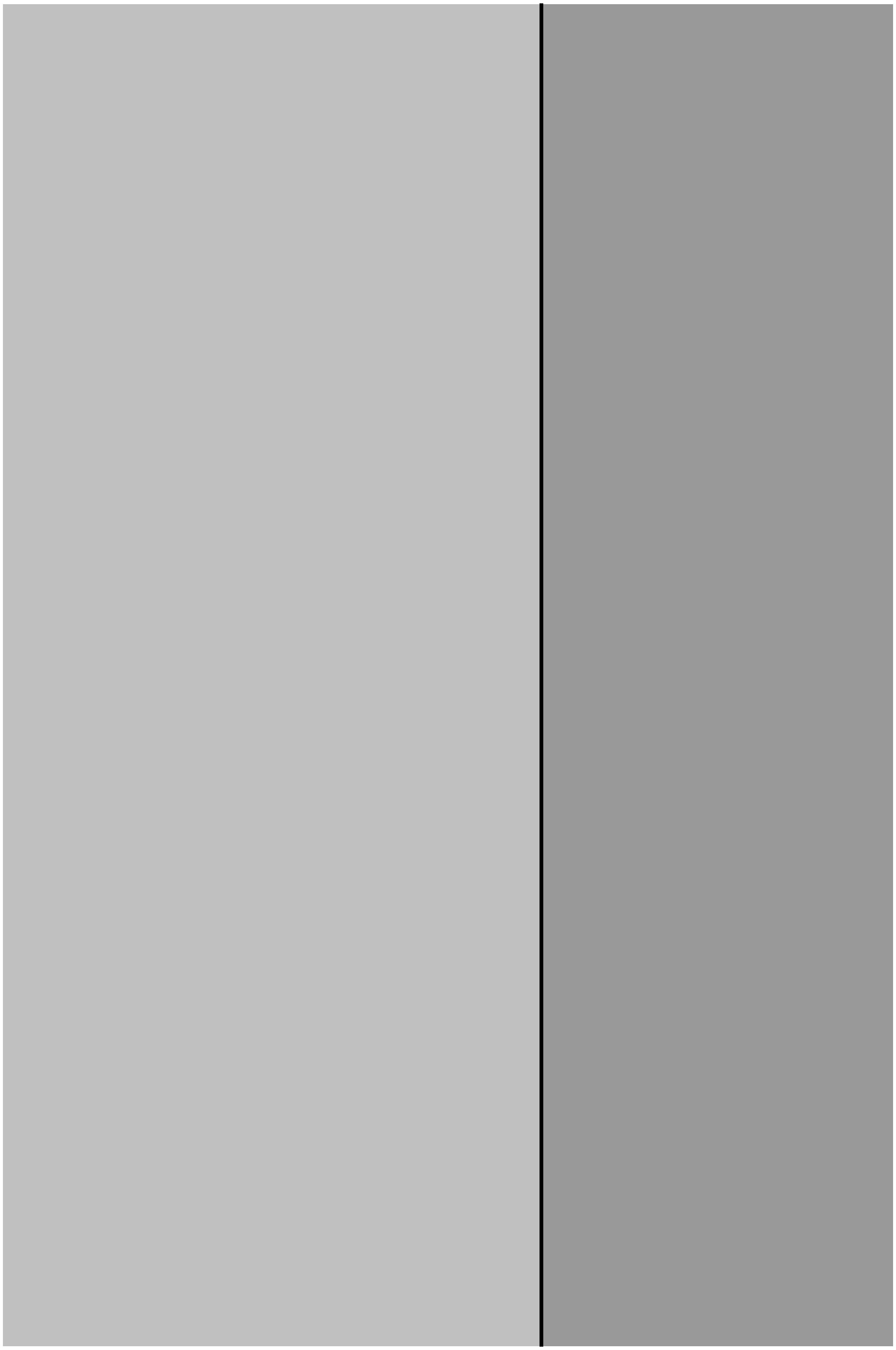
for co-product

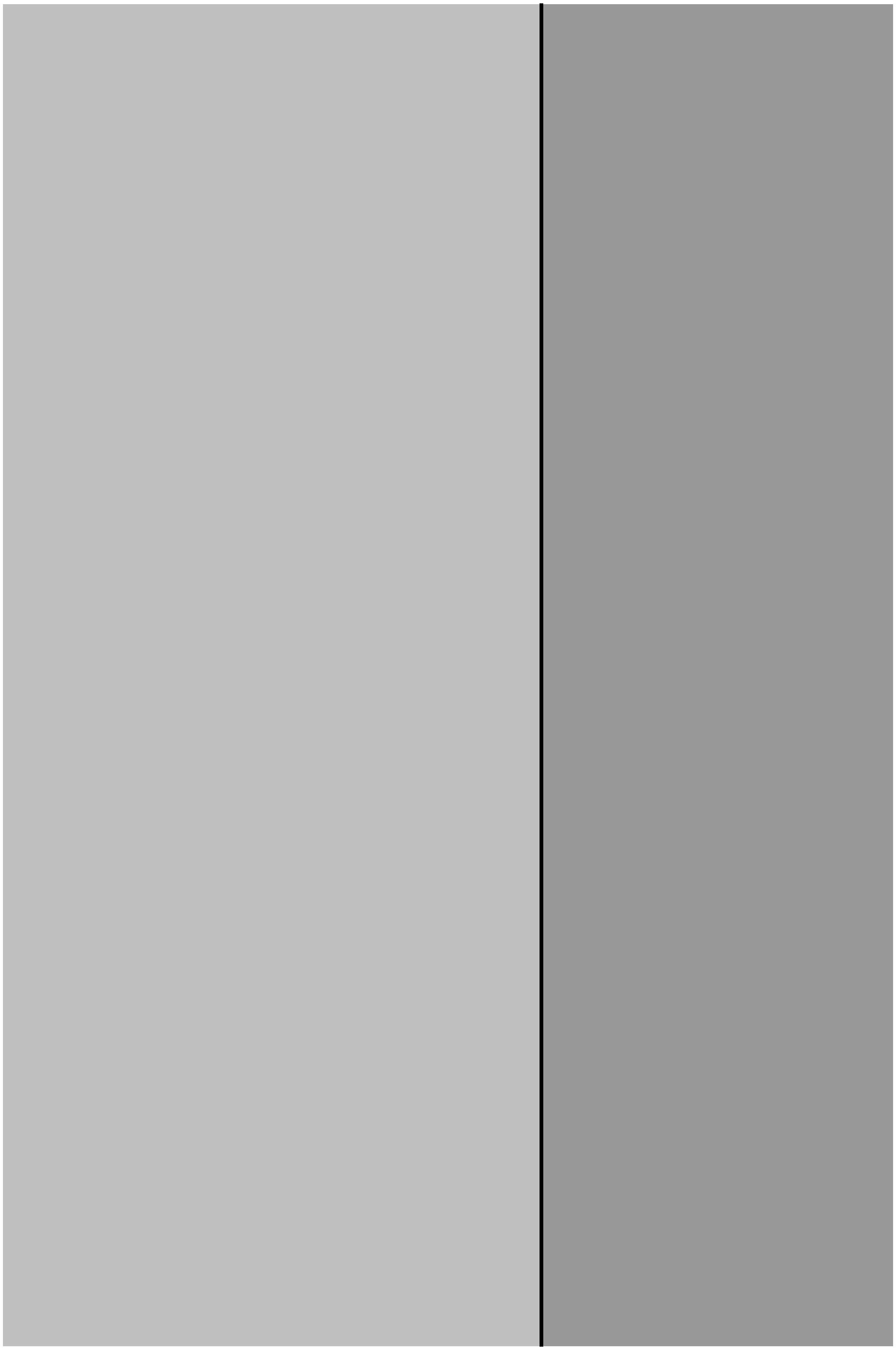
1. Economic value - relative to main product (%)		2. Finished product in kgs	3. Proportion of finished product value (%)
	OR		

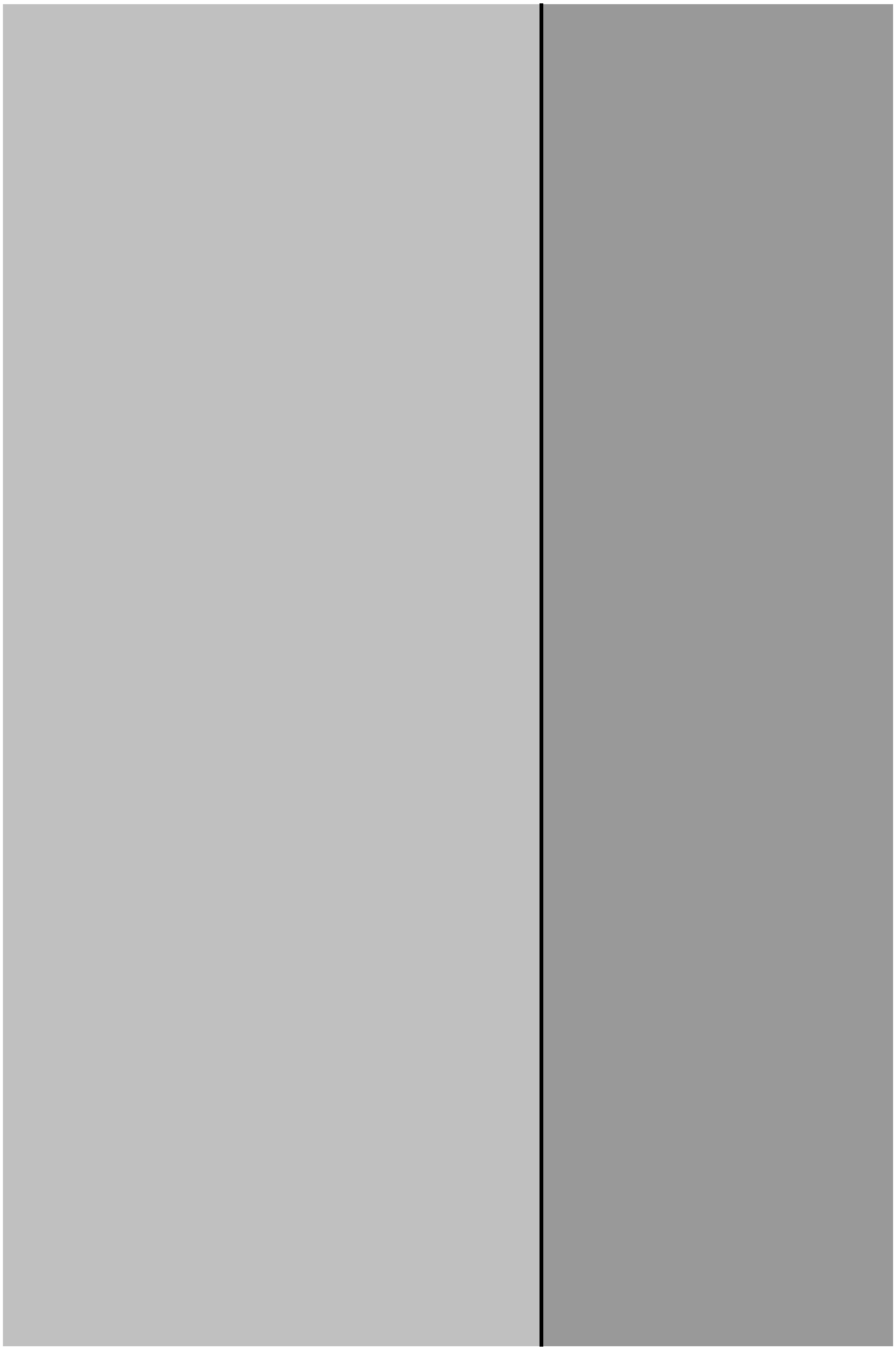
[Select]
U.S. 1
Metric 2

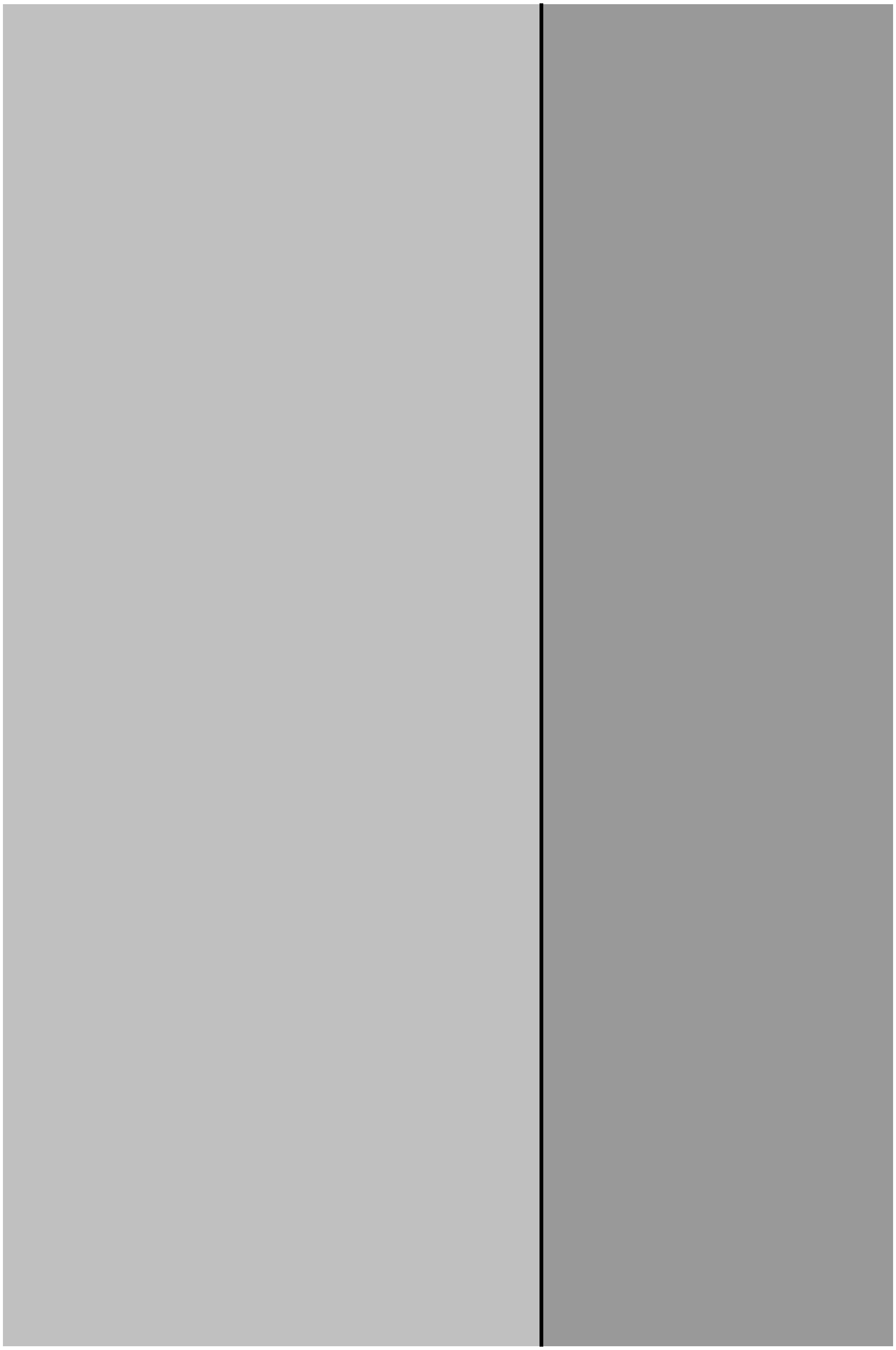
Default Temp.

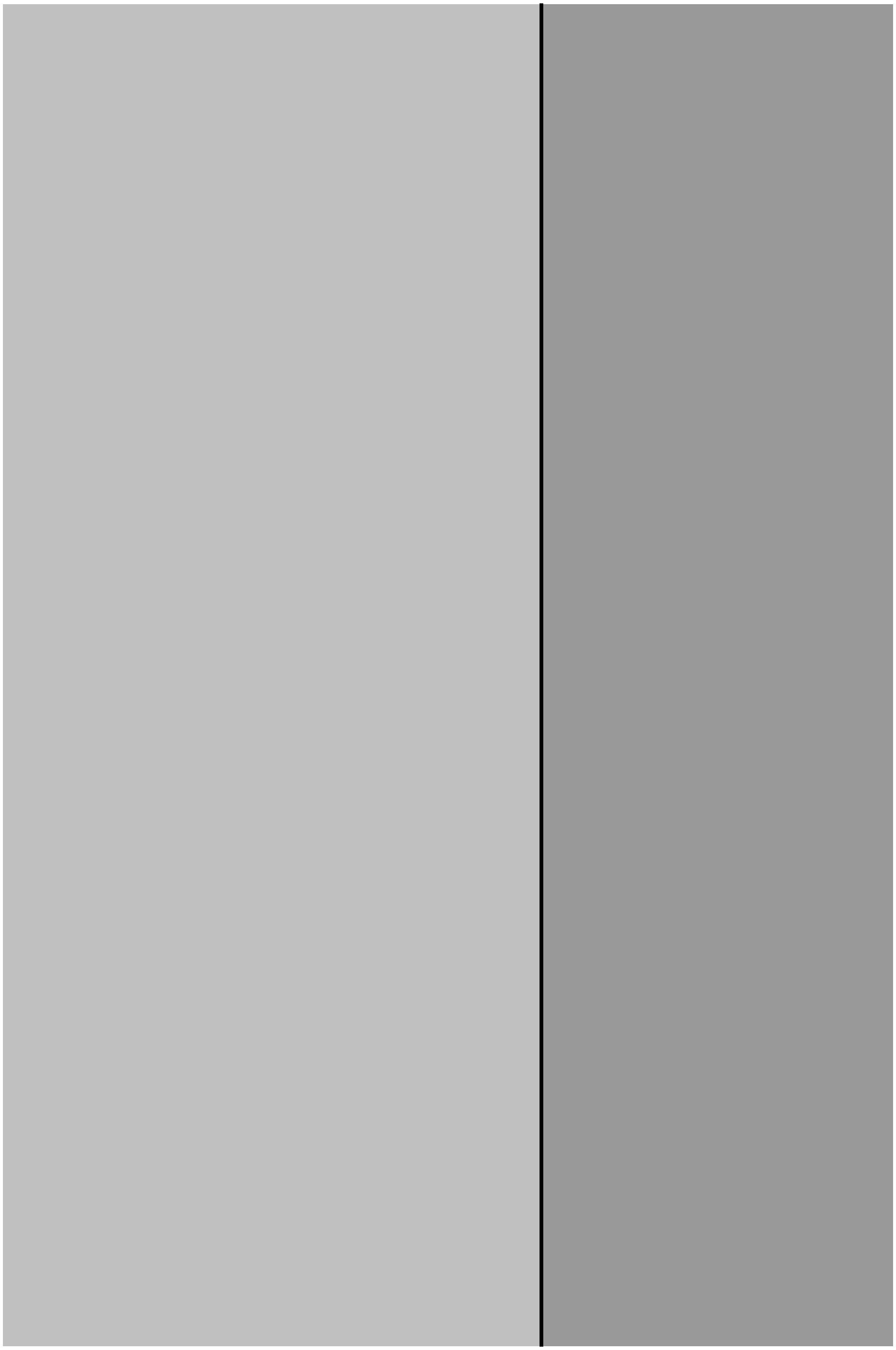
0°C

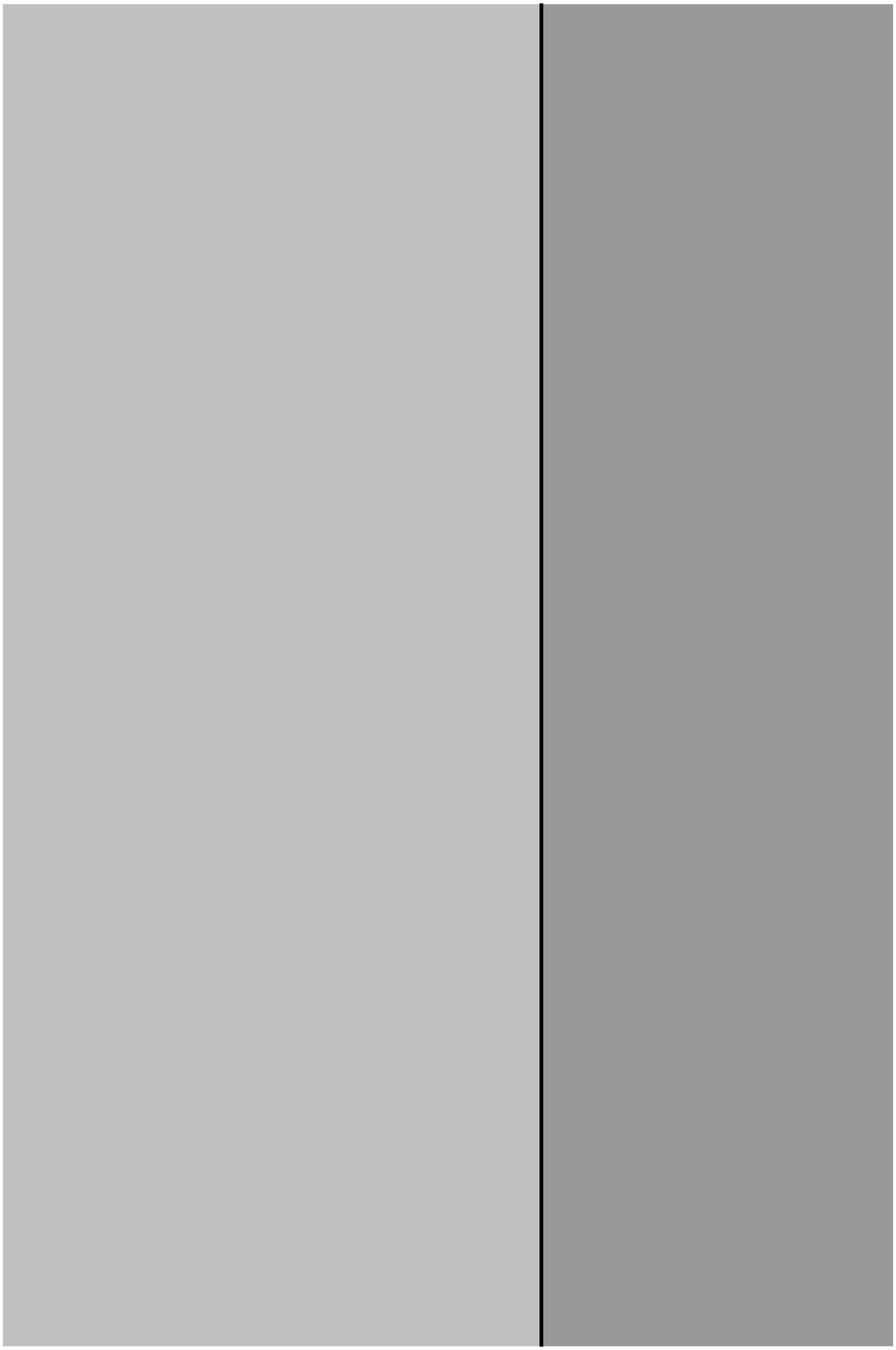












F
C

Yield/per unit area stuff
1
78.9876
78.9876

°C	10	1
°F	50	1.8

COUNTRY LOOK-UP

	index		
[Select]		Fill in Field management cell	

- Albania	1	Eastern Europe	24
- Algeria	2	Africa	
- Angola	3	Africa	
- Argentina	4	Latin America	
- Armenia	5	Asia	
- Australia	6	Oceania	
- Austria	7	Western Europe	
- Azerbaijan	8	Asia	
- Bahrain	9	Middle East	
- Bangladesh	10	Indian Subcontinent	
- Belarus	11	Eastern Europe	
- Belgium	12	Western Europe	
- Benin	13	Africa	
- Bolivia	14	Latin America	
- Bosnia & Herzegovina	15	Eastern Europe	
- Brazil	16	Latin America	
- Brunei Darussalam	17	Asia	
- Bulgaria	18	Eastern Europe	
- Cameroon	19	Africa	
- Canada	20	North America	

- Chile		21	Latin America	
- China, People's Rep. of		22	Asia	
- Chinese Taipei		23	Asia	
- Colombia		24	Latin America	
- Congo Dem. Rep.		25	Africa	
- Costa Rica		26	Latin America	
- Cote d'Ivoire		27	Africa	
- Croatia		28	Eastern Europe	
- Cuba		29	Latin America	
- Cyprus		30	Western Europe	
- Czech Republic		31	Western Europe	
- Denmark		32	Western Europe	
- Dominican Republic		33	Latin America	
- Ecuador		34	Latin America	
- Egypt		35	Africa	
- El Salvador		36	Latin America	
- Eritrea		37	Africa	
- Estonia		38	Eastern Europe	
- Ethiopia		39	Africa	
- Finland		40	Western Europe	

- France	41	Western Europe	
- Gabon	42	Africa	
- Georgia	43	Asia	
- Germany	44	Western Europe	
- Ghana	45	Africa	
- Greece	46	Western Europe	
- Guatemala	47	Latin America	
- Haiti	48	Latin America	
- Honduras	49	Latin America	
- Hong Kong (China)	50	Asia	
- Hungary	51	Western Europe	
- Iceland	52	Western Europe	
- India	53	Indian Subcontinent	
- Indonesia	54	Asia	
- Iran Islamic Rep.	55	Middle East	
- Iraq	56	Middle East	
- Ireland	57	Western Europe	
- Israel	58	Middle East	
- Italy	59	Western Europe	
- Jamaica	60	Latin America	

- Japan	61	Asia	
- Jordan	62	Middle East	
- Kazakhstan	63	Asia	
- Kenya	64	Africa	
- Korea, Dem Rep. of	65	Asia	
- Korea, Rep. of	66	Asia	
- Kuwait	67	Middle East	
- Kyrgyzstan	68	Asia	
- Latvia	69	Eastern Europe	
- Lebanon	70	Middle East	
- Libya	71	Africa	
- Lithuania	72	Eastern Europe	
- Luxembourg	73	Western Europe	
- Malaysia	74	Asia	
- Malta	75	Western Europe	
- Mexico	76	North America	
- Moldova	77	Eastern Europe	
- Morocco	78	Africa	
- Mozambique	79	Africa	
- Myanmar	80	Asia	

- Namibia	81	Africa	
- Nepal	82	Indian Subcontinent	
- Netherlands	83	Western Europe	
- Netherlands Antilles	84	Latin America	
- New Zealand	85	Oceania	
- Nicaragua	86	Latin America	
- Nigeria	87	Africa	
- Norway	88	Western Europe	
- Oman	89	Middle East	
- Pakistan	90	Indian Subcontinent	
- Panama	91	Latin America	
- Paraguay	92	Latin America	
- Peru	93	Latin America	
- Philippines	94	Asia	
- Poland	95	Eastern Europe	
- Poland	96	Western Europe	
- Portugal	97	Western Europe	
- Qatar	98	Middle East	
- Romania	99	Eastern Europe	
- Russia	100	Asia	

- Saudi Arabia	101	Middle East	
- Senegal	102	Africa	
- Serbia & Montenegro	103	Eastern Europe	
- Singapore	104	Asia	
- Slovak Republic	105	Western Europe	
- Slovenia	106	Eastern Europe	
- South Africa	107	Africa	
- Spain	108	Western Europe	
- Sri Lanka	109	Indian Subcontinent	
- Sudan	110	Africa	
- Sweden	111	Western Europe	
- Switzerland	112	Western Europe	
- Syria	113	Middle East	
- Tajikistan	114	Asia	
- Tanzania United Rep.	115	Africa	
- Thailand	116	Asia	
- The former Yugoslav Re	117	Eastern Europe	
- Togo	118	Africa	
- Trinidad & Tobago	119	Latin America	
- Tunisia	120	Africa	

- Turkey	121	Western Europe	
- Turkmenistan	122	Asia	
- Ukraine	123	Eastern Europe	
- United Arab Emirates	124	Middle East	
- United Kingdom	125	Western Europe	
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-- AZ	129	North America	
-- AR	130	North America	
-- CA	131	North America	
-- CO	132	North America	
-- CT	133	North America	
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-- TN	169	North America	
-- TX	170	North America	
-- UT	171	North America	
-- VT	172	North America	
-- VA	173	North America	
-- WA	174	North America	
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-- WI	176	North America	
-- WY	177	North America	
- Uruguay	178	Latin America	
- Uzbekistan	179	Asia	
- Venezuela	180	Latin America	

- Vietnam	181	Asia	
- Yemen	182	Middle East	
- Zambia	183	Africa	
- Zimbabwe	184	Africa	
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Former USSR	189	Asia	
Latin America	190	Latin America	
Middle East	191	Middle East	
North America	192	North America	
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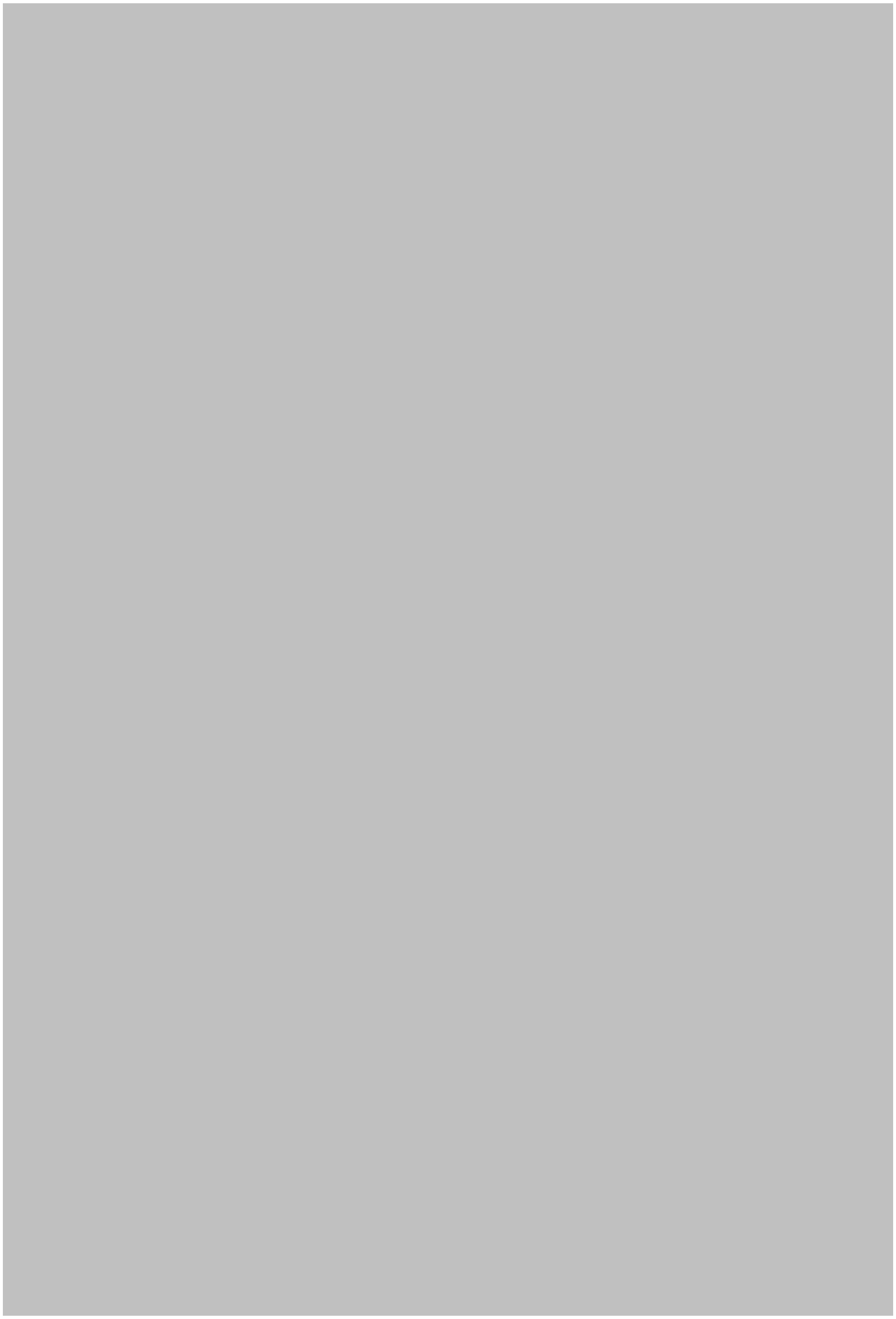
Drop-down validation

kgs

tonnes		
tons (US, short)		
litres		
pieces		
trees		
gallons		[Select]
pounds		Temperate
		Tropical

Unit systems
[Select]
Metric
U.S.

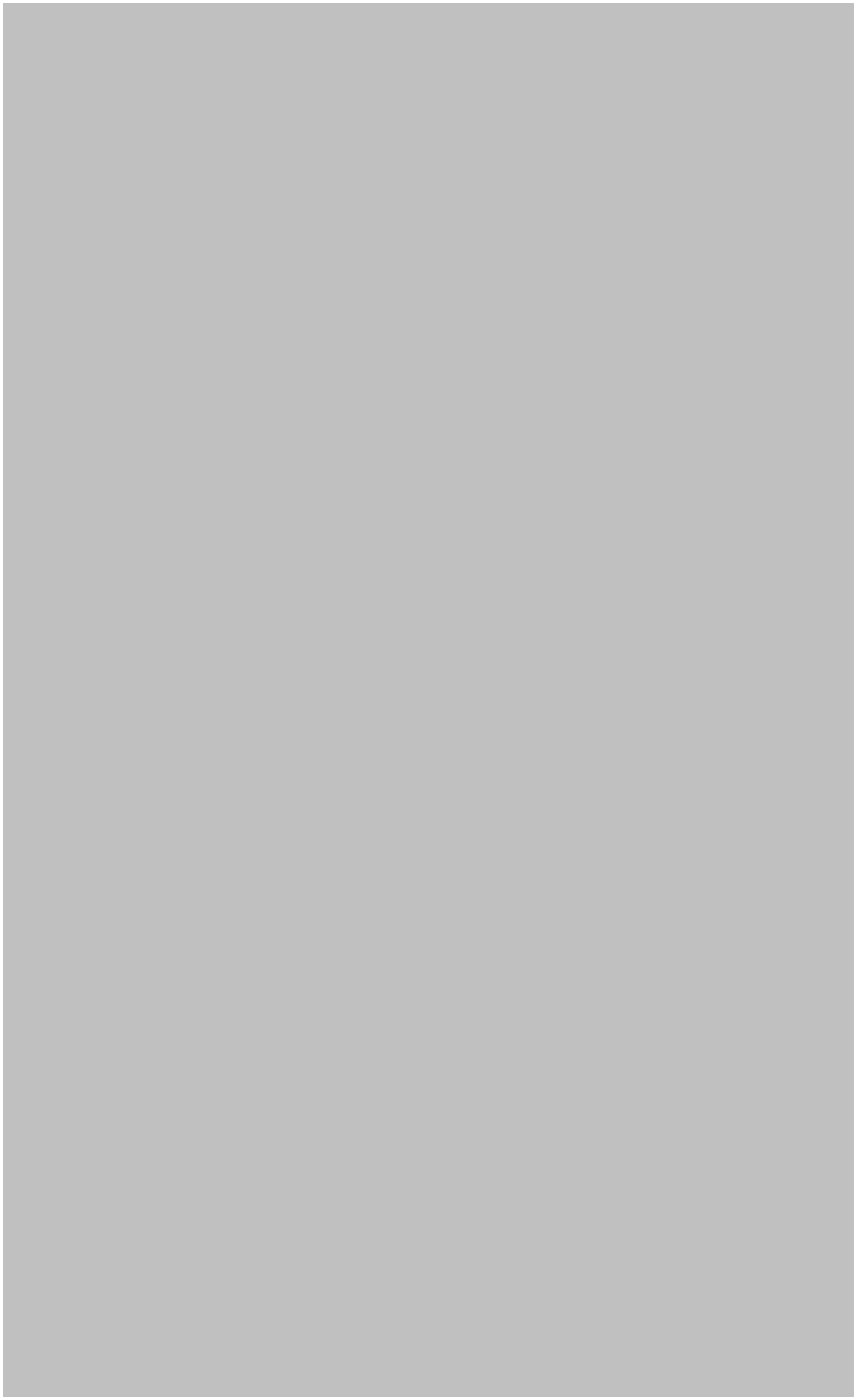
1	[Select]
1	°C
2	°F



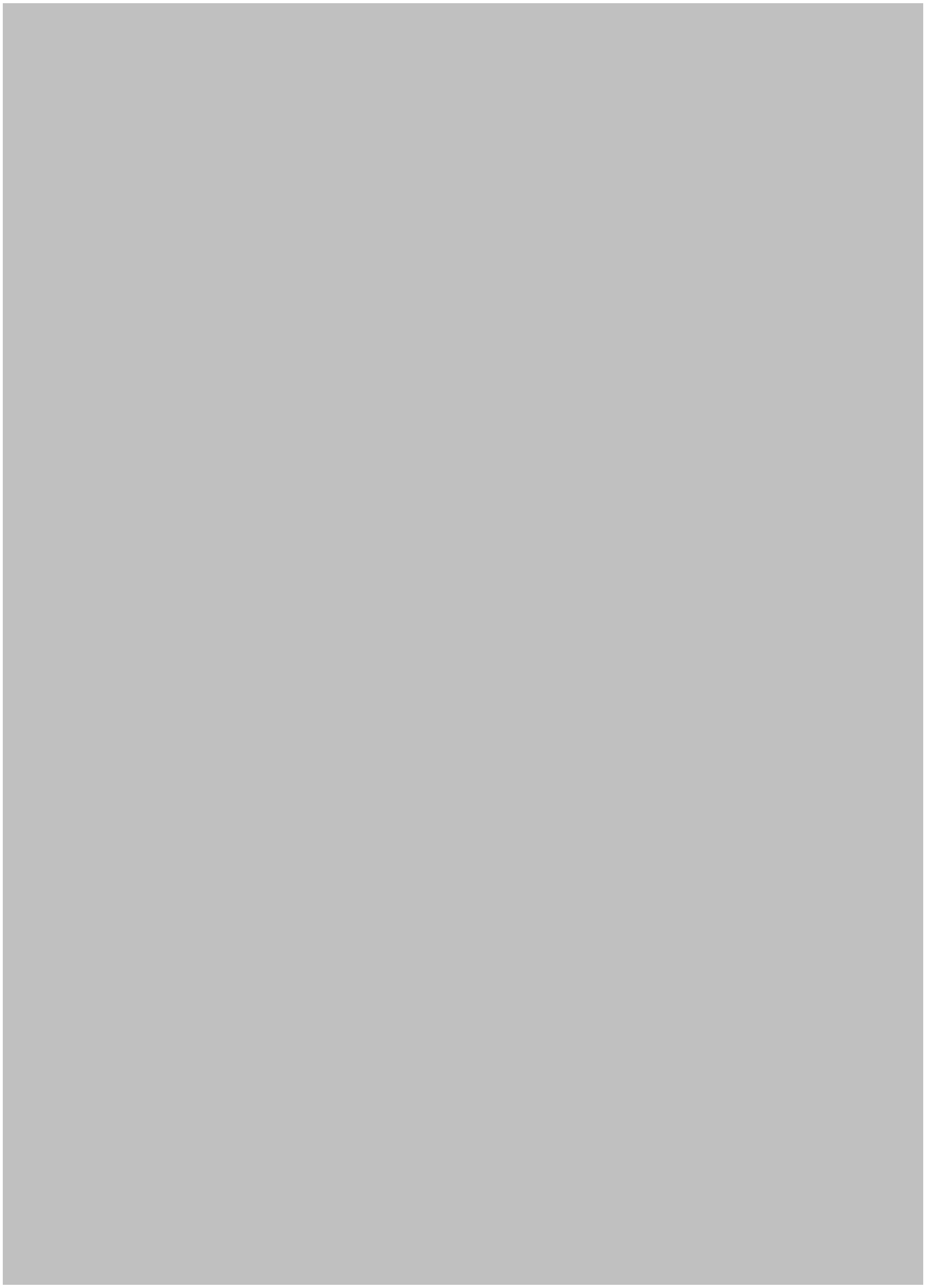
Default Units

Unit systems

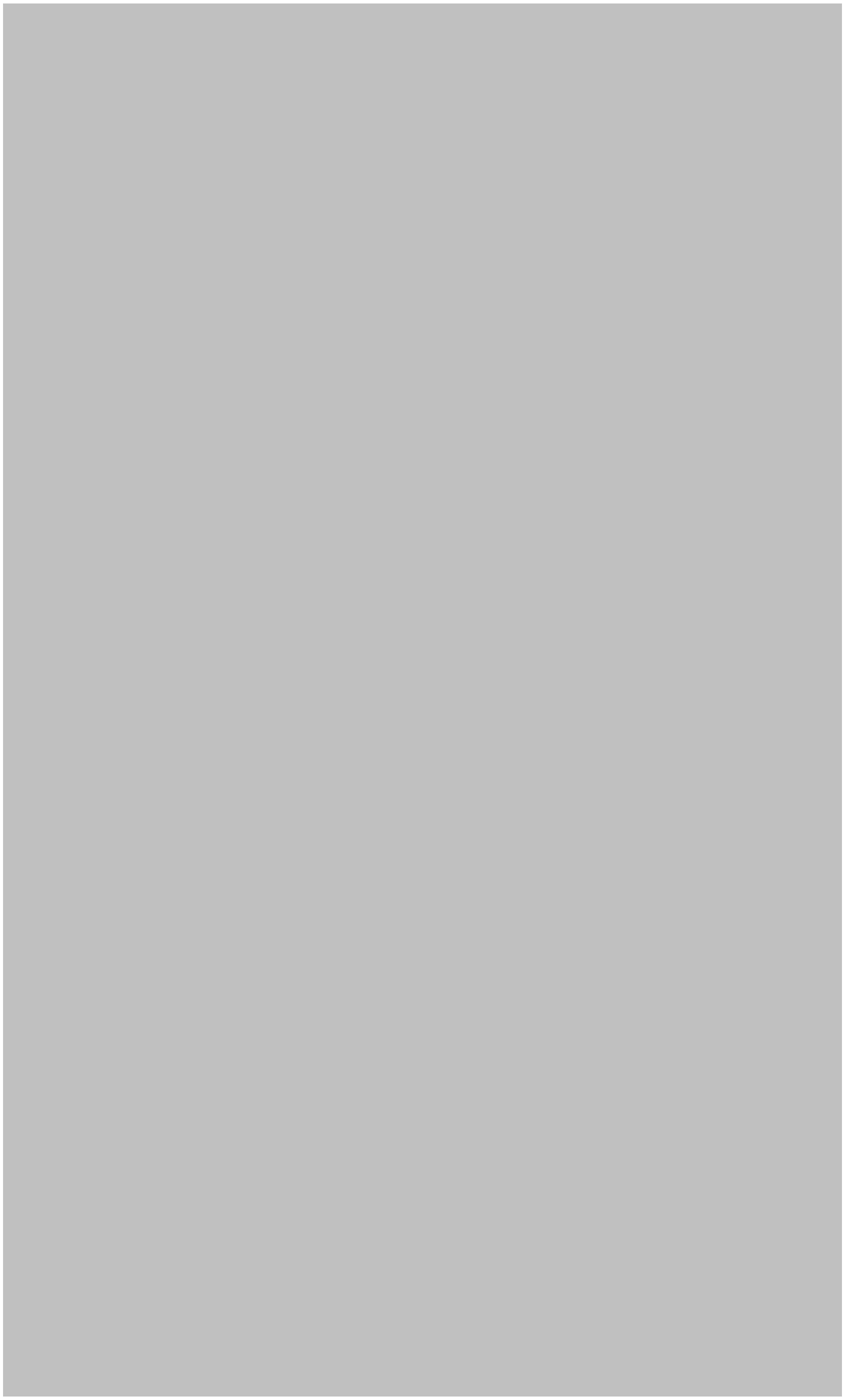
[Select]	1	[Select]	[Select]
Metric	1	hectares	kg/ha
U.S.	2	acres	pounds/acre (US

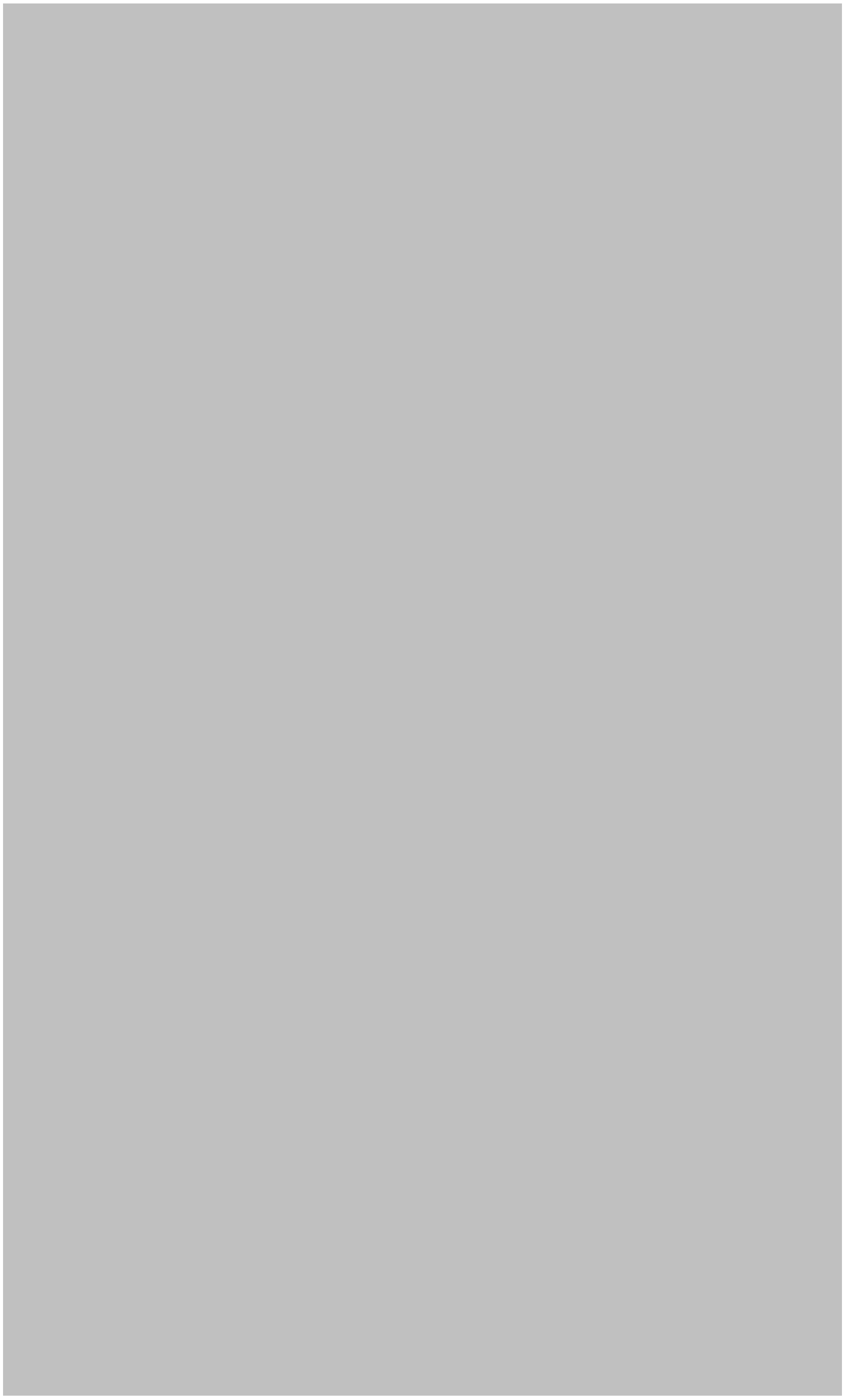


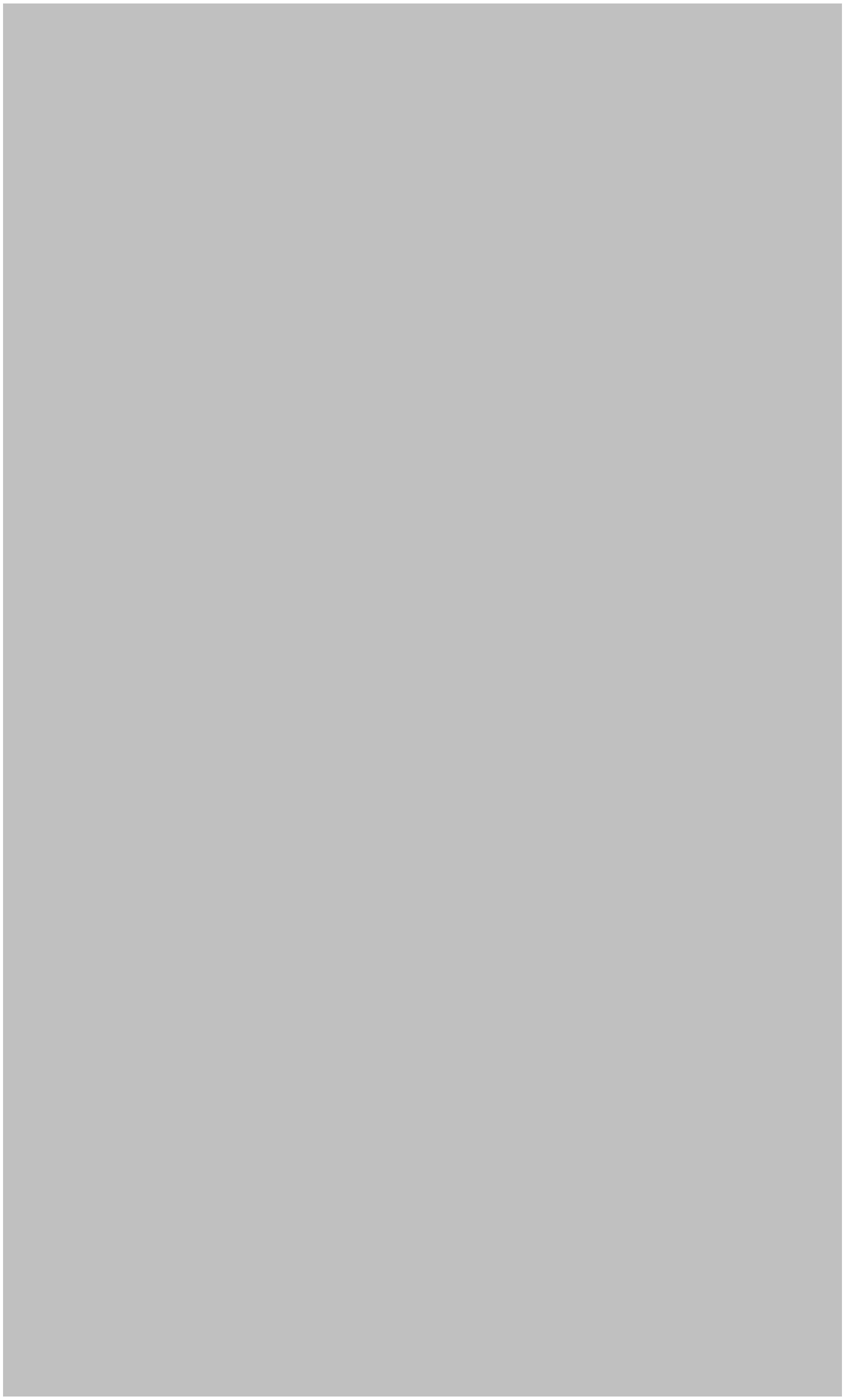
[Select]	[Select]	[Select]	[Select]	[Select]
kgs	tonnes	tonnes/ha	hectare	litres
pounds	tons (US, short)	tons/acre	acre	US Gallons



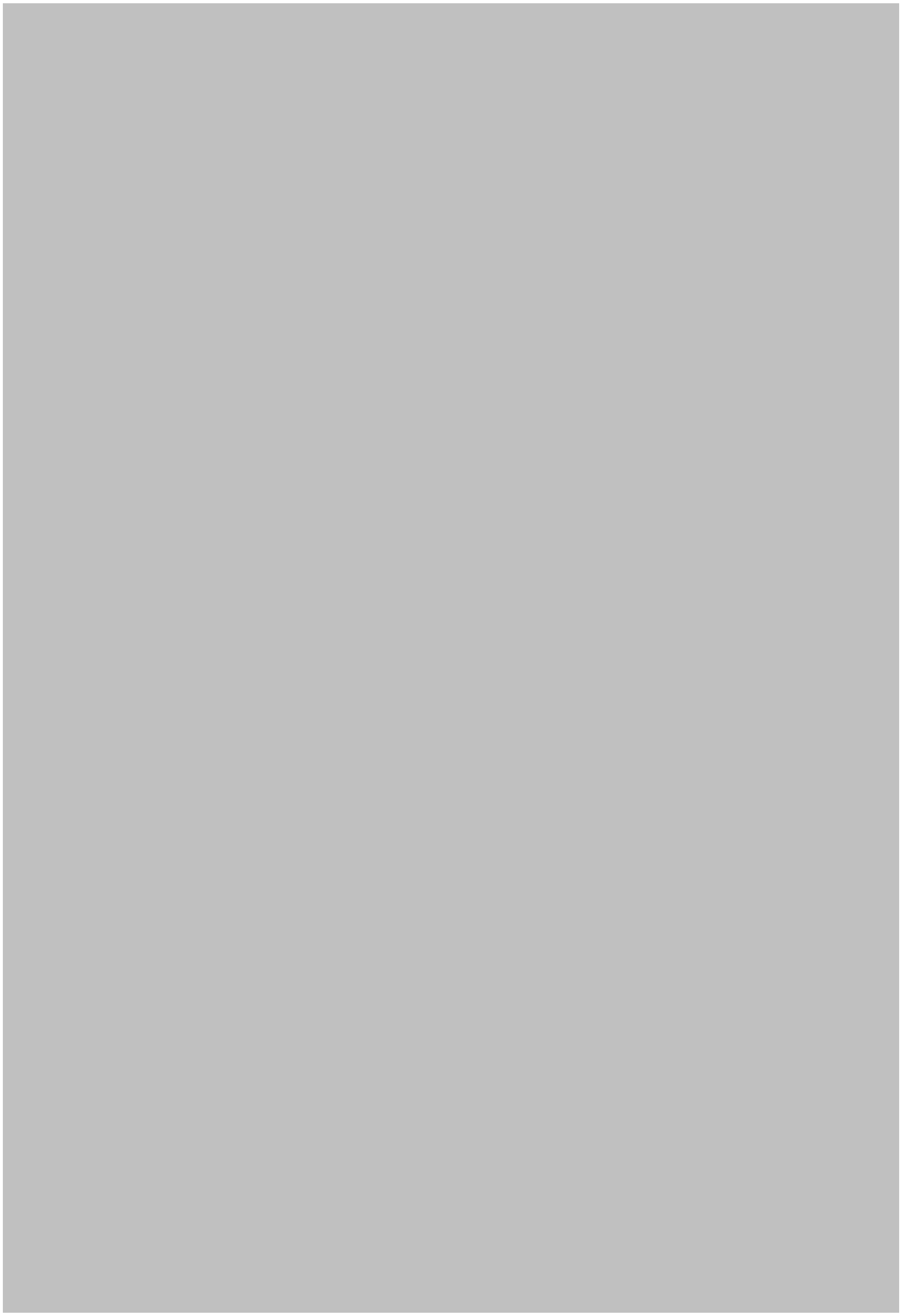
[Select]	[Select]	[Select]	[Select]
km	°C	kgs/day	cm
mile	°F	pounds/day	inch

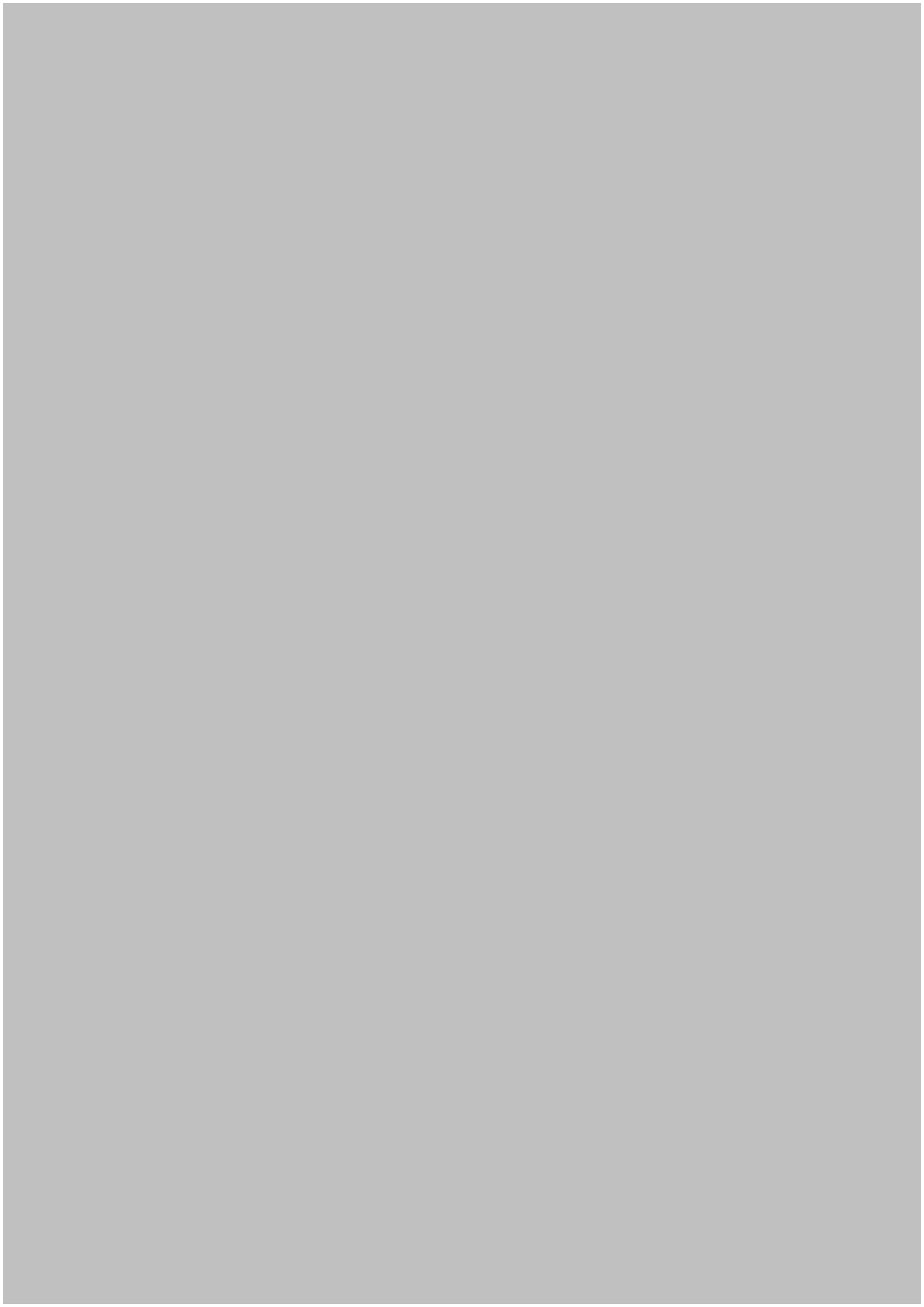


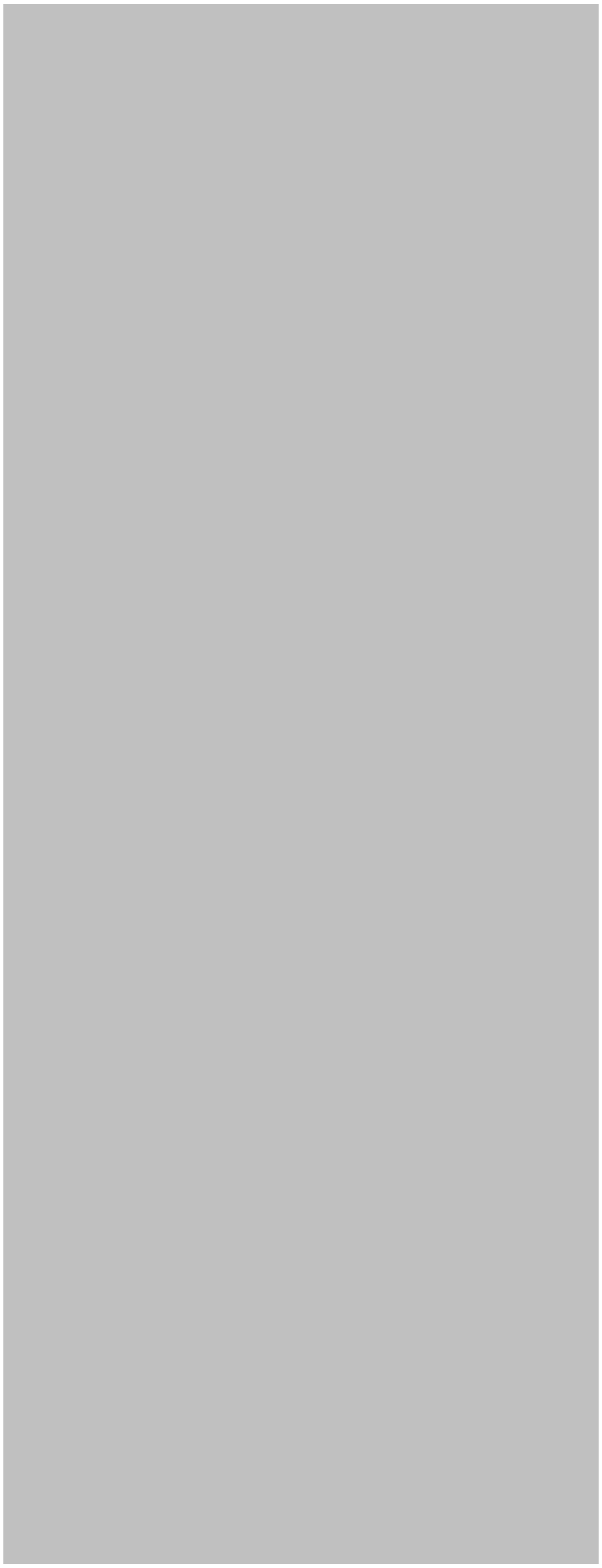


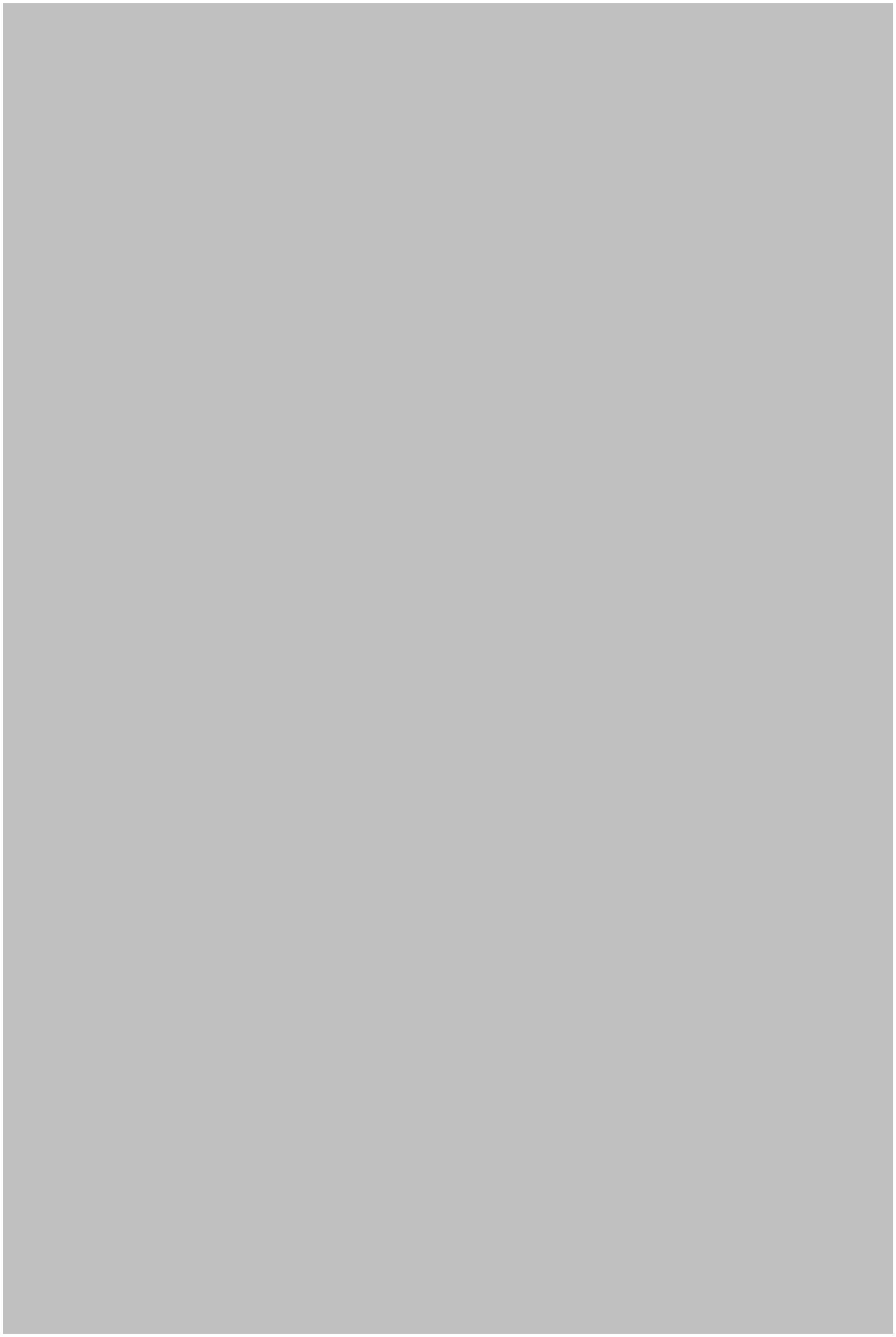


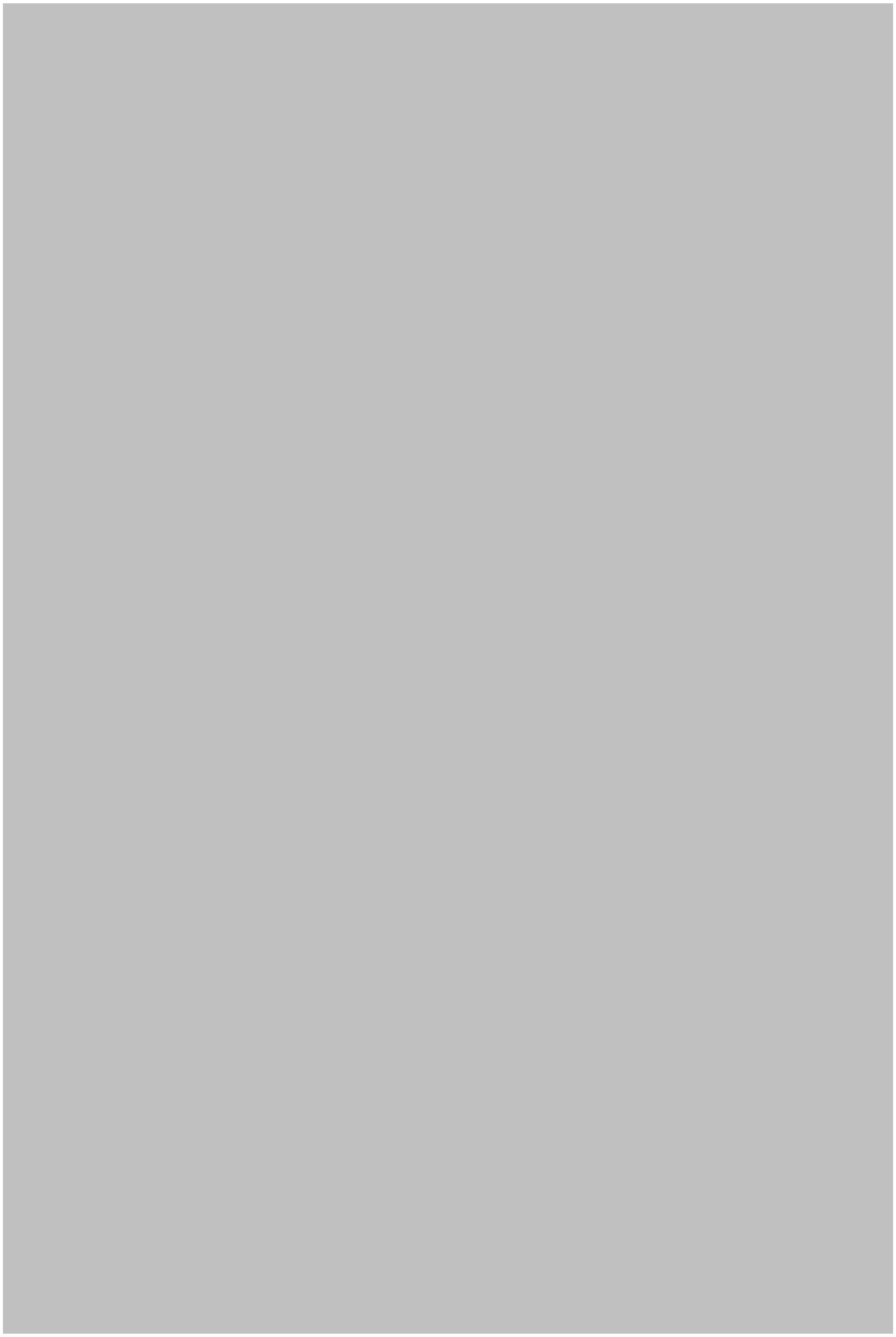
[Select]
litre
gallon

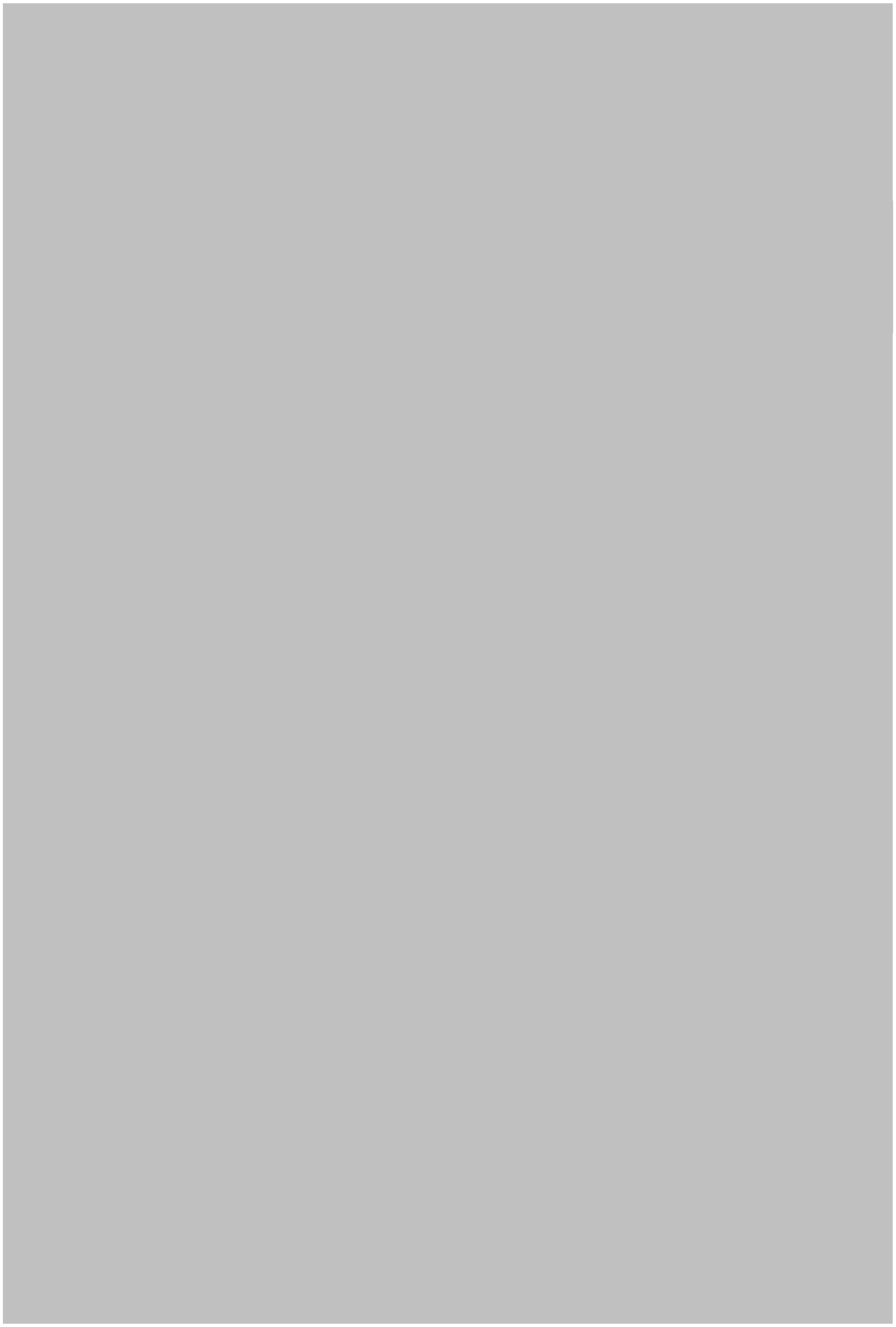












Crop Management

YOUR RESULTS SO FAR

by land area

by production

HOME | GENERAL | CROPS | SEQUESTRATION | LIVESTOCK | ENERG

on this page: 1. 2. Soil 3. Fertiliser Use 4. Pesticide Applications 5. Crop Residue Management

Crop type

Crop type*	Tomato

Soil

Soil texture*	Medium
Soil Organic Matter*	1.72 < SOM <= 5.16
Soil moisture*	Dry
Soil drainage*	Good
Soil pH*	5.5 < pH <= 7.3

Fertiliser Use

Fertiliser Use

Fertiliser Use

	Fertiliser	**Nutrient or product**
Fertiliser 1	Monoammonium phosphate - 11% N; 52% P2O5	N
Fertiliser 1	Compound NPK 15%N 15% K2O 15% P2O5	P2O5
Fertiliser 1	Compound NK - 14% N; 44% K2O	K2O
Fertiliser 2	Diammonium phosphate - 18% N; 46% P2O5	Product
Fertiliser 3	Calcium nitrate - 15% N	Product
Fertiliser 4	Potassium sulphate - 50% K2O; 45% SO3	Product
Fertiliser 5	Compound NPK 15%N 15% K2O 15% P2O5	Product
Fertiliser 6	Compound NPK 15%N 15% K2O 15% P2O5	Product
Fertiliser 6	Kainit / Magnesium Sulphate - 11% K2O; 5% MgO	Product

For the soil carbon effect of organic amendments to be estimated you must also complete the relevant section of the sequestration tab.

	Fertiliser 6	Limestone - 55% $CaCO_3$ / 29%CaO	Product
Pesticide applications	Number of applications	20	
Crop residue management (if this section is not completed then the worst case - "Removed; left untreated…" is assumed)			Unit
	Amount of residue	22112.8983	kg/ha
	Method	Removed; left untreated in heaps or pits	

Estimated emissions	kgs CO2	kgs N2O	kgs CH4
Fertiliser production	1,582,652.9		
Background direct and indirect N2O		0.6	
Fertiliser induced field emissions	485.3	-	
Methane from Paddy Rice			-
Agrochemicals	410.0		
Crop residue management		11.2	1,444.7
Totals	**1,583,548.2**	**11.8**	**1,444.7**

R
: 1,630,541.8 kg CO2 eq Per hectare
: 20.6 kg CO2 eq Per kilogram

GY USE | PROCESSING | TRANSPORT | RESULTS

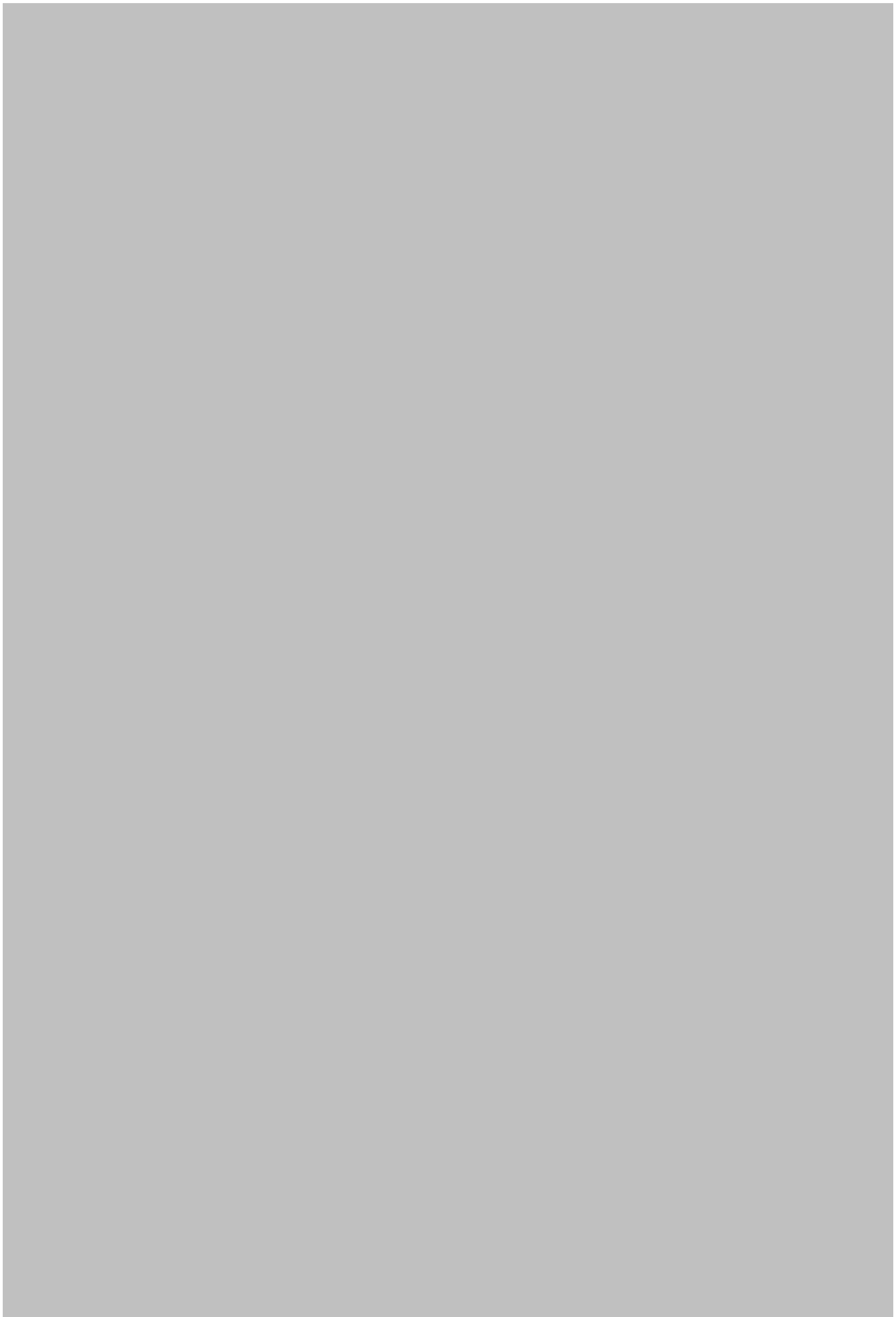
6. Crop Management Results

Application rate	Unit (e.g. tonnes, kgs, pounds)	Application method	Emissions inhibitors	Fertiliser production
79665.70909	kg/ha	Subsurface drip	None	Current tech
77895.36	kg/ha	Subsurface drip	None	Current tech
79665.70909	kg/ha	Subsurface drip	None	Current tech
106826.4	kg/ha	Subsurface drip	None	Current tech
513086.4	kg/ha	Subsurface drip	None	Current tech
338461.2	kg/ha	Subsurface drip	None	Current tech
39.627	kg/ha	Incorporate	None	Current tech
665.994	kg/ha	Incorporate	None	Current tech
648.696	kg/ha	Incorporate	None	Current tech

2005.365	kg/ha	Incorporate	None	Current tech

Rice only

kg CO2 eq
1,582,652.9
164.2
485.3
-
410.0
39,434.6
1,623,147.1



default residue tonnes/ha 3.22667

EMISSIONS FROM SOIL A

Data check - are all cells required completed	NO inhibitor index
0	1
0	1
0	1
0	1
0	1
0	1
0	1
0	1
0	1

0	1
total - weighted average of above values	1

Totals (kg CO2 eq)
1582653
164
485
0
410
39435
1623147

COUNTRY LOOK UP TABLE

	index
[Select]	0
- Albania	1
- Algeria	2
- Angola	3
- Argentina	4
- Armenia	5
- Australia	6
- Austria	7
- Azerbaijan	8
- Bahrain	9
- Bangladesh	10
- Belarus	11
- Belgium	12
- Benin	13
- Bolivia	14
- Bosnia & Herzegovina	15
- Brazil	16
- Brunei Darussalam	17

- Latvia	69
- Lebanon	70
- Libya	71
- Lithuania	72
- Luxembourg	73
- Malaysia	74
- Malta	75
- Mexico	76
- Moldova	77
- Morocco	78
- Mozambique	79
- Myanmar	80
- Namibia	81
- Nepal	82
- Netherlands	83
- Netherlands Antilles	84
- New Zealand	85
- Nicaragua	86
- Nigeria	87
- Norway	88
- Oman	89
- Pakistan	90
- Panama	91
- Paraguay	92
- Peru	93
- Philippines	94
- Poland	95
- Poland	96
- Portugal	97
- Qatar	98
- Romania	99
- Russia	100
- Saudi Arabia	101
- Senegal	102
- Serbia & Montenegro	103
- Singapore	104
- Slovak Republic	105
- Slovenia	106
- South Africa	107
- Spain	108
- Sri Lanka	109
- Sudan	110
- Sweden	111
- Switzerland	112
- Syria	113
- Tajikistan	114
- Tanzania United Rep.	115
- Thailand	116
- The former Yugoslav Republic of Macedonia	117
- Togo	118
- Trinidad & Tobago	119

- Tunisia	120
- Turkey	121
- Turkmenistan	122
- Ukraine	123
- United Arab Emirates	124
- United Kingdom	125
- United States	126
-- AL	127
-- AK	128
-- AZ	129
-- AR	130
-- CA	131
-- CO	132
-- CT	133
-- DE	134
-- DC	135
-- FL	136
-- GA	137
-- HI	138
-- ID	139
-- IL	140
-- IN	141
-- IA	142
-- KS	143
-- KY	144
-- LA	145
-- ME	146
-- MD	147
-- MA	148
-- MI	149
-- MN	150
-- MS	151
-- MO	152
-- MT	153
-- NE	154
-- NV	155
-- NH	156
-- NJ	157
-- NM	158
-- NY	159
-- NC	160
-- ND	161
-- OH	162
-- OK	163
-- OR	164
-- PA	165
-- RI	166
-- SC	167
-- SD	168
-- TN	169
-- TX	170

-- UT	171
-- VT	172
-- VA	173
-- WA	174
-- WV	175
-- WI	176
-- WY	177
- Uruguay	178
- Uzbekistan	179
- Venezuela	180
- Vietnam	181
- Yemen	182
- Zambia	183
- Zimbabwe	184
Africa	185
Asia	186
Central and Eastern Europe	187
China (including Hong Kong)	188
Former USSR	189
Latin America	190
Middle East	191
North America	192
Pacific	193
Rest of Europe	194

ΛND FERTILISERS

N2O inhibitor index	application rate in kilos	index key for Fert
1	79665.70909	15
1	77895.36	9
1	79665.70909	8
1	106826.4	10
1	513086.4	7
1	338461.2	18
1	39.627	9
1	665.994	9
1	648.696	11

1	2005.365	13
1		

CROP RESIDUES MODEL

index for residue model	21
Table	Dry matter fraction harvested
	0.9
yield t/ha	78.9876
Above ground residue (t/ha)	3.22667
N in above ground residue	0.335378958
Below ground residue	6.449595338
N in below groud residue	0.084919672

	CH4
Tonnes of residue	22.1128983
redundant	1
MethaneN2O correction factor	0.065333333
redundant	1
redundant	1
Emissions kg	1444.709356
Overall factor	0.065333333

	Non-fertiliser induced N2O
From below ground residues, tonnes	0.000849197
From above ground residues (if left on field somehow), tonnes	0.00335379
total	0.000298681

RICE MODEL

Is the crop rice (0- false, 1 true)? 0

days under cultivation	
water management before cultivation	
water management during cultivation	

Timing of residue incorporation	

Baseline EF

Overall EF
Over full rice cultivation period

Value to be carried back to outputs (i.e. output o

		Developed/develop
Fill in Field management cell C5!		
Eastern Europe	24	0
Africa		0
Africa		0
Latin America		0
Asia		0
Oceania		1
Western Europe		1
Asia		0
Middle East		1
Indian Subcontinent		0
Eastern Europe		0
Western Europe		1
Africa		0
Latin America		0
Eastern Europe		0
Latin America		0
Asia		0

Eastern Europe		0
Africa		0
North America		1
Latin America		0
Asia		0
Asia		1
Latin America		0
Africa		0
Latin America		0
Africa		0
Eastern Europe		0
Latin America		0
Western Europe		1
Western Europe		1
Western Europe		1
Latin America		0
Latin America		0
Africa		0
Latin America		0
Africa		0
Eastern Europe		0
Africa		0
Western Europe		1
Western Europe		1
Africa		0
Asia		0
Western Europe		1
Africa		0
Western Europe		1
Latin America		0
Latin America		0
Latin America		0
Asia		1
Western Europe		0
Western Europe		1
Indian Subcontinent		0
Asia		0
Middle East		0
Middle East		0
Western Europe		1
Middle East		1
Western Europe		1
Latin America		0
Asia		1
Middle East		0
Asia		0
Africa		0
Asia		0
Asia		1
Middle East		1
Asia		0

Eastern Europe		0
Middle East		0
Africa		0
Eastern Europe		0
Western Europe		1
Asia		0
Western Europe		1
North America		0
Eastern Europe		0
Africa		0
Africa		0
Asia		0
Africa		0
Indian Subcontinent		0
Western Europe		1
Latin America		0
Oceania		1
Latin America		0
Africa		0
Western Europe		1
Middle East		0
Indian Subcontinent		0
Latin America		0
Latin America		0
Latin America		0
Asia		0
Eastern Europe		0
Western Europe		0
Western Europe		1
Middle East		0
Eastern Europe		0
Asia		0
Middle East		0
Africa		0
Eastern Europe		0
Asia		1
Western Europe		1
Eastern Europe		1
Africa		0
Western Europe		1
Indian Subcontinent		0
Africa		0
Western Europe		1
Western Europe		1
Middle East		0
Asia		0
Africa		0
Asia		0
Eastern Europe		0
Africa		0
Latin America		0

Africa		0
Western Europe		0
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Eastern Europe		0
Middle East		1
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Latin America		0
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Middle East		0
Africa		0
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Eastern Europe	0	0
Asia		0
Asia		0
Latin America		0
Middle East		0
North America		0
Asia		0
Western Europe		0

Ogle classification
Temperate-Dry

Soil CEC (estimated)	22.796

application method key	k key for fertiliser	fertiliser amount, in kgs	**N concentration %**
6	1	724233.719	11%
6	4	519302.4	15%
6	5	181058.4298	14%
6	12	106826.4	18%
6	12	513086.4	15%
6	12	338461.2	0%
5	12	39.627	15%
5	12	665.994	15%
5	12	648.696	0%

5	12	2005.365	0%

Sub-Totals, back

Sub-Totals, FIE

Total (N2O-N)
Total (N2O)

Of which backgr

Of which FIE

slope	intercept	N content - above ground	below:above ratio
0	3.22667	0.015166667	0.291666667

0.001

N20
22.1128983
1
0.00050675
1
1
11.20571121

	Rice	Rice		
Rice				
Rice				0
Rice				0
Compost		0		0
Farmyard Manure		0		0
[Select]				
Straw incorporated more than		0		0
Straw incorporated shortly befo		0		0

			1
			1.3
			0
			#VALUE!
f this model if used)			0

bing			
Fill in Field management cell C5!			
Eastern Europe			
Africa			
Africa			
Latin America			
Asia, continental			
Oceania			
Western Europe			
Asia, continental			
Middle East			
Indian Subcontinent			
Eastern Europe			
Western Europe			
Africa			
Latin America			
Eastern Europe			
Latin America			
Asia, continental			tonnes/acre

Eastern Europe			tonnes/ha
Africa			kg/ha
North America			kg/acre
Latin America			tons/acre
Asia, continental			
Asia, continental			
Latin America			
Africa			
Latin America			
Africa			
Eastern Europe			
Latin America			Unit systems
Western Europe			[Select]
Western Europe			Metric
Western Europe			U.S.
Latin America			
Latin America			
Africa			
Latin America			
Africa			
Eastern Europe			
Africa			
Western Europe			
Western Europe			
Africa			
Asia, continental			
Western Europe			
Africa			
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Latin America			
Latin America			
Latin America			
Asia, continental			
Western Europe			
Western Europe			
Indian Subcontinent			
Asia, insular			
Middle East			
Middle East			
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Middle East			
Asia, continental			

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Asia, insular
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Asia, insular
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Latin America

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Middle East
Africa
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Africa
Asia, continental
Eastern Europe
Asia, continental
Asia, continental
Latin America
Middle East
North America
Asia, insular
Western Europe

		N2O
	Bouwman model indices	-0.414
temperate or tropical	1	0.00000
Crop type	4	0.00000
Soil Texture	2	-0.47200
SOM/SOC	2	0.14000
Soil CEC	2	0.00000
Drainage	2	-0.42000
pH	2	0.10900
Bouwman index for N2O	**Amount of N applied**	
0.00390	79665.70909	310.6962655
0.00390	77895.36	303.791904
0.00340	25348.18017	86.18381256
0.00390	19228.752	74.9921328
0.00340	76962.96	261.674064
0.00000	0	0
0.00390	5.94405	0.023181795
0.00390	99.8991	0.38960649
0.00000	0	0

0.00000	0	0
ground		0.347
		#NUM!
		#NUM!
ound		#NUM!

N content below
0.013166667

Table mirrored from submodel and data	Methane emissions (for untreated, use IPCC method for small heaps)
Removed; left untreated in heaps or pits	0.065333333
Removed; non-Forced Aeration Compos	0.005
Removed; Forced Aeration Compost	0.003

Left on field; Incorporated or mulch	0
Burned	0.0027
Exported off farm	0

default unit for residue	tonnes/ha

[Select]

kg CH4/ha/day

UNIT CONVERSIONS

Area conversions

hectares	1	hectares
acres	0.405	acres

Quantity conversions

[Select]	*Conversion factor to tonnes*	
kgs	*0.001*	finished product
tonnes	*1*	finished product
tons (US, short)	*0.90718474*	finished product
litres	*0.001*	finished product
pieces	1	
trees	1	
gallons	0.003785412	
pounds	0.000453592	

[Select]	*Conversion factor to kg/ha*
[Select]	*0*
tonnes/acre	*2470*

tonnes/ha	*1000*
kg/ha	*1*
kg/acre	*2.47105163*
pounds/ha (US)	*0.45359237*
pounds/acre (US)	*1.120849251*
ounces/ha (US)	*0.028349523*
ounces/acre (US)	*0.070053135*
fluid ounces/ha (US)	*0.037495619*
fluid ounces/acre (US)	*0.092653611*
tons/acre	2240.746308

1	[Select]	[Select]
1	hectares	kg/ha
2	acres	pounds/acre (US)

Temperature units

°C
°F

kg CO2 eq	1.0000
tonnes CO2 eq	0.0010
pounds CO2 eq	2.2046
tons CO2 eq	0.0011

NO	NH3-volatilisation	Leaching	
-1.527	0		
0.00000	-0.40200		
0.00000	-0.04500		
0.00000	0.00000		
0.00000	0.00000		
0.00000	0.01200		
0.94600	0.00000		
0.00000	-0.93300		
438.1614	2991.692388	79665.70909	1
428.42448	1116.687136	77895.36000	1
136.8801729	363.3847601	25348.18017	1
105.758136	1613.501495	19228.75200	1
415.599984	1103.320498	76962.96000	1
0	0	0.00000	1
0.032692275	0.046625425	5.94405	1
0.54944505	0.783613533	99.89910	1
0	0	0.00000	1

0	0	0.00000	1
0.006			
#NUM!	30.810	0.000	
#NUM!	30.810	0.000	
		#NUM!	
#NUM!		0.554855912	
		#NUM!	

N2O emissions
0.00050675
0.00050675
0.000337833

#N/A
0.00007
0

LOOK UPS

[Select]		During cultivation
Upland		0
Continuously flooded		1
Intermittently flooded		0.6
Intermittently flooded - multiple aeration		0.52
Rainfed		0.28
Drought prone		0.25
Deep water		0.31

[Select]		Before cultivation
Not flooded pre-season (for less than 180 days)		1
Not flooded pre-season (for more than 180 days)		0.68
Flooded pre-season		1.9

Organic amendment applied		
Straw incorporated shortly before cultivation		1
Straw incorporated more than 30 days before cultiva		0.29
Compost		0.05
Farmyard Manure		0.14
Green manure		0.5

hectare	1
acre	2

kilogram	1
tonne	2
ton	3
litre	4
piece	5
tree	6
gallon	7
pound	8

[Select]	[Select]	[Select]	[Select]
kgs	tonnes	tonnes/ha	hectare
pounds	tons (US, short)	tons/acre	acre

	Current tech	New tech	Old tech	Older tech
Embodied CO2		**FYM applied**	**Compost applied**	**CaCO3 applied**
854595.7884		0	0	0
498530.304		0	0	0
483426.0074		0	0	0
74778.48		0	0	0
764498.736		0	0	0
259261.2792		0	0	0
38.04192		0	0	0
639.35424		0	0	0
0		0	0	0

11.04956115		0	0	1102.95075
1582652.948		0	0	1102.95075

[Select]	[Select]	[Select]	[Select]	[Select]
litres	km	°C	kgs/day	cm
US Gallons	mile	°F	pounds/day	inch

Urea applied	Emissions from liming	Emissions from Urea	NO inhibition	N2O inhibition
0	0	0	79665.70909	79665.70909
0	0	0	77895.36	77895.36
0	0	0	25348.18017	25348.18017
0	0	0	19228.752	19228.752
0	0	0	76962.96	76962.96
0	0	0	0	0
0	0	0	5.94405	5.94405
0	0	0	99.8991	99.8991
0	0	0	0	0

0	485.29833	0	0	0
0	485.29833	0	121645.7353	121645.7353

[Select]	[Select]
litre	kg
gallon	pounds

CH4 from organic amendments for paddy rice

VARIOUS LOOK

[Select]
Ammonium Bicarbonate - 3
Ammonium nitrate - 35% N
Ammonium sulphate - 21%
Ammonium sulphate nitrate
Anhydrous ammonia - 82%
Calcium ammonium nitrate
Calcium nitrate - 15% N
Compound NK - 14% N; 44
Compound NPK 15%N 15%
Diammonium phosphate - 1
Kainit / Magnesium Sulphat
Lime - 52% CaO
Limestone - 55% CaCO3 /
Lime, algal - 30% CaO

Monoammonium phosphate
Muriate of potash / Potassiu
Phosphate/Rock Phosphate
Potassium sulphate - 50% K
Super phosphate - 21% P2
Triple super phosphate - 48
Urea - 46.4% N
Urea ammonium nitrate sol
Compost (zero emissions) -
Compost (fully aerated proc
Compost (non-fully aerated
Cattle Farmyard manure - 0
Pig Farmyard manure - 0,7
Sheep Farmyard manure -
Horse Farmyard Manure - 0
Poultry layer manure - 1,9%
Broiler/Turkey litter - 3% N
Cattle Slurry - 0,26% N
Pig slurry - 0,36% N
Separated Pig slurry - liquid
Separated Pig slurry - solid
straw

Index
1
2
3
4
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21
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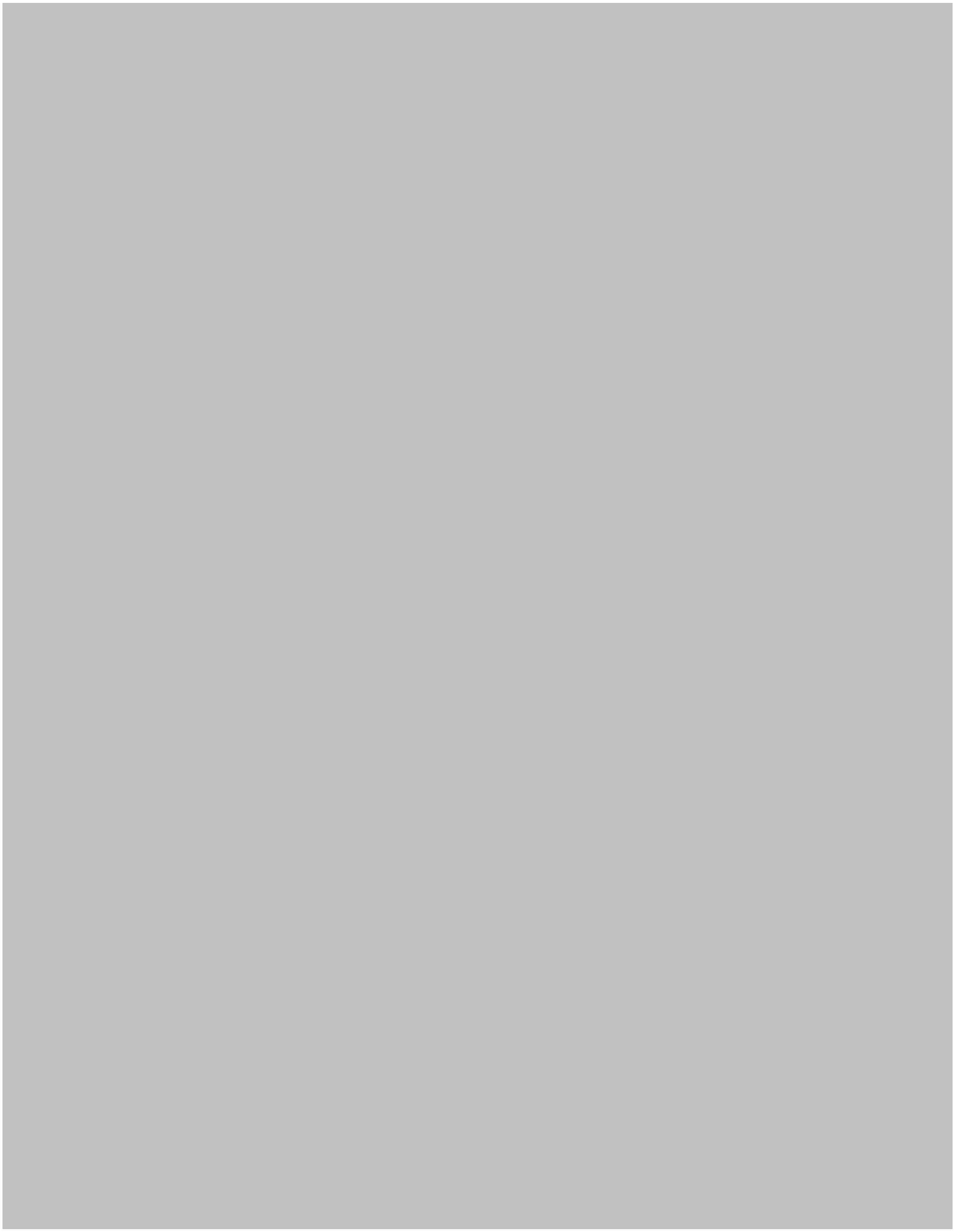
31

0
1
2
0
1
2

N.B. The detailed impact of



K-UPS

Fertilisers, Crops, Bouwman indices, NI inhibtors

Nutrient index	Bouwman index		Synth, manure	compost alert index	manure alert index
#N/A	#N/A		#N/A		
1	1		0		0
2	2		0		0
3	3		0		0
4	4		0		0
5	5		0		0
6	6		0		0
7	7		0		0
8	8		0		0
9	9		0		0
10	10		0		0
11	11		0		0
12	12		3		0
13	13		3		0
14	14		3		0

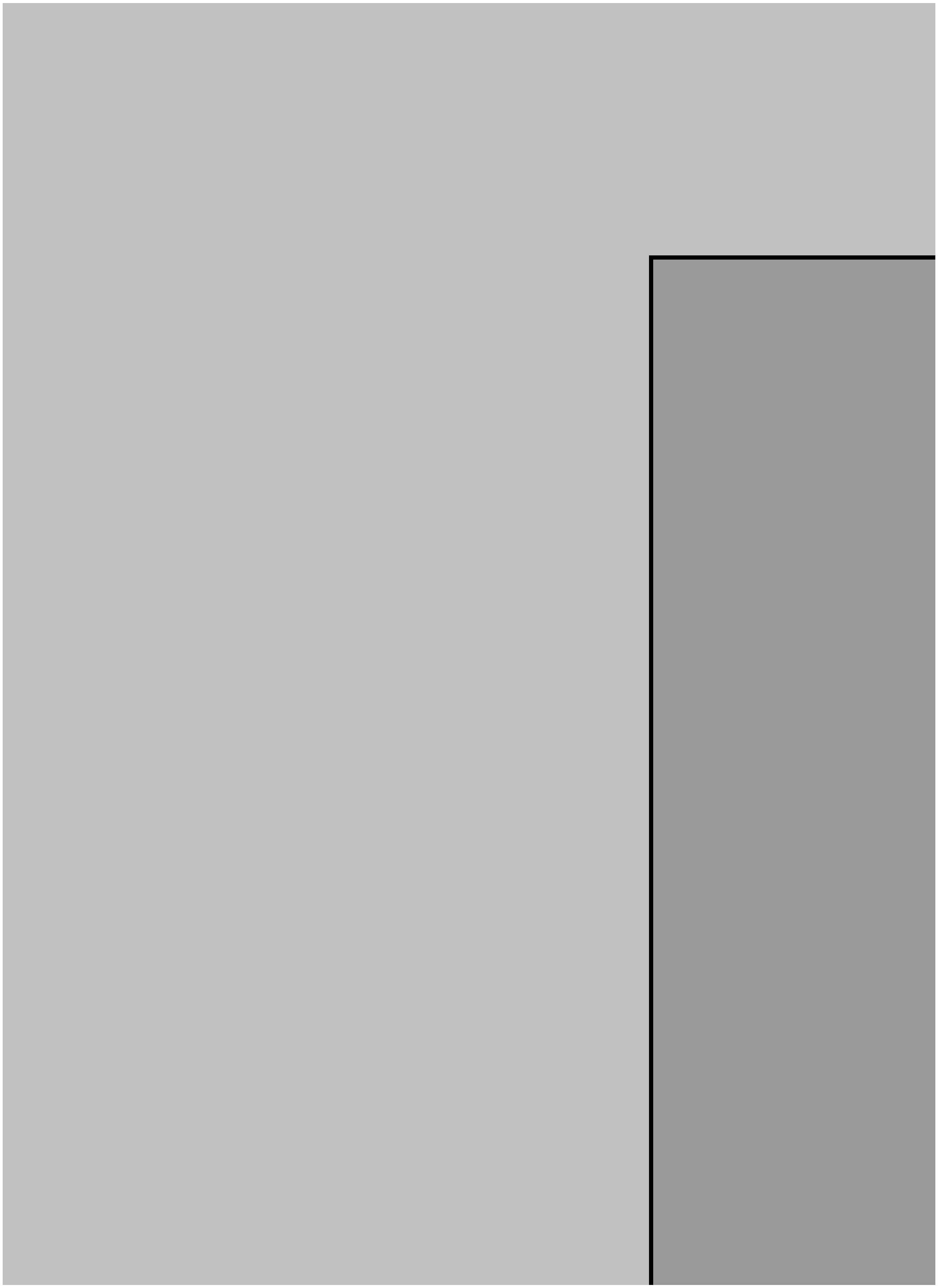
15	15		0		0
16	16		0		0
17	17		0		0
18	18		0		0
19	19		0		0
20	20		0		0
21	21		0		0
22	22		0		0
23	23		2	1	0
24	24		2	1	0
25	25		2	1	0
26	26		1		1
27	27		1		1
28	28		1		1
29	29		1		1
30	30		1		1
31	31		1		1
32	32		1		1
33	33		1		1
34	34		1		1
35	35		1		1
36	36		0	0	0
37	37		0	0	0
38	38		0	0	0
39	39		0	0	0
40	40				0

[Select]	Gross classifi	Bouwman equ	Is it rice
Alfalfa	Alfalfa	Other crop	0
Apple	Tree Crop	Other crop	0
Barley	Grain	Other crop	0
Clover	N-fixing forage	Legume	0
Coffee	Tree Crop	Other crop	0
Cotton	Other	Other crop	0
Dry Bean	Beans & pulse	Legume	0
Grass-clover mix	Grass-clover r	Grass-clover	0
Maize	Grain	Other crop	0
Millet	Grain	Other crop	0
Oats	Grain	Other crop	0
Peanut	Beans & pulse	Legume	0
Perennial grass	Perennial gras	Grass	0
Potato	Tuber	Other crop	0
Rice	Grain	Wetland rice	1
Rye	Grain	Other crop	0
Sorghum	Grain	Other crop	0
Soyabean	Beans & pulse	Legume	0
Spring wheat	Grain	Other crop	0
Tea	Tree Crop	Other crop	0

Tomato	Tomato	Other crop	0
Tree Crop	Bush crop	Other crop	0
Vegetable	Vegetable	Other crop	0
Winter wheat	Grain	Other crop	0
Other grain	Grain	Other crop	0
Other legume	Beans & pulse	Legume	0
Other N-fixing forag	N-fixing forage	Legume	0
Other Non-N-fixing	Non-N-fixing f	Grass	0
Other root crops	Root crop	Other crop	0
Other tuber crop	Tuber	Other crop	0
Other	Other	Other crop	0

N20 emissions inhi	1	2
	Grass	upland
None	1	1
Nitrification inhibito	0.4	0.63
polymer coated	0.23	1
N0 emissions inhib	1	2
	Grass	upland
None	1	1
Nitrification inhibito	0.54	0.54
polymer coated	0.6	0.6

emissions inhibitors is not clear. We model it here as impacting both background and fertiliser induced emission



	zero emissions compost used?
	0
	0
	0
	0
	0
	0
	0
	Composted residues?
	0
	0

	0

s, etc

[Select]	#N/A		assumed temperature
Temperate-M	1	0.3	10
Temperate-Dr	1	0	10
Tropical-Moist	2	0.3	18
Tropical-Dry	2	0	18

[Select]	#N/A
CEC <= 16	1
16 < CEC <=	2
24 < CEC <=	3
32 < CEC	4

[Select]	#N/A
Grass	1
Grass-clover	2
Legume	3

Wetland rice	5
Other crop	4

[Select]	#N/A
Poor	1
Good	2

[Select]	#N/A
Apply in soluti	1
Broadcast	2
Broadcast or i	3
Broadcast to f	4
Incorporate	5
Subsurface dr	6

[Select]	#N/A
Moist	1
Dry	2

ns, since data do not permit us to separate the effect onto the separate sources. These figures should be

Dat

TRUE

TRUE
TRUE

manure alert trigger		compost alert trigger	
			Fertiliser
0	0		TRUE
0	0		TRUE
0	0		TRUE
0	0		TRUE
0	0		TRUE
0	0		TRUE
0	**0**		

if either manure or compost are used: **0**

		[Select]	#N/A
Temperate		pH <= 5.5	5
Temperate		5.5 < pH <= 7.3	6.4
Tropical		7.3 < pH <= 8.5	7.9
Tropical		pH > 8.5	9

[Select or enter exact amount]	#N/A		exact or n
SOM <= 1.72	**30**	1	1
1.72 < SOM <= 5.16	60	2	1
5.16 < SOM <= 10.32	135	3	1
10.32 < SOM	180	4	1
0	#N/A	4	0

[Select]	#N/A
N	1
P	2
K	3
P2O5	4
K2O	5
MgO	6
Na2O	7
Ca	8
CaO	9
CaCO3	10
SO3	11
Product	12

[Select]	0	0	assumed
Fine	0.60	1	1.5
Medium	0.30	2	1.3
Coarse	0.15	3	1.7

[Select]	*[Select]*
Tropical	Moist
Temperate	Dry

e treated with caution particularly for low N application rates (e.g. <100 kg/ha)

ta entry checking

	TRUE
TRUE	TRUE
TRUE	TRUE
TRUE	TRUE
	TRUE
	TRUE
	TRUE
	TRUE
	TRUE
	TRUE

						TRUE
						TRUE
cells completed				All TRUE	All FALSE	Either all true
TRUE	TRUE	TRUE	TRUE	TRUE	FALSE	TRUE
TRUE	TRUE	TRUE	TRUE	TRUE	FALSE	TRUE
TRUE	TRUE	TRUE	TRUE	TRUE	FALSE	TRUE
TRUE	TRUE	TRUE	TRUE	TRUE	FALSE	TRUE
TRUE	TRUE	TRUE	TRUE	TRUE	FALSE	TRUE
TRUE	TRUE	TRUE	TRUE	TRUE	FALSE	TRUE

ot

bulk density	

Enter value and units	Fertiliser type, nutrient(or pro

e or all false

TRUE	0
FALSE	1

oduct), amount, units, and method must all be entered

States in US	Pounds CO2 (	Kg CO2 eq per kwh

Sequestration

Land Use changes		Changes	How long ago was this change made (years)
	Land Use Changes	No	0
		Forest type	Age when felled
	If conversion from forest	[select]	0
			Current Age
	If conversion to forest	[select]	0
Management changes			How long ago was this change made? (years)
	Tillage Changes	No	0
	Cover cropping	no change	0
	Compost	no change	0
	Manure additions	no change	0
	Residue incorporation	no change	0
Annual biomass for trees in cropping system		Species	density (trees per hectare) last year
	Tree/bush species 1	[select]	0
	Tree/bush species 2	[select]	0
	Tree/bush species 3	[select]	0
	Tree/bush species 4	[select]	0
	Tree/bush species 5	[select]	0
	Tree/bush species 6	[select]	0

Tree/bush species 7	[select]	0
Tree/bush species 8	[select]	0
Tree/bush species 9	[select]	0
Tree/bush species 10	[select]	0

Annual totals	kg CO2 eq
Above ground biomass	-
Below ground biomass	-
Soil C	-
Total	**-**

TS SO FAR

by land area:	1,630,541.8	kg CO2 eq	Per hectare
by production:	20.6	kg CO2 eq	Per kilogram

ENERGY USE | PROCESSING | TRANSPORT | RESULTS

4. Sequestration

Percentage of field converted

0

Percentage of land with practice change

0	%
0	%
0	%
0	%
0	%

this year	last year	units	change in number of trees this year
0	0	cm	0
0	0	cm	0
0	0	cm	0
0	0	cm	0
0	0	cm	0
0	0	cm	0

0	0	cm	0
0	0	cm	0
0	0	cm	0
0	0	cm	0

Cumulative totals	kg CO2 eq
Above ground biomass	-
Below ground biomass	-
Soil C since practice changes	-
Total	**-**

accumulated or lost from the system sin
changes in the above boxes. This may b
land use change, tillage practice change
practice change or the beginning of the
plantation

ce the first of the
pe either the
e, rotational
tree crop

Soil emissions from Land Use/Management cha

climate for soil CO2 model	2
was the drop-down or actual value entered for soil SOM?	1
Assumed bulk density	1.3
Soil C in tonnes/ha in top 30 cm	78000

For tillage and other inputs the model give a 20 year factor which we use as a start point

For compost, residue, and manure the model gives an annual % soil increment as the start point of our calcs

Compost
Manure additions
Residue incorporation

Carbon stored in tree crops

trees per ha	trees lost per ha
0	0
0	0
0	0
0	0

	0	0
	0	0
	0	0
	0	0
	0	0
	0	0

CO2 equiv
0.00
0.00
0.00
0.00

nge

Amount applied	annual increment factor
0	1.00000
0	1.00000
22112.8983	1.00000

Index	DBH this year(cms)	DBH last year(cms)
0	0	0
0	0	0
0	0	0
0	0	0

0	0	0
0	0	0
0	0	0
0	0	0
0	0	0
0	0	0

CO2 equiv
0.00
0.00
0.00
0.00

Classification		Net biomass growth (tonnes dm/l
Tropical rain forest	Africa (<= 20 yr)	10
Tropical rain forest	Africa (>20 yr)	3.1
Tropical rain forest	North America (<= 20 yr)	9.45
Tropical rain forest	North America (> 20 yr)	9.45
Tropical rain forest	South America (<= 20 yr)	11
Tropical rain forest	South America (> 20 yr)	3.1
Tropical rain forest	Asia, continental (<= 20 yr)	7
Tropical rain forest	Asia, continental (> 20 yr)	2.2
Tropical rain forest	Asia, insular (<= 20 yr)	13
Tropical rain forest	Asia, insular (> 20 yr)	3.4
Tropical rain forest	Europe (<= 20 yr)	#N/A
Tropical rain forest	Europe (> 20 yr)	#N/A
Tropical rain forest	New Zealand (<= 20 yr)	#N/A
Tropical rain forest	New Zealand (> 20 yr)	#N/A
Tropical rain forest	South Africa (<= 20 yr)	#N/A
Tropical rain forest	South Africa (> 20 yr)	#N/A
Tropical Moist deciduous for	Africa (<= 20 yr)	5

Tropical Moist deciduous for	Africa (>20 yr)	1.3
Tropical Moist deciduous for	North America (<= 20 yr)	7
Tropical Moist deciduous for	North America (> 20 yr)	2
Tropical Moist deciduous for	South America (<= 20 yr)	7
Tropical Moist deciduous for	South America (> 20 yr)	2
Tropical Moist deciduous for	Asia, continental (<= 20 yr)	9
Tropical Moist deciduous for	Asia, continental (> 20 yr)	2
Tropical Moist deciduous for	Asia, insular (<= 20 yr)	11
Tropical Moist deciduous for	Asia, insular (> 20 yr)	3
Tropical Moist deciduous for	Europe (<= 20 yr)	#N/A
Tropical Moist deciduous for	Europe (> 20 yr)	#N/A
Tropical Moist deciduous for	New Zealand (<= 20 yr)	#N/A
Tropical Moist deciduous for	New Zealand (> 20 yr)	#N/A
Tropical Moist deciduous for	South Africa (<= 20 yr)	#N/A
Tropical Moist deciduous for	South Africa (> 20 yr)	#N/A
Tropical Dry forest	Africa (<= 20 yr)	2.4
Tropical Dry forest	Africa (>20 yr)	1.8
Tropical Dry forest	North America (<= 20 yr)	4
Tropical Dry forest	North America (> 20 yr)	1
Tropical Dry forest	South America (<= 20 yr)	4
Tropical Dry forest	South America (> 20 yr)	1
Tropical Dry forest	Asia, continental (<= 20 yr)	6
Tropical Dry forest	Asia, continental (> 20 yr)	1.5
Tropical Dry forest	Asia, insular (<= 20 yr)	7
Tropical Dry forest	Asia, insular (> 20 yr)	2
Tropical Dry forest	Europe (<= 20 yr)	#N/A
Tropical Dry forest	Europe (> 20 yr)	#N/A
Tropical Dry forest	New Zealand (<= 20 yr)	#N/A
Tropical Dry forest	New Zealand (> 20 yr)	#N/A
Tropical Dry forest	South Africa (<= 20 yr)	#N/A
Tropical Dry forest	South Africa (> 20 yr)	#N/A
Tropical shrubland	Africa (<= 20 yr)	0.45
Tropical shrubland	Africa (>20 yr)	0.9
Tropical shrubland	North America (<= 20 yr)	4
Tropical shrubland	North America (> 20 yr)	1
Tropical shrubland	South America (<= 20 yr)	4
Tropical shrubland	South America (> 20 yr)	1
Tropical shrubland	Asia, continental (<= 20 yr)	5
Tropical shrubland	Asia, continental (> 20 yr)	1.3
Tropical shrubland	Asia, insular (<= 20 yr)	2
Tropical shrubland	Asia, insular (> 20 yr)	1
Tropical shrubland	Europe (<= 20 yr)	#N/A
Tropical shrubland	Europe (> 20 yr)	#N/A
Tropical shrubland	New Zealand (<= 20 yr)	#N/A
Tropical shrubland	New Zealand (> 20 yr)	#N/A
Tropical shrubland	South Africa (<= 20 yr)	#N/A
Tropical shrubland	South Africa (> 20 yr)	#N/A
Tropical Mountain systems	Africa (<= 20 yr)	3.5
Tropical Mountain systems	Africa (>20 yr)	1.25
Tropical Mountain systems	North America (<= 20 yr)	3.4
Tropical Mountain systems	North America (> 20 yr)	0.9
Tropical Mountain systems	South America (<= 20 yr)	3.4
Tropical Mountain systems	South America (> 20 yr)	0.9
Tropical Mountain systems	Asia, continental (<= 20 yr)	1.25
Tropical Mountain systems	Asia, continental (> 20 yr)	0.75

Tropical Mountain systems	Asia, insular (<= 20 yr)	1.25
Tropical Mountain systems	Asia, insular (> 20 yr)	0.75
Tropical Mountain systems	Europe (<= 20 yr)	#N/A
Tropical Mountain systems	Europe (> 20 yr)	#N/A
Tropical Mountain systems	New Zealand (<= 20 yr)	#N/A
Tropical Mountain systems	New Zealand (> 20 yr)	#N/A
Tropical Mountain systems	South Africa (<= 20 yr)	#N/A
Tropical Mountain systems	South Africa (> 20 yr)	#N/A
Subtropical humid forest	Africa (<= 20 yr)	#N/A
Subtropical humid forest	Africa (>20 yr)	#N/A
Subtropical humid forest	North America (<= 20 yr)	7
Subtropical humid forest	North America (> 20 yr)	2
Subtropical humid forest	South America (<= 20 yr)	7
Subtropical humid forest	South America (> 20 yr)	2
Subtropical humid forest	Asia, continental (<= 20 yr)	9
Subtropical humid forest	Asia, continental (> 20 yr)	2
Subtropical humid forest	Asia, insular (<= 20 yr)	11
Subtropical humid forest	Asia, insular (> 20 yr)	3
Subtropical humid forest	Europe (<= 20 yr)	#N/A
Subtropical humid forest	Europe (> 20 yr)	#N/A
Subtropical humid forest	New Zealand (<= 20 yr)	#N/A
Subtropical humid forest	New Zealand (> 20 yr)	#N/A
Subtropical humid forest	South Africa (<= 20 yr)	#N/A
Subtropical humid forest	South Africa (> 20 yr)	#N/A
Subtropical dry forest	Africa (<= 20 yr)	2.4
Subtropical dry forest	Africa (>20 yr)	1.8
Subtropical dry forest	North America (<= 20 yr)	4
Subtropical dry forest	North America (> 20 yr)	1
Subtropical dry forest	South America (<= 20 yr)	4
Subtropical dry forest	South America (> 20 yr)	1
Subtropical dry forest	Asia, continental (<= 20 yr)	6
Subtropical dry forest	Asia, continental (> 20 yr)	1.5
Subtropical dry forest	Asia, insular (<= 20 yr)	7
Subtropical dry forest	Asia, insular (> 20 yr)	2
Subtropical dry forest	Europe (<= 20 yr)	#N/A
Subtropical dry forest	Europe (> 20 yr)	#N/A
Subtropical dry forest	New Zealand (<= 20 yr)	#N/A
Subtropical dry forest	New Zealand (> 20 yr)	#N/A
Subtropical dry forest	South Africa (<= 20 yr)	#N/A
Subtropical dry forest	South Africa (> 20 yr)	#N/A
Subtropical steppe	Africa (<= 20 yr)	#N/A
Subtropical steppe	Africa (>20 yr)	#N/A
Subtropical steppe	North America (<= 20 yr)	4
Subtropical steppe	North America (> 20 yr)	1
Subtropical steppe	South America (<= 20 yr)	4
Subtropical steppe	South America (> 20 yr)	1
Subtropical steppe	Asia, continental (<= 20 yr)	5
Subtropical steppe	Asia, continental (> 20 yr)	1.3
Subtropical steppe	Asia, insular (<= 20 yr)	2
Subtropical steppe	Asia, insular (> 20 yr)	1
Subtropical steppe	Europe (<= 20 yr)	#N/A
Subtropical steppe	Europe (> 20 yr)	#N/A
Subtropical steppe	New Zealand (<= 20 yr)	#N/A
Subtropical steppe	New Zealand (> 20 yr)	#N/A

Subtropical steppe	South Africa (<= 20 yr)	#N/A
Subtropical steppe	South Africa (> 20 yr)	#N/A
Subtropical mountain systen	Africa (<= 20 yr)	3.5
Subtropical mountain systen	Africa (>20 yr)	1.25
Subtropical mountain systen	North America (<= 20 yr)	3.4
Subtropical mountain systen	North America (> 20 yr)	0.9
Subtropical mountain systen	South America (<= 20 yr)	3.4
Subtropical mountain systen	South America (> 20 yr)	0.9
Subtropical mountain systen	Asia, continental (<= 20 yr)	3
Subtropical mountain systen	Asia, continental (> 20 yr)	0.75
Subtropical mountain systen	Asia, insular (<= 20 yr)	7.5
Subtropical mountain systen	Asia, insular (> 20 yr)	2
Subtropical mountain systen	Europe (<= 20 yr)	#N/A
Subtropical mountain systen	Europe (> 20 yr)	#N/A
Subtropical mountain systen	New Zealand (<= 20 yr)	#N/A
Subtropical mountain systen	New Zealand (> 20 yr)	#N/A
Subtropical mountain systen	South Africa (<= 20 yr)	#N/A
Subtropical mountain systen	South Africa (> 20 yr)	#N/A
Temperate Oceanic forest	Africa (<= 20 yr)	#N/A
Temperate Oceanic forest	Africa (>20 yr)	#N/A
Temperate Oceanic forest	North America (<= 20 yr)	15
Temperate Oceanic forest	North America (> 20 yr)	15
Temperate Oceanic forest	South America (<= 20 yr)	#N/A
Temperate Oceanic forest	South America (> 20 yr)	#N/A
Temperate Oceanic forest	Asia, continental (<= 20 yr)	#N/A
Temperate Oceanic forest	Asia, continental (> 20 yr)	#N/A
Temperate Oceanic forest	Asia, insular (<= 20 yr)	#N/A
Temperate Oceanic forest	Asia, insular (> 20 yr)	#N/A
Temperate Oceanic forest	Europe (<= 20 yr)	2.3
Temperate Oceanic forest	Europe (> 20 yr)	2.3
Temperate Oceanic forest	New Zealand (<= 20 yr)	3.5
Temperate Oceanic forest	New Zealand (> 20 yr)	3.5
Temperate Oceanic forest	South Africa (<= 20 yr)	5.65
Temperate Oceanic forest	South Africa (> 20 yr)	5.65
Temperate continental fores	Africa (<= 20 yr)	#N/A
Temperate continental fores	Africa (>20 yr)	#N/A
Temperate continental fores	North America (<= 20 yr)	4
Temperate continental fores	North America (> 20 yr)	4
Temperate continental fores	South America (<= 20 yr)	#N/A
Temperate continental fores	South America (> 20 yr)	#N/A
Temperate continental fores	Asia, continental (<= 20 yr)	4
Temperate continental fores	Asia, continental (> 20 yr)	4
Temperate continental fores	Asia, insular (<= 20 yr)	#N/A
Temperate continental fores	Asia, insular (> 20 yr)	#N/A
Temperate continental fores	Europe (<= 20 yr)	4
Temperate continental fores	Europe (> 20 yr)	4
Temperate continental fores	New Zealand (<= 20 yr)	#N/A
Temperate continental fores	New Zealand (> 20 yr)	#N/A
Temperate continental fores	South Africa (<= 20 yr)	#N/A
Temperate continental fores	South Africa (> 20 yr)	#N/A
Temperate mountain system	Africa (<= 20 yr)	#N/A
Temperate mountain system	Africa (>20 yr)	#N/A
Temperate mountain system	North America (<= 20 yr)	3
Temperate mountain system	North America (> 20 yr)	3
Temperate mountain system	South America (<= 20 yr)	#N/A

Temperate mountain system	South America (> 20 yr)	#N/A
Temperate mountain system	Asia, continental (<= 20 yr)	3
Temperate mountain system	Asia, continental (> 20 yr)	3
Temperate mountain system	Asia, insular (<= 20 yr)	#N/A
Temperate mountain system	Asia, insular (> 20 yr)	#N/A
Temperate mountain system	Europe (<= 20 yr)	3
Temperate mountain system	Europe (> 20 yr)	3
Temperate mountain system	New Zealand (<= 20 yr)	#N/A
Temperate mountain system	New Zealand (> 20 yr)	#N/A
Temperate mountain system	South Africa (<= 20 yr)	#N/A
Temperate mountain system	South Africa (> 20 yr)	#N/A
Boreal coniferous forest	Africa (<= 20 yr)	#N/A
Boreal coniferous forest	Africa (>20 yr)	#N/A
Boreal coniferous forest	North America (<= 20 yr)	1.1
Boreal coniferous forest	North America (> 20 yr)	1.1
Boreal coniferous forest	South America (<= 20 yr)	#N/A
Boreal coniferous forest	South America (> 20 yr)	#N/A
Boreal coniferous forest	Asia, continental (<= 20 yr)	1.1
Boreal coniferous forest	Asia, continental (> 20 yr)	1.1
Boreal coniferous forest	Asia, insular (<= 20 yr)	#N/A
Boreal coniferous forest	Asia, insular (> 20 yr)	#N/A
Boreal coniferous forest	Europe (<= 20 yr)	1.1
Boreal coniferous forest	Europe (> 20 yr)	1.1
Boreal coniferous forest	New Zealand (<= 20 yr)	#N/A
Boreal coniferous forest	New Zealand (> 20 yr)	#N/A
Boreal coniferous forest	South Africa (<= 20 yr)	#N/A
Boreal coniferous forest	South Africa (> 20 yr)	#N/A
Boreal Tundra woodland	Africa (<= 20 yr)	#N/A
Boreal Tundra woodland	Africa (>20 yr)	#N/A
Boreal Tundra woodland	North America (<= 20 yr)	0.4
Boreal Tundra woodland	North America (> 20 yr)	0.4
Boreal Tundra woodland	South America (<= 20 yr)	#N/A
Boreal Tundra woodland	South America (> 20 yr)	#N/A
Boreal Tundra woodland	Asia, continental (<= 20 yr)	0.4
Boreal Tundra woodland	Asia, continental (> 20 yr)	0.4
Boreal Tundra woodland	Asia, insular (<= 20 yr)	#N/A
Boreal Tundra woodland	Asia, insular (> 20 yr)	#N/A
Boreal Tundra woodland	Europe (<= 20 yr)	0.4
Boreal Tundra woodland	Europe (> 20 yr)	0.4
Boreal Tundra woodland	New Zealand (<= 20 yr)	#N/A
Boreal Tundra woodland	New Zealand (> 20 yr)	#N/A
Boreal Tundra woodland	South Africa (<= 20 yr)	#N/A
Boreal Tundra woodland	South Africa (> 20 yr)	#N/A
Boreal mountain system	Africa (<= 20 yr)	#N/A
Boreal mountain system	Africa (>20 yr)	#N/A
Boreal mountain system	North America (<= 20 yr)	1.05
Boreal mountain system	North America (> 20 yr)	1.3
Boreal mountain system	South America (<= 20 yr)	#N/A
Boreal mountain system	South America (> 20 yr)	#N/A
Boreal mountain system	Asia, continental (<= 20 yr)	1.05
Boreal mountain system	Asia, continental (> 20 yr)	1.3
Boreal mountain system	Asia, insular (<= 20 yr)	#N/A
Boreal mountain system	Asia, insular (> 20 yr)	#N/A
Boreal mountain system	Europe (<= 20 yr)	1.05
Boreal mountain system	Europe (> 20 yr)	1.3

Boreal mountain system	New Zealand (<= 20 yr)	#N/A
Boreal mountain system	New Zealand (> 20 yr)	#N/A
Boreal mountain system	South Africa (<= 20 yr)	#N/A
Boreal mountain system	South Africa (> 20 yr)	#N/A

	previous prac	current practice inde	difference in indexes
LUC factor	0	0	
.	.	.	.
.	.	.	.
.	.	.	.
.	.	.	.
tillage factor	0	0	0
input factor - green manure plus c	1	1	0
Compost-IF	0	0	0
Fym-IF	0	0	0
Residue-IF	0	0	0
Overall Factor			
C emissions			
CO2 equivalent			

Current biomass (kg per plant)	Previous biomass (kg per plant)	above ground C current year, all trees	above ground C current year, CO2 equiv, all trees
1	1	0	0
2	2	0	0
3	3	0	0
4	4	0	0

5	5	0	0
6	6	0	0
7	7	0	0
8	8	0	0
9	9	0	0
10	10	0	0
		0	0

na/yr)	Above ground biomass		root shoot ratio
	310		0.37
	310		0.37
*	300		0.37
	300		0.37
	300		0.37
	300		0.37
	280		0.37
	280		0.37
	350		0.37
	350		0.37
	#N/A		#N/A
	#N/A		#N/A
	#N/A		#N/A
	#N/A		#N/A
	#N/A		#N/A
	#N/A		#N/A
	260		0.2

	260		0.24
	220		0.2
	220		0.24
	220		0.2
	220		0.24
	180		0.2
	180		0.24
	290		0.2
	290		0.2
	#N/A		#N/A
	#N/A		#N/A
	#N/A		#N/A
	#N/A		#N/A
	#N/A		#N/A
	#N/A		#N/A
	120		0.56
	120		0.28
	210		0.56
	210		0.28
	210		0.56
	210		0.28
	130		0.56
	130		0.28
	160		0.56
	160		0.28
	#N/A		#N/A
	#N/A		#N/A
	#N/A		#N/A
	#N/A		#N/A
	#N/A		#N/A
	#N/A		#N/A
*	70		0.4
	70		0.4
	80		0.4
	80		0.4
	80		0.4
	80		0.4
	60		0.4
	60		0.4
	70		0.4
	70		0.4
	#N/A		#N/A
	#N/A		#N/A
	#N/A		#N/A
	#N/A		#N/A
	#N/A		#N/A
	#N/A		#N/A
*	115	*	0.27
*	115	*	0.27
*	145	*	0.27
*	145	*	0.27
*	145	*	0.27
*	145	*	0.27
*	135	*	0.27
*	135	*	0.27

*	205	*	0.27
*	205	*	0.27
	#N/A		#N/A
	#N/A		#N/A
	#N/A		#N/A
	#N/A		#N/A
	#N/A		#N/A
	#N/A		#N/A
	#N/A		#N/A
	#N/A		#N/A
	220		0.2
	220		0.24
	220		0.2
	220		0.24
	180		0.2
	180		0.24
	290		0.2
	290		0.24
	#N/A		#N/A
	#N/A		#N/A
	#N/A		#N/A
	#N/A		#N/A
	#N/A		#N/A
	#N/A		#N/A
	140		0.56
	140		0.28
	210		0.56
	210		0.28
	210		0.56
	210		0.28
	130		0.56
	130		0.28
	160		0.56
	160		0.28
	#N/A		#N/A
	#N/A		#N/A
	#N/A		#N/A
	#N/A		#N/A
	#N/A		#N/A
	#N/A		#N/A
	#N/A		#N/A
	#N/A		#N/A
	80		0.32
	80		0.32
	80		0.32
	80		0.32
	60		0.32
	60		0.32
	70		0.32
	70		0.32
	#N/A		#N/A
	#N/A		#N/A
	#N/A		#N/A
	#N/A		#N/A

	#N/A		#N/A
	#N/A		#N/A
*	50		0.27
*	50		0.27
*	145	*	0.27
*	145	*	0.27
*	145	*	0.27
*	145	*	0.27
*	135	*	0.27
*	135	*	0.27
*	410	*	0.27
*	410	*	0.27
	#N/A		#N/A
	#N/A		#N/A
	#N/A		#N/A
	#N/A		#N/A
	#N/A		#N/A
	#N/A		#N/A
	#N/A		#N/A
	#N/A		#N/A
	660		0.433333333
	660		0.248571429
	#N/A		#N/A
	#N/A		#N/A
	#N/A		#N/A
	#N/A		#N/A
	#N/A		#N/A
	#N/A		#N/A
	120		0.433333333
	120		0.248571429
	360		0.433333333
	360		0.248571429
	180		0.433333333
	180		0.248571429
	#N/A		#N/A
	#N/A		#N/A
	60		0.433333333
	130		0.248571429
	#N/A		#N/A
	#N/A		#N/A
	20		0.433333333
	120		0.248571429
	#N/A		#N/A
	#N/A		#N/A
	20		0.433333333
	120		0.248571429
	#N/A		#N/A
	#N/A		#N/A
	#N/A		#N/A
	#N/A		#N/A
	#N/A		#N/A
	#N/A		#N/A
	50		0.433333333
	130		0.248571429
	#N/A		#N/A

	#N/A		#N/A
	100		0.433333333
	130		0.248571429
	#N/A		#N/A
	#N/A		#N/A
	100		0.433333333
	130		0.248571429
	#N/A		#N/A
	#N/A		#N/A
	#N/A		#N/A
	#N/A		#N/A
	#N/A		#N/A
	#N/A		#N/A
*	50	*	0.39
*	50	*	0.24
	#N/A		#N/A
	#N/A		#N/A
*	50	*	0.39
*	50	*	0.24
	#N/A		#N/A
	#N/A		#N/A
*	50	*	0.39
*	50	*	0.24
	#N/A		#N/A
	#N/A		#N/A
	#N/A		#N/A
	#N/A		#N/A
	#N/A		#N/A
	#N/A		#N/A
	3.5	*	0.39
	17.5	*	0.24
	#N/A		#N/A
	#N/A		#N/A
	3.5	*	0.39
	17.5	*	0.24
	#N/A		#N/A
	#N/A		#N/A
	3.5	*	0.39
	17.5	*	0.24
	#N/A		#N/A
	#N/A		#N/A
	#N/A		#N/A
	#N/A		#N/A
	#N/A		#N/A
	#N/A		#N/A
*	13.5	*	0.39
*	45	*	0.24
	#N/A		#N/A
	#N/A		#N/A
*	13.5	*	0.39
*	45	*	0.24
	#N/A		#N/A
	#N/A		#N/A
*	13.5	*	0.39
*	45	*	0.24

	#N/A		#N/A
	#N/A		#N/A
	#N/A		#N/A
	#N/A		#N/A

Factors (respecting conversion time) - annualised	cumulative so far	cumulative at 20 years	considering percentage conversion (annualised)	cumulative so far with percentage conversion
1.00000	1.00000	1	1.00	1.00
.	.	.	.	.
.	.	.	.	.
.	.	.	.	.
.	.	.	.	.
1.00000	1.00000	**1**	1.0000	1.0000
1.00000	1.00000	**1**	1.0000	1.0000
1	1.00000	**1**	1.0000	1.0000
1	1.00000	**1**	1.0000	1.0000
1	1.00000	**1**	1.0000	1.0000
1	**1**	**1**	**1**	**1**
0	**0**	**0**	**0**	**0**
0	**0**	**0**	**0**	**0**

above ground C previous year, all trees	Losses	Above ground Carbon change this year	Above ground Carbon change this year Co2 eq	Below ground carbon change this year
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0

0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
		0	0	0

Forest and region look-ups

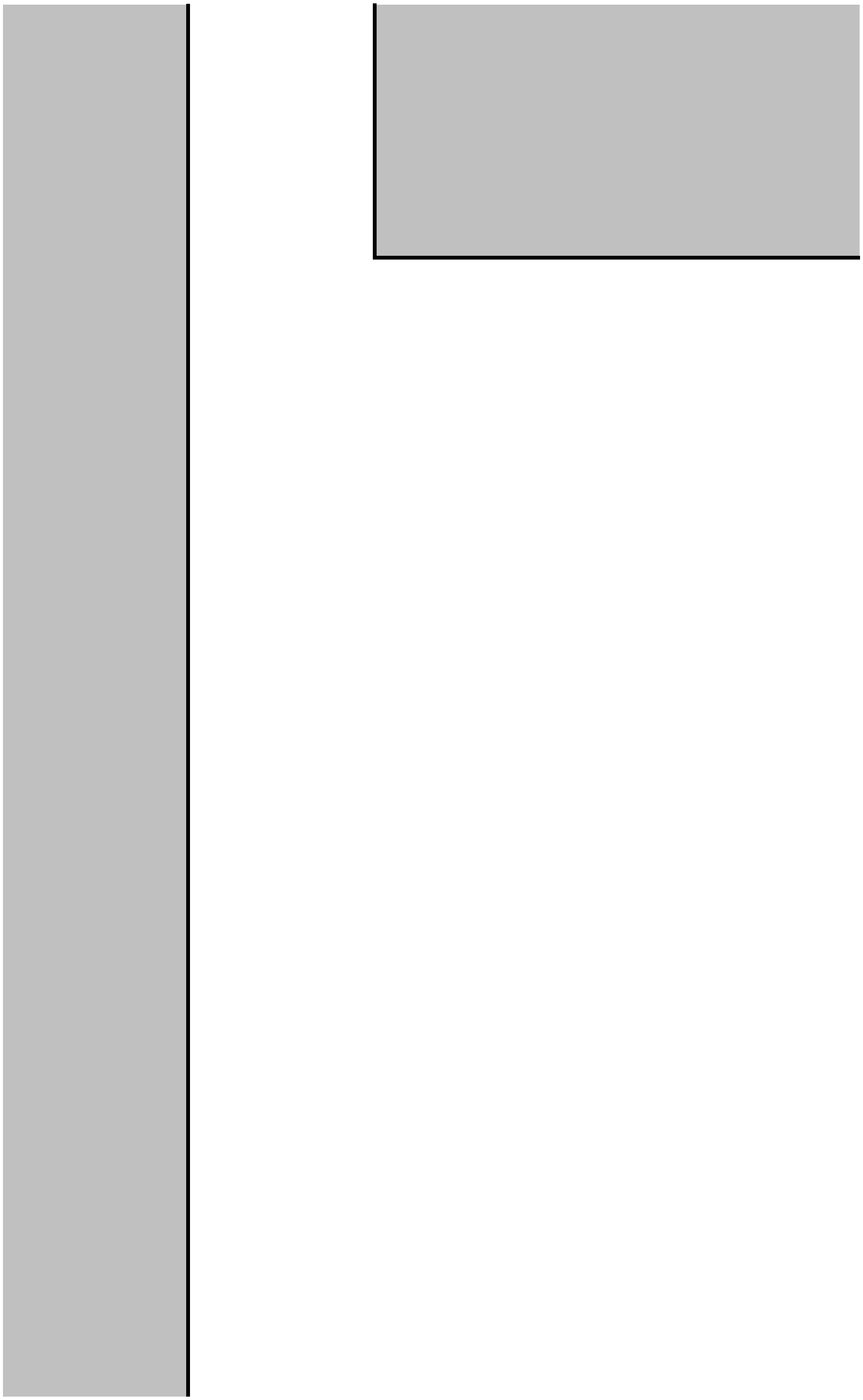
[select]	
Tropical rain fores	1
Tropical Moist dec	2
Tropical Dry fores	3
Tropical shrublan	4
Tropical Mountain	5
Subtropical humic	6
Subtropical dry fo	7
Subtropical stepp	8
Subtropical moun	9
Temperate Ocean	10
Temperate contin	11
Temperate mount	12
Boreal coniferous	13
Boreal Tundra wo	14
Boreal mountain s	15

Africa	1
North America	2
South America	3
Asia, continental	4
Asia, insular	5
Europe	6
New Zealand	7
South Africa	8
Western Europe	6
Latin America	3
Eastern Europe	6
Oceania	5
Indian Subcontine	5
Middle East	1

Allometric models for t

[select]	index for meas
coffee (arabica)	1
shade (Cordia alli	2
Tropical Moist Ha	3
Tropical wet hard	4
temperate/tropica	5
temperate US eas	6
palm(Chrysophyll	7
palm (Attalea coh	8
palm (Sabal sp)	9
palm(Attalea phal	10
palm (Euterpe pre	11
palm (Phenakosp	12

This year	1
	2
	3
	4
	5
	6
	7
	8
	9
	10
Last year	1
	2
	3
	4
	5
	6
	7
	8
	9
	10



cumulative at 20 years with percentage conversion
1.00
.
.
.
.
1.0000
1.0000
1.0000
1.0000
1.0000
1
0
0

Below ground carbon change this year, CO2 eq	Total below ground C	Total below ground C, CO2 equiv	hectare conversion
0	0	0	1
0	0	0	1
0	0	0	1
0	0	0	1

0	0	0	1
0	0	0	1
0	0	0	1
0	0	0	1
0	0	0	1
0	0	0	1
0	0	0	1

Soil carbon change indices

Uni

ree species

CONSTANT	DBH	DBH^Y power	
0.06591739	1.991	0	
0.146554784	2.223	0	
-2.289	2.649	2	
21.297	-6.953	2	

minimum of tropical hardwo
4.697972973

coffee (arabica)	shade (Cordia a	tropical moist wo	tropical wet hardwood
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0

C
co

If conversion	
If conversio	

Land Use Change	Previous	Current	involving forest
No	0	0	
Forest to Grassland	1	2	1
Forest to Arable	1	3	1
Grassland to Forest	2	1	1
Grassland to Arable	2	3	0
Arable to Forest	3	1	1
Arable to Grassland	3	2	0

Tillage practice changes	Previous	Current
No	0	0
Conventional to Reduced	3	2
Conventional to No-till	3	1
Reduced to Conventional	2	3
Reduced to No-till	2	1
No-till to Conventional	1	3
No-till to Reduced	1	2

cover croppping?	compost, manu	previous	current
no change	no change	0	0
started adding	started incorpo	0	1
stopped adding	stopped incorp	1	0

t conversions

	conversion
[Select]	#N/A
mm	0.1
cm	1
inch	2.54
metre	100

kg CO2 eq	1.0000
tonnes CO2 eq	0.0010
pounds CO2 eq	2.2046
tons CO2 eq	0.0011

DBHY multiplier	Root:Shoot Ra	Carbon Fractio	Wood density	
0	0.24	0.5	0.5	0
0	0.24	0.5	0.5	0
-0.021	0.22	0.47	0.45	
0.74	0.37	0.47	0.45	
	0.295	0.51	0.45	
	0.31	0.48	0.45	
	0.29875	0.4825	0.45	
	0.29875	0.4825	0.45	
	0.29875	0.4825	0.45	
	0.29875	0.4825	0.45	
	0.29875	0.4825	0.45	
	0.29875	0.4825	0.45	

od biomass function

tropical/temperate pines	temperate US	palm(Chrysoph	palm (Attalea	palm (Saba
0.887	0.5	0.182	10.856	24.559
0.887	0.5	0.182	10.856	24.559
0.887	0.5	0.182	10.856	24.559
0.887	0.5	0.182	10.856	24.559
0.887	0.5	0.182	10.856	24.559
0.887	0.5	0.182	10.856	24.559
0.887	0.5	0.182	10.856	24.559
0.887	0.5	0.182	10.856	24.559
0.887	0.5	0.182	10.856	24.559
0.887	0.5	0.182	10.856	24.559
0.887	0.5	0.182	10.856	24.559
0.887	0.5	0.182	10.856	24.559
0.887	0.5	0.182	10.856	24.559
0.887	0.5	0.182	10.856	24.559
0.887	0.5	0.182	10.856	24.559
0.887	0.5	0.182	10.856	24.559
0.887	0.5	0.182	10.856	24.559
0.887	0.5	0.182	10.856	24.559
0.887	0.5	0.182	10.856	24.559
0.887	0.5	0.182	10.856	24.559

arbon lost/gained from
onversion from/to forest

		index forest type	index region	Age < 20?
from forest		0	3	1
n to forest		0	3	1

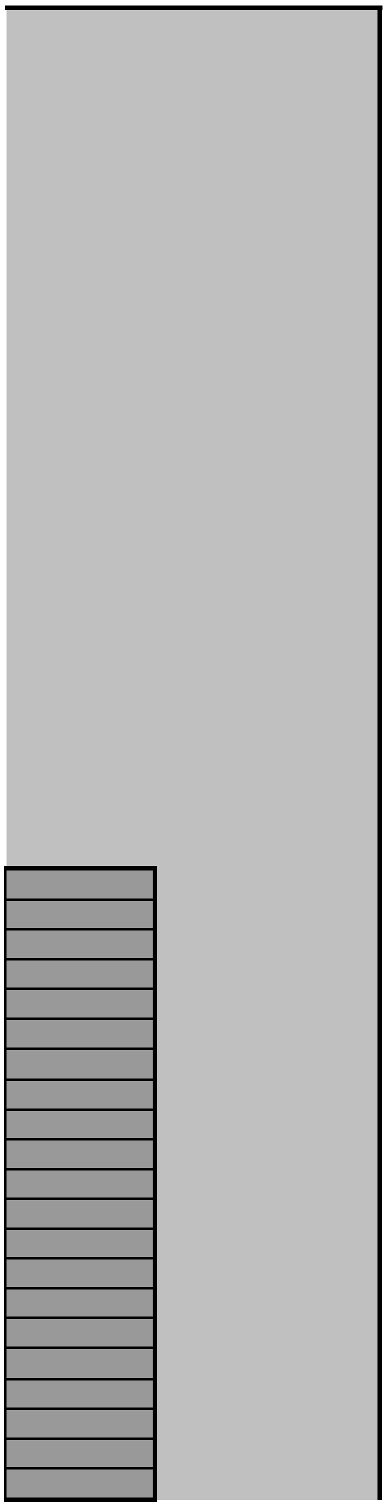
		diameter at 15cm from ground	
		diameter at breast height	
		diameter at breast height	
		diameter at breast height	
		diameter at breast height	
		diameter at breast height	
		height	
		height	
		height	
		height	
		height	
		height	

2.718281828

palm(Attalea phalarata)	palm (Euterpe precatoria	palm (Phenakospermun guianensis)		
0	0	0		
0	0	0		
0	0	0		
0	0	0		
0	0	0		
0	0	0		
0	0	0		
0	0	0		
0	0	0		
0	0	0		
0	0	0		
0	0	0		
0	0	0		
0	0	0		
0	0	0		
0	0	0		
0	0	0		
0	0	0		
0	0	0		
0	0	0		

is forest involved	country	Region	index for forest type and region	conversion factor from t C to kgs CO2
0	24	Latin America	-11	3666.666667

biomass growth (AG) <20	net biomass growth (AG) >20 yrs	eventual mass (AG)	rootshoot ratio	below ground biomass	current above ground biomass
0	0	0	0	0	0
0	0	0	0	0	0



current below ground biomass	annual AG biomass change (t C)	below ground biomass	ground biomass (CO2	ground biomass (CO2	AG biomass change	below ground biomass
0	#N/A	#N/A	0	0	#N/A	#N/A
0	0	0	0	0	0	0

Livestock

Life cycle

This section should always be completed if using this tab

The data to the right may either represent a typical life cycle or else a snapshot

Life cycle or snapshot	Snapshot
Livestock type*	[Select]
	Length of phase
Juvenile phase	0
Adult productive phase*	0
Adult non-productive phases	0

Juvenile phase

Feed mix percentage, pasture type (if applicable) and manure management are required for simple (Tier 1) estimate. Optional inputs can be used to refine the estimate (Tier 2).

FEED CHARACTERISTICS

Percentage of diet from feed mix (instead of grazing)	0
	Quality
Type of grazing if applicable	[Select]

MANURE MANAGEMENT

Manure management system
[Select]

		[Select]
		[Select]
	Comments on manure management:	(Type over this cell to enter any co manure management s
Adult productive phase Feed mix percentage, pasture type (if applicable) and manure management are required for simple (Tier 1) estimate. Optional inputs can be used to refine the estimate (Tier 2).	**FEED CHARACTERISTICS**	
	Percentage of diet from feed mix (instead of grazing)	0
		Quality
	Type of grazing if applicable	[Select]
	MANURE MANAGEMENT	
		Manure management system
		[Select]
		[Select]
		[Select]
	Comments on manure management:	(Type over this cell to enter any co manure management s
Adult non-productive	**FEED CHARACTERISTICS**	
	Percentage of diet from feed mix (instead of grazing)	0

phase

Quality

Type of grazing if applicable	[Select]

MANURE MANAGEMENT

Feed mix percentage, pasture type (if applicable) and manure management are required for simple (Tier 1) estimate. Optional inputs can be used to refine the estimate (Tier 2).

Manure management system

[Select]

[Select]

[Select]

Comments on manure management: (Type over this cell to enter any co manure management s

Annualised emissions in kg per year

	Total in feed	Enteric
Growing phase	-	-
Productive adults	-	-
Non-productive adults	-	-
Totals	-	-

Lifecycle

	-	-
	-	-
	-	-
	-	-

RESULTS SO FAR

by land area:	1,630,541.8	kg CO2 eq	Per hectare
by production:	20.6	kg CO2 eq	Per kilogram

TOCK | ENERGY USE | PROCESSING | TRANSPORT | RESULTS

ductive | 5. Animal Residue | 6. Results

Time unit

0

0

0

Number of animals 0

Number of animals* 0

Number of animals 0

OPTIONAL INPUT

dry matter intake per head

%

Type

[Select]

You may select components of your own feed mix to the right to estimate emissions for this component. If you leave this section blank emissions will be assumed for European cereal production.

1

2

3

4

5

6

7

8

9

Percentage of manure managed under this system (when in use)	Number of days per year this system is used
0	0

0	0	10
0	0	
omments about your strategy .)	**0**	

OPTIONAL INPUT

%

You may select components of your own feed mix to the right to estimate emissions for this component. If you leave this section blank emissions will be assumed for average feed component production.

dry matter intake per head

Type

[Select]

1
2
3

% of manure managed under this system (when in use)	**Number of days per year this system is used**	
		4
		5
0	0	**6**
0	0	**7**
0	0	**8**
omments about your strategy .)	**0**	**9**
		10

OPTIONAL INPUT

%

dry matter intake per head

You may select components of your own feed mix to the right to estimate emissions for this component. If you leave this section blank emissions will be assumed for European cereal production.

Type

[Select]

1
2
3
4
5
6
7
8
9
10

Percentage of manure managed under this system (when in use)	Number of days per year this system is used
0	0
0	0
0	0
omments about your strategy .)	0

Manure Ch4	Manure direct N2O	Manure indirect N2O	kg CO2 eq
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-

kg CO2 eq

-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-

'S

CATTLE/BUFFALO ONLY

dry matter intake can be estimated from t

0	kgs/day

Feed Component	Percentage	
Select	0	%
Select	0	%
Select	0	%
Select	0	%
Select	0	%
Select	0	%
Select	0	%
Select	0	%
Select	0	%

start weight

female adult weight

male adult weight

number of (juvenile) females

Estimated dry matter intake

Select	0	%
Total	**0**	**%**

'S

CATTLE/BUFFALO ONLY

dry matter intake can be estimated from t

0 kgs/day

milk production (per day)

Fat content of milk%

Protein content of milk%

Feed	**Percentage**	
Select	0	%
Select	0	%
Select	0	%
Select	0	%
Select	0	%
Select	0	%
Select	0	%
Select	0	%
Select	0	%
Select	0	%
Total	**0**	

percentage of cows pregnant

Estimated dry matter intake

S

0 kgs/day

Feed	Percentage	
Select	0	%
Select	0	%
Select	0	%
Select	0	%
Select	0	%
Select	0	%
Select	0	%
Select	0	%
Select	0	%
Select	0	%
Total	**0**	

the following

	Units
	kgs
	kgs
	kgs

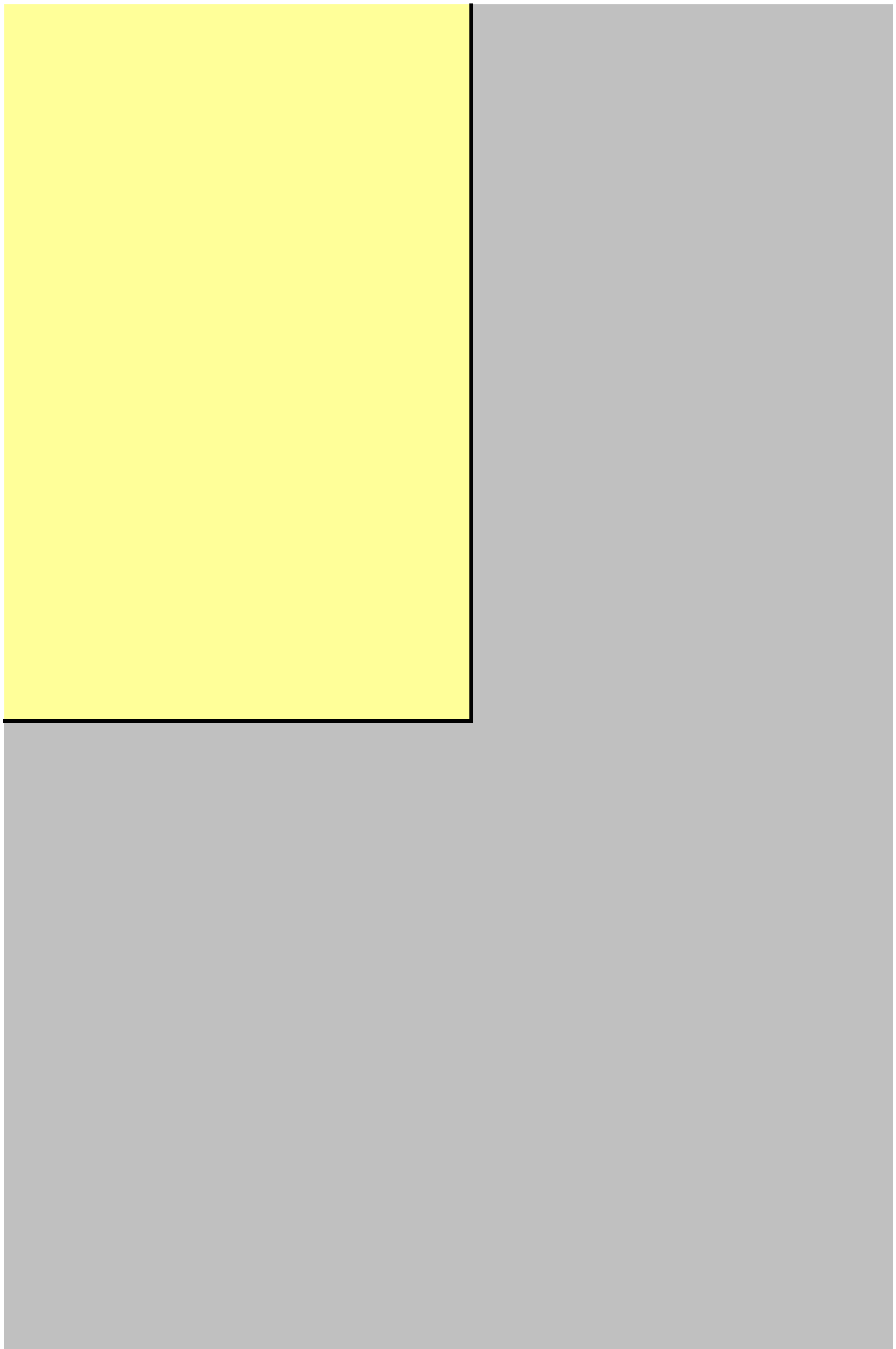
	kgs
	pounds

the following

	kgs

0	%

	kgs
	pounds



number of years fo	min of 1 year and life cy
0	0
0	0
0	0

Emissions from feed

	% in feed mix	Emissions CO2 equiv
	0	0
	0	0
	0	0
	0	0
	0	0
	0	0
	0	0
	0	0
	0	0
	0	0
total for default	100	0

total CO2 to carry forward (defaults | 0

		Emissions CO2 equiv
	0	0
	0	0
	0	0
	0	0
	0	0
	0	0
	0	0
	0	0
	0	0
	0	0
total for default	100	0

total CO2 to carry forward (defaults | 0

	Emissions CO2 equiv
0	0
0	0
0	0

	0	0
	0	0
	0	0
	0	0
	0	0
	0	0
	0	0
total for default	100	0

total CO2 to carry forward (defaults	0

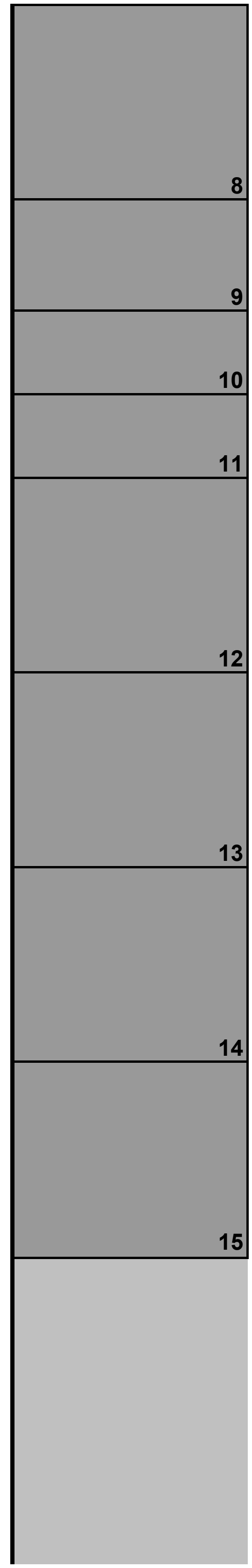
Totals for whole life cycle
Growing phase
Adults
Non-prod

Totals

life expectancy

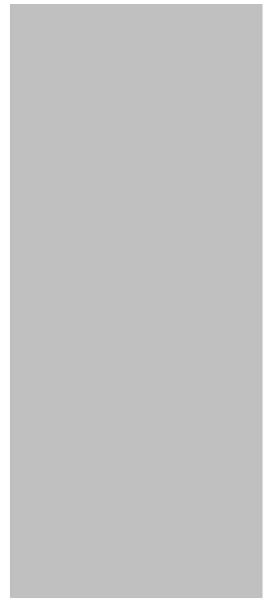
GENERA

Manure
1
2
3
4
5
6
7


8
9
10
11
12
13
14
15

Enteric a

Specific h



ycle time

Enteric emissions

Tier

Tier

	Use the Tier 2 e
	Tier
	Tier perc
	Use the Tier 2 e
	Tier

Total	Tier
	Use the Tier 2 e

Life cycle

Feed	Enteric
0	0.00
0	0.0000
0	0.00

0

days	length of lifecycle

0	0
	0
	0

AL

Region	Latin America

Temperature celsius used	
17.3	

Life cycle
Snapshot
only - please ignore

	1
	Daily spread
dairy cows	Dairy cow - daily spread
other cattle	Dairy cow - daily spread
pigs, mature	Dairy cow - daily spread
pigs, growing	Dairy cow - daily spread
buffalo, mature	Dairy cow - daily spread
buffalo, growing	Dairy cow - daily spread
sheep	Dairy cow - daily spread

goats	Dairy cow - daily spread
camels	Dairy cow - daily spread
horses	Dairy cow - daily spread
rabbits	Dairy cow - daily spread
hens	Dairy cow - daily spread
pullets	Dairy cow - daily spread
turkeys	Dairy cow - daily spread
ducks	Dairy cow - daily spread

dairy cows	72
other cattle	56
pigs, mature	1.5
pigs, growing	1.5
buffalo, mature	55
buffalo, growing	55
sheep	8
goats	5
camels	46
horses	18
rabbits	0
hens	0
pullets	0
turkeys	0
ducks	0

	% N lost from volatilisation
Swine - anaerobic lagoon	40
Swine - pit storage	25
Swine Deep bedding	40
Swine Liquid slurry	48
Swine Solid store	45
Dairy cow - Anaerobic lagoon	35
Dairy cow - Liquid slurry	40
Dairy cow Pit storage	28
Dairy cow - Dry lot	20
Dairy cow - Solid storage	30
Dairy cow - daily spread	7
Poultry - without litter	55
Poultry - anaerobic lagoon	40
Poultry - with litter	40
Other cattle - dry lot	30
Other cattle - Solid storage	45
Other cattle - Deep bedding	30
Other animal (not pigs, cattle, poultry	25
Other animal (not pigs, cattle, poultry	12
grazing	20

nd feed requirements

kgs	*0.001*
tonnes	*1*
tons (US, short)	*0.90718474*
litres	*0.001*

	Ym
Feedlot fed cattle	3
Dairy cows	6.5
Other cattle - low quality crop residue	6.5
Other cattle/buffalo grazing	6.5

	Ym
Lambs	4.5
Mature sheep	6.5

	NE
[Select]	0.8
High quality forage	0.7
Medium quality forage	0.6
Low quality forage	0.45

	cattle maintenance
[Select]	0
High quality forage	0.17
Medium quality forage	0.36
Low quality forage	0.36

ens

Commercial Brown

Hy-Line W-36

Hy-Line W-98

Hy-Line Silver Brown

[Select]	combined CO2-eq emissions
Calcium supplement	19
Chickpea	188.9453805
Cotton	387.3957687
Field Bean [Broad Bean, Faba Bean	42.258
Field Pea	35.215
Fodder Legumes	19.50689657
Fodderbeet	141.7012335
Groundnut [Peanut]	88.53097875
Lentil	177.1362943
Maize	271.2409257
Millet	305.1708745
Oats	207.9444985
Oilseed Rape	427.7778679
Pigeon pea/cowpea/mungbean	226.3480773
Potato	90.74438768
Rice	183.0482527
Rye	273.6240588
Safflower	432.4579648
Sorghum	151.0774223
Soybean	98.60398365

Spring barley	335.002189
Sugarbeet	10.10994242
Sunflower	287.3885755
Sweet Potato	97.85935474
Temperate Grassland: Grass/Legum	31.39714375
Temperate Grassland: Permanent G	432.2396206
Tropical Grasses	45.38555762
Wheat	140.9707893
Winter barley	271.0834088
Yams and Cocoyams	38.24304365
User defined 1	#DIV/0!
User defined 2	#DIV/0!
User defined 3	#DIV/0!
User defined 4	#DIV/0!
User defined 5	#DIV/0!
User defined 6	#DIV/0!

factors

· 1 enteric

Tier 1 classification

immature

· 2 enteric

Juvenile phase	0
Numbers	0
males	0
Assumed dry matter intake per head per day	0
Mature weight (kgs)	0
average bodyweight in growing phase	0
quantity (tonnes) consumed over period	0

estimate if it's available

1 enteric

Tier 1 classification

lactating

2 enteric

Adult phase	0
Number	0
Assumed dry matter intake per head per day	0
quantity (tonnes) consumed over period	0
entage of *productive time* actually in production	100

estimate if it's available

1 enteric

Tier 1 classification

olds

· 2 enteric

Adult phase	0
Number	0
Assumed dry matter intake per head per day	0
quantity (tonnes) consumed over period	0

estimate if it's available

Manure Ch4	Manure direct N2O
0.00	0.00
0.0000	0.0000
0.00	0.00

lengths of phases	to use in annualised emissions

0	0
0	0
0	0

	developped
	0

temperature used in lookups	°C
17.3	°F

for H7	null

2	3
Solid storage	**Dry lot**
Dairy cow - Solid storage	Dairy cow - Dry lot
Other cattle - Solid storage	Other cattle - dry lot
Other cattle - Solid storage	Other cattle - dry lot
Other animal (not pigs, cattle, poultry) - Solid storage	Other cattle - dry lot
Other animal (not pigs, cattle, poultry) - Solid storage	Other cattle - dry lot
Other animal (not pigs, cattle, poultry) - Solid storage	Other cattle - dry lot
Other animal (not pigs, cattle, poultry) - Solid storage	Other cattle - dry lot

Other animal (not pigs, cattle, poultry) - Solid storage	Other cattle - dry lot
Other cattle - Solid storage	Other cattle - dry lot
Swine Solid store	Other cattle - dry lot
Swine Solid store	Other cattle - dry lot
Other animal (not pigs, cattle, poultry) - Solid storage	Other cattle - dry lot
Other animal (not pigs, cattle, poultry) - Solid storage	Other cattle - dry lot
Other animal (not pigs, cattle, poultry) - Solid storage	Other cattle - dry lot
Other animal (not pigs, cattle, poultry) - Solid storage	Other cattle - dry lot

is it enteric	Manure N excretion index
1	1
1	2
0	4
0	3
1	15
1	2
0	11
0	12
0	14
0	13
0	17
0	5
0	6
0	9
0	10

kg CO2 eq
tonnes CO2 eq
pounds CO2 eq
tons CO2 eq

DE

[Select]
pasture
open grazing

1
2
3

Days	eggs
Weeks	dozen eggs
Months	liters
Years	gallons
	cwt

proportion females	0.5
proportion males	0.5
0.00	

0.00

0.00

Manure indirect N2O
0.00
0.0000
0.00

developing
1

4	5
Liquid slurry with natural crust cover	**Liquid slurry without natural crust cover**
Dairy cow - Liquid slurry	Dairy cow - Liquid slurry
Dairy cow - Liquid slurry	Dairy cow - Liquid slurry
Dairy cow - Liquid slurry	Dairy cow - Liquid slurry
Dairy cow - Liquid slurry	Dairy cow - Liquid slurry
Dairy cow - Liquid slurry	Dairy cow - Liquid slurry
Dairy cow - Liquid slurry	Dairy cow - Liquid slurry
Dairy cow - Liquid slurry	Dairy cow - Liquid slurry

Dairy cow - Liquid slurry	Dairy cow - Liquid slurry
Dairy cow - Liquid slurry	Dairy cow - Liquid slurry
Swine Liquid slurry	Swine Liquid slurry
Swine Liquid slurry	Swine Liquid slurry
Swine Liquid slurry	Swine Liquid slurry
Swine Liquid slurry	Swine Liquid slurry
Swine Liquid slurry	Swine Liquid slurry
Swine Liquid slurry	Swine Liquid slurry

index	VS, MCF, B index indexing (cattle, pigs, buffalo)
1	104
2	91
10	52
11	65
3	79
9	79
4	116
5	118
6	120
7	122
8	0
12	126
13	130
14	132
15	134

1.0000
0.0010
2.2046
0.0011

	NE
High Grain Diet	8
High quality forage	7
Moderate quality forage	6
Low quality forage	4.5

UE
0
0.17
0.36

Ym
0.03
0.065
0.065
0.065

corn	grams
soybeans	kg
wheat	metric tons
barley	ounces
peas	pounds

Tier 2 emissions for cattle

Coefficients for energy required

Lactating cows	0.386
cattle	0.37
pregnancy	0.407

cattle	0.37

kg Co2 eq
0
0
0

0
0
0
0

	[Select]	immature
1	cattle	other cattle
2	buffalo	buffalo, gro
3	sheep	sheep
4	pigs	pigs, growi
5	goats	goats
6	camels	camels
7	horses	horses
8	rabbits	rabbits
9	hens	hens
10	pullets	pullets
11	turkeys	turkeys
12	ducks	ducks

6	7	8
Uncovered anaerobic lagoon	**Pit storage below animal confinements**	**Deep bedding - no mixing**
Dairy cow - Anaerobic lagoon	Swine - pit storage	Other cattle - Deep bedding
Dairy cow - Anaerobic lagoon	Swine - pit storage	Other cattle - Deep bedding
Dairy cow - Anaerobic lagoon	Swine - pit storage	Other cattle - Deep bedding
Dairy cow - Anaerobic lagoon	Swine - pit storage	Other animal (not pigs, cattle, poultry) - Deep bedding
Dairy cow - Anaerobic lagoon	Swine - pit storage	Other animal (not pigs, cattle, poultry) - Deep bedding
Dairy cow - Anaerobic lagoon	Swine - pit storage	Other animal (not pigs, cattle, poultry) - Deep bedding
Dairy cow - Anaerobic lagoon	Swine - pit storage	Other animal (not pigs, cattle, poultry) - Deep bedding

Dairy cow - Anaerobic lagoon	Swine - pit storage	Other animal (not pigs, cattle, poultry) - Deep bedding
Dairy cow - Anaerobic lagoon	Swine - pit storage	Other cattle - Deep bedding
Swine - anaerobic lagoon	Swine - pit storage	Swine Deep bedding
Swine - anaerobic lagoon	Swine - pit storage	Swine Deep bedding
Poultry - anaerobic lagoon	Swine - pit storage	Other animal (not pigs, cattle, poultry) - Deep bedding
Poultry - anaerobic lagoon	Swine - pit storage	Other animal (not pigs, cattle, poultry) - Deep bedding
Poultry - anaerobic lagoon	Swine - pit storage	Other animal (not pigs, cattle, poultry) - Deep bedding
Poultry - anaerobic lagoon	Swine - pit storage	Other animal (not pigs, cattle, poultry) - Deep bedding

VS indexing (other animals)
1
3
5
7
11
12
13
14

Swine - anaerobic lagoon
Swine - pit storage
Swine Deep bedding
Swine Liquid slurry
Swine Solid store
Dairy cow - Anaerobic lagoon
Dairy cow - Liquid slurry
Dairy cow Pit storage
Dairy cow - Dry lot
Dairy cow - Solid storage
Dairy cow - daily spread
Poultry - without litter
Poultry - anaerobic lagoon
Poultry - with litter
Other cattle - dry lot
Other cattle - Solid storage
Other cattle - Deep bedding
Other animal (not pigs, cattle, poultry
Other animal (not pigs, cattle, poultry
Zero

kgs	kgs/day
pounds	pounds/day

DE
0.8
0.7
0.6
0.5

	C
females	0.8
castrates	1
bulls	1.2

	sheep maintenance
housed	0.009
flat pasture	0.0107
hilly pasture	0.024
housed for fattening	0.0067

Commerci
al Brown
Hy-Line
W-36
Hy-Line
W-98
Hy-Line
Silver
Brown

DE for forage in diet	0
DE including feed (assuming high grain)	#DIV/0!
REM (Ratio energy available for maintenance)	#DIV/0!
CF maintenance overall	0.37
daily weight gain	#DIV/0!
REG (Ratio energy available for growth)	#DIV/0!

DE for forage in diet	0
DE including feed (assuming high grain)	#DIV/0!
available for maintenance)	#DIV/0!
CF maintenance overall	0.386

DE for forage in diet	0
DE including feed (assuming high grain)	#DIV/0!
available for	#DIV/0!
Cfmaintenance overall	0.37

lactating	non-lactating	olds	castrates
dairy cows	other cattle	other cattle	other cattle
buffalo, mature	buffalo, mature	buffalo, mature	buffalo, mature
sheep	sheep	sheep	sheep
pigs, mature	pigs, mature	pigs, mature	pigs, mature
goats	goats	goats	goats
camels	camels	camels	camels
horses	horses	horses	horses
rabbits	rabbits	rabbits	rabbits
hens	hens	hens	hens
pullets	pullets	pullets	pullets
turkeys	turkeys	turkeys	turkeys
ducks	ducks	ducks	ducks

9	10	11	12
Deep bedding - active mixing	**Composting in vessel**	**Composting - static pile**	**Composting - forced aeration**
Other cattle - Deep bedding	Zero	Zero	Zero
Other cattle - Deep bedding	Zero	Zero	Zero
Other cattle - Deep bedding	Zero	Zero	Zero
Other animal (not pigs, cattle, poultry) - Deep bedding	Zero	Zero	Zero
Other animal (not pigs, cattle, poultry) - Deep bedding	Zero	Zero	Zero
Other animal (not pigs, cattle, poultry) - Deep bedding	Zero	Zero	Zero
Other animal (not pigs, cattle, poultry) - Deep bedding	Zero	Zero	Zero

Other animal (not pigs, cattle, poultry) - Deep bedding	Zero	Zero	Zero
Other cattle - Deep bedding	Zero	Zero	Zero
Swine Deep bedding	Zero	Zero	Zero
Swine Deep bedding	Zero	Zero	Zero
Other animal (not pigs, cattle, poultry) - Deep bedding	Zero	Zero	Zero
Other animal (not pigs, cattle, poultry) - Deep bedding	Zero	Zero	Zero
Other animal (not pigs, cattle, poultry) - Deep bedding	Zero	Zero	Zero
Other animal (not pigs, cattle, poultry) - Deep bedding	Zero	Zero	Zero

) - Deep bedding
) - Solid storage

1
2.201

Food energy density
18.5

0.05	0.11	Composting
0.05	0.09	Converting to Biogas
0.05	0.10	Selling as input
0.05	0.11	

	Net energy requirements	Gross Energy req (GE)	DMI (kg/day)
Maintenance	0	#DIV/0!	#DIV/0!
Growth - females	#DIV/0!	#DIV/0!	#DIV/0!
Growth males	#DIV/0!	#DIV/0!	#DIV/0!
Activity	0	#DIV/0!	#DIV/0!
Total		#DIV/0!	#DIV/0!

	Net energy requirements	Gross Energy req (GE)	DMI (kg/day)
Maintenance	0	#DIV/0!	#DIV/0!
Milk production	0	#DIV/0!	#DIV/0!
Activity	0	#DIV/0!	#DIV/0!
Total		#DIV/0!	#DIV/0!

	Net energy requirements	Gross Energy req (GE)	DMI (kg/day)
Maintenance	0	#DIV/0!	#DIV/0!
Activity	0	#DIV/0!	#DIV/0!
Total		#DIV/0!	#DIV/0!

EF grazing	Embedded DMI equations	Is hens?
0.02	1	0
0.02	1	0
0.01	0	0
0.01	0	0
0.01	0	0
0.01	0	0
0.01	0	0
0.01	0	0
0.01	0	1
0.01	0	0
0.01	0	0
0.01	0	0

13	14	15	16
Composting - non-forced aeration	**Poultry manure with litter**	**Poultry manure without litter**	**Aerobic treatment - natural aeration**
Zero	Poultry - with litter	Poultry - without litter	Zero
Zero	Poultry - with litter	Poultry - without litter	Zero
Zero	Poultry - with litter	Poultry - without litter	Zero
Zero	Poultry - with litter	Poultry - without litter	Zero
Zero	Poultry - with litter	Poultry - without litter	Zero
Zero	Poultry - with litter	Poultry - without litter	Zero
Zero	Poultry - with litter	Poultry - without litter	Zero

Zero	Poultry - with litter	Poultry - without litter	Zero
Zero	Poultry - with litter	Poultry - without litter	Zero
Zero	Poultry - with litter	Poultry - without litter	Zero
Zero	Poultry - with litter	Poultry - without litter	Zero
Zero	Poultry - with litter	Poultry - without litter	Zero
Zero	Poultry - with litter	Poultry - without litter	Zero
Zero	Poultry - with litter	Poultry - without litter	Zero
Zero	Poultry - with litter	Poultry - without litter	Zero

[Select]	Emissions factor for direct	Order	
Daily spread	0	7	1
Solid storage	0.005	3	2
Dry lot	0.02	4	3
Liquid slurry with natural crust cover	0.005	2	4
Liquid slurry without natural crust cover	0	2	5
Uncovered anaerobic lagoon	0	1	6
Pit storage below animal confinements	0.002	5	7
Anaerobic digester	0	8	8
Deep bedding - no mixing	0.01	9	9
Deep bedding - active mixing	0.07	10	10
Composting - forced aeration	0.006666667	11	11
Composting - non-forced aeration	0.01	12	12
Poultry manure with litter	0.001	13	13
Poultry manure without litter	0.001	14	14
Aerobic treatment - natural aeration	0.01	15	15
Aerobic treatment - forced aeration	0.005	16	16
Grazing	0	17	17

	Cf (maintenance)
non-lactating cows	0.322
Lactating cows	0.386
cattle	0.37
young and female sheep	0.2265
male sheep	0.260475

years
1
7
30.41666667
365

Manu

Tier 1 EF | 0

Tier 2 cattle

juv

adult

Feed methane conversion factor

Emissions factors

Feed methane conversion factor	Emissions factors
0.00%	0

percentage of manure in each system

0.00%

Tier 2 EF | 0

0.00%
0.00%

Used (kg CH4 /head/year) 0

Tier 1 EF 0

Feed methane conversion factor

Emissions factors

0.00%	0

Tier 2 EF 0

percentage of manure in this system

0.00%
0.00%
0.00%

/head/year) 0

Tier 1 EF 0

Feed methane conversion factor	Emissions factors
0.00%	0

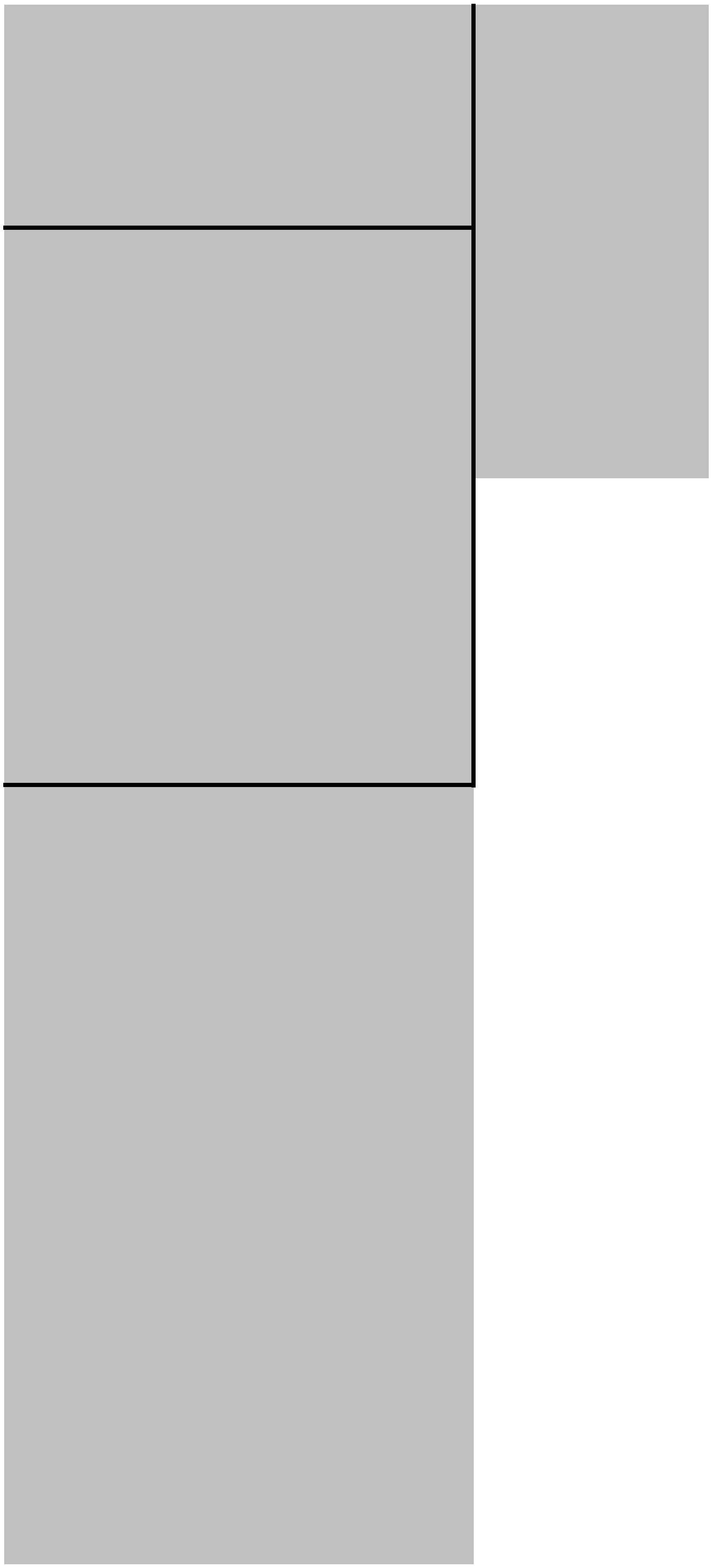
Tier 2 EF	0
Used (kg CH4 /head/year)	0

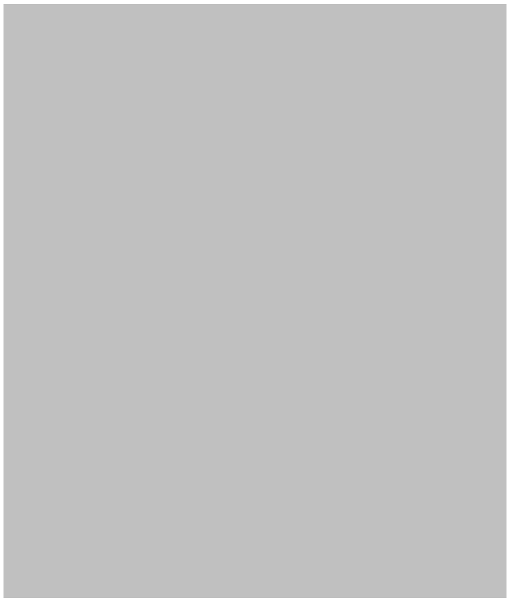
percentage of manure in this system
0.00%
0.00%
0.00%

	0	dairy cow	other
North America	1	128	53
Western Europe	2	117	57
Eastern Europe	3	99	58
Oceania	4	90	60
Latin America	5	72	56
Africa	6	46	31
Middle East	7	46	31
Asia	8	68	47
Indian Subcontinent	9	58	27

17	18
Aerobic treatment - forced aeration	**Grazing**
Zero	grazing
Zero	grazing
Zero	grazing
Zero	grazing
Zero	grazing
Zero	grazing
Zero	grazing

Zero	grazing
Zero	grazing
Zero	grazing
Zero	grazing
Zero	grazing
Zero	grazing
Zero	grazing
Zero	grazing





ıre methane and N2O (direct and indirec

mass females	mass males
0	0
0	0

Mass
B
VS
Daily N excretio

methane

MCF	EF CH4 - per head per year	Totals, CH4 (kg per year for this sub-population	Classification	percentage and storage time multiplier
17	0.00	0.00	0	0

17	0.00	0.00	0	0
17	0.00	0.00	0	0

Mass
B
VS
Daily N excretio

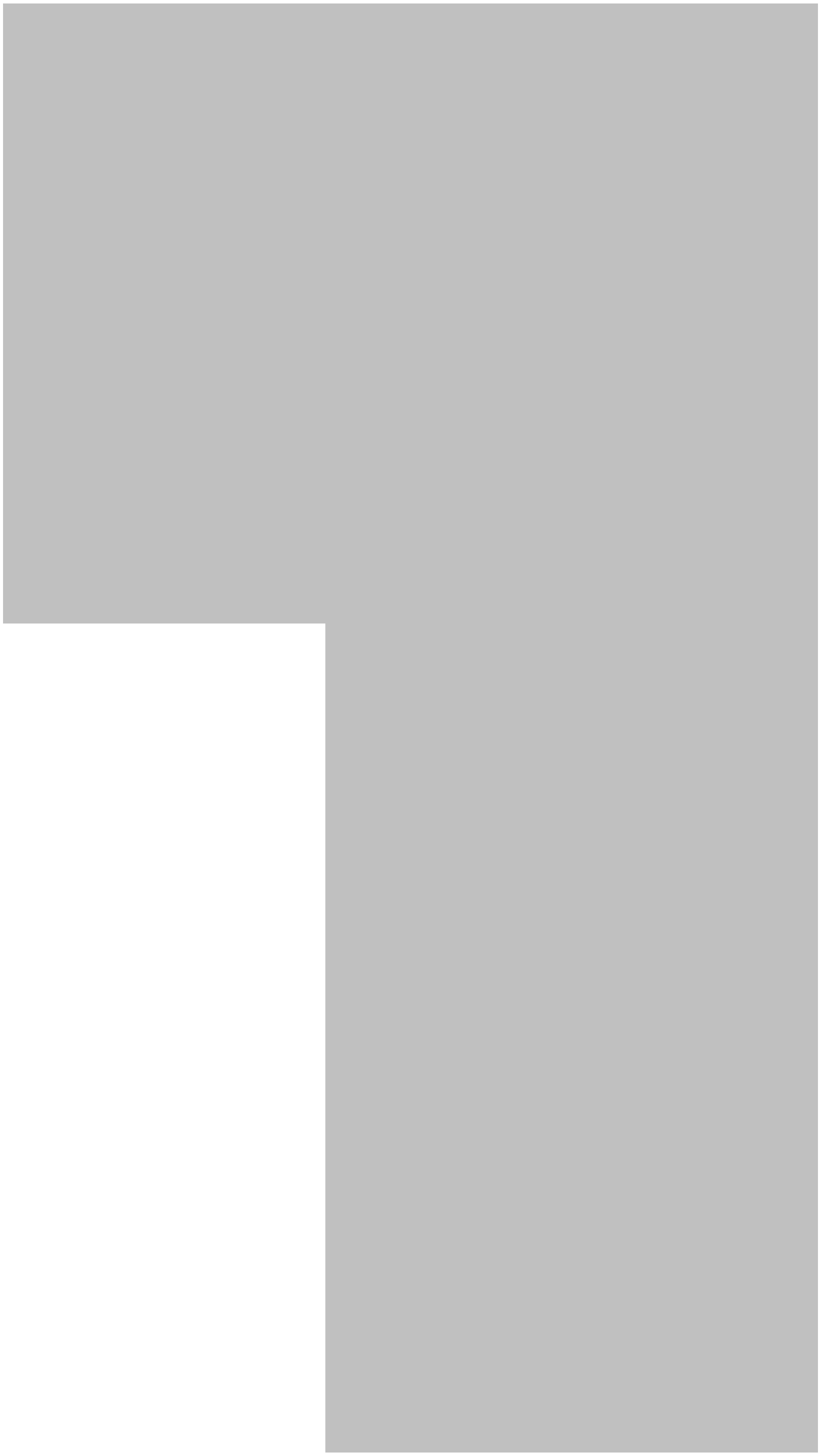
methane

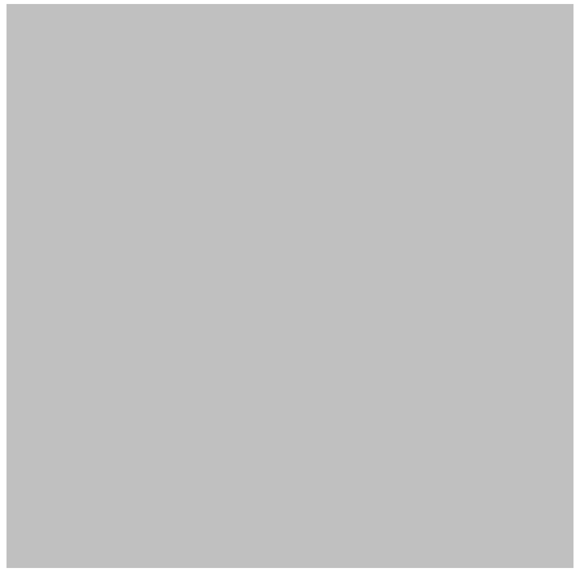
MCF	EF CH4 - per head per year	Totals, CH4 (kg per year for this	Classification	percentage and storage
17	0.00	0.00	0	0
17	0.00	0.00	0	0
17	0.00	0.00	0	0

Tier 1 VSs, max

Mass
B
VS

				Daily N excretic
methane				
MCF	EF CH4 - per head per year	per year for this sub-population	Classification	and storage time multiplier
17	0.00	0.00	0	0
17	0.00	0.00	0	0
17	0.00	0.00	0	0





ct)

other animals	cattle, pigs, buffa	used in lookups
0	0	0
0	0	0
0	0	0
on rate (kg per 1000 kg animal)		Latin America

nitrous oxide

Nex by by these cattle (kg/year)	N2O EF (dir)	indirect N2O	totals direct N2O (kg/year for	totals indirect N2O (kg/year for
#VALUE!	0	0.00000	0	0

#VALUE!	0	0.00000	0	0
#VALUE!	0	0.00000	0	0

other animals	cattle, pigs, buffa	used in lookups
0	0	0
0	0	0
0	0	0

on rate (kg per 1000 kg animal) Latin America

nitrous oxide

Nex by by these cattle (kg/year)	N2O EF (dir)	indirect N2O	totals direct N2O	totals indirect N2O
#VALUE!	0	0.00000	0	0
#VALUE!	0	0.00000	0	0
#VALUE!	0	0.00000	0	0

ximum methane producing capacity (B), and default body masses

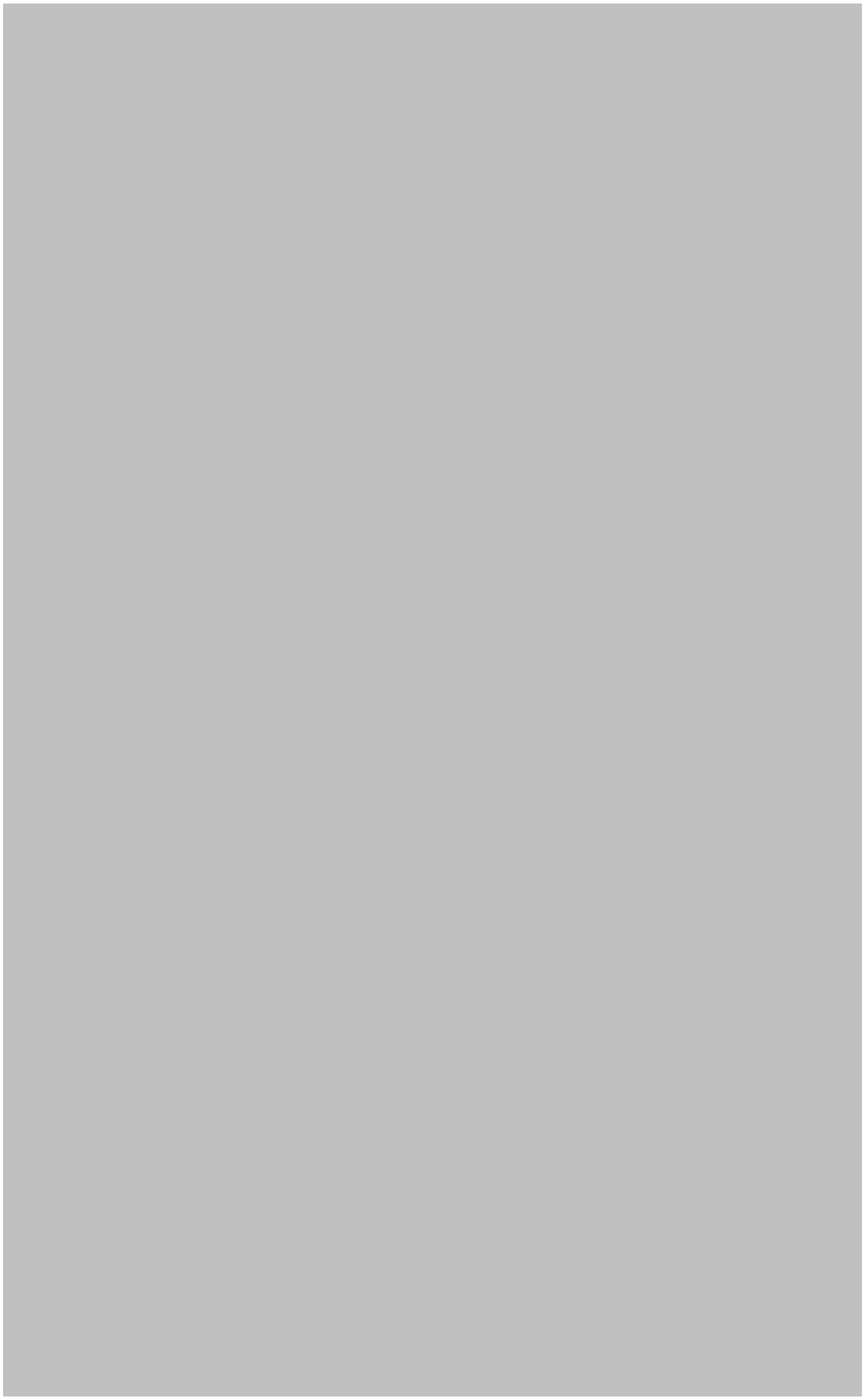
other animals	cattle, pigs, buffa	used in below
0	0	0
0	0	0
0	0	0

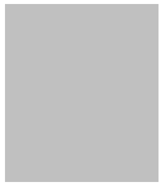
on rate (kg per 1000 kg animal)	Latin America

nitrous oxide

Nex by by these cattle (kg/year)	N2O EF (dir)	indirect N2O	N2O (kg/year for	indirect N2O (kg/year for
#VALUE!	0	0.00000	0	0
#VALUE!	0	0.00000	0	0
#VALUE!	0	0.00000	0	0

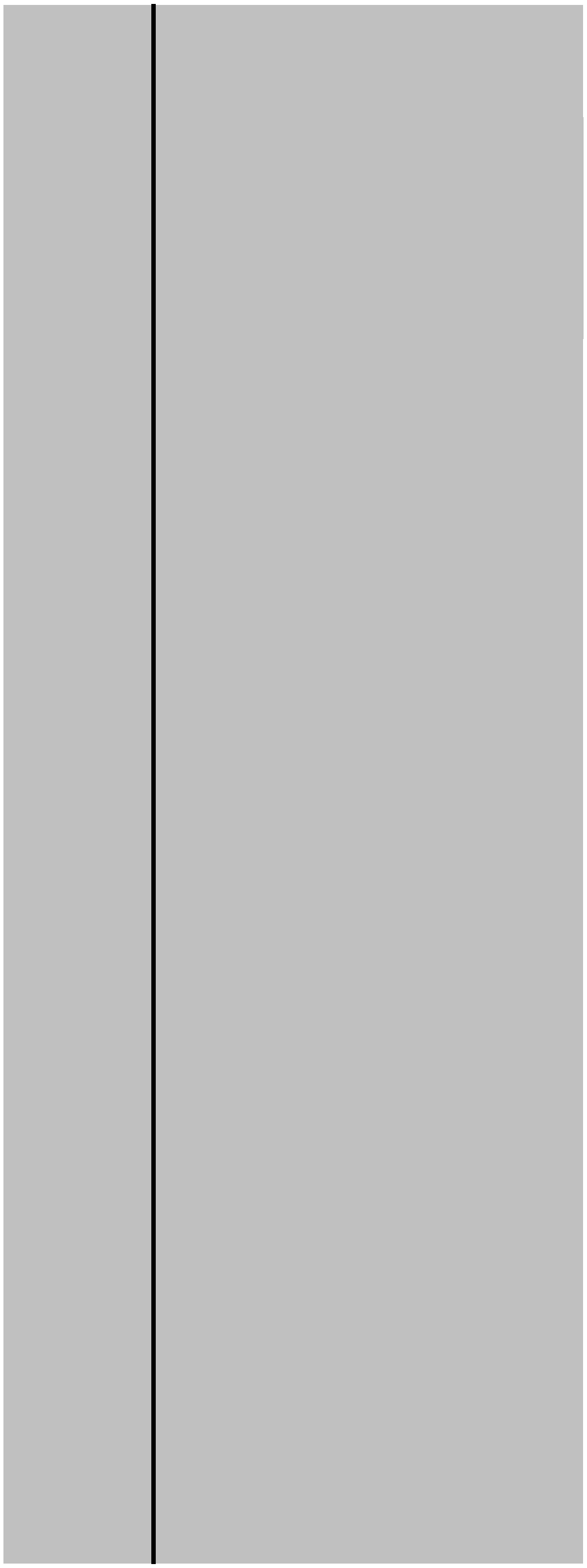
°C
°F





Data entry checking

TRUE TRUE



TRUE

TRUE	0
FALSE	1

Feed mixes entered

Enter both value and units

TRUE	FALSE
TRUE	FALSE
TRUE	FALSE
TRUE	FALSE
TRUE	FALSE
TRUE	FALSE
TRUE	FALSE
TRUE	FALSE
TRUE	FALSE
TRUE	FALSE
TRUE	FALSE

TRUE	FALSE
TRUE	FALSE
TRUE	FALSE
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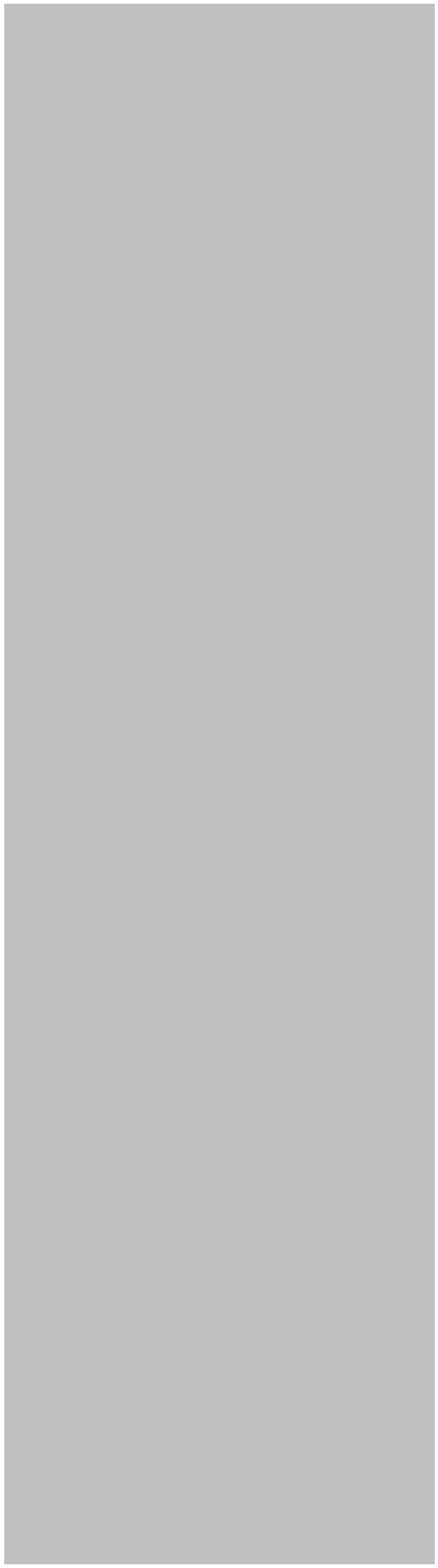
FALSE	0
FALSE	0
FALSE	
FALSE	0
	0



	B	C	D	E	F	G	H
2							
3							
4		Annual Energy Use					
5							
6				Quantity	Units		
7		Electricity from grid or local renewables (e.g. vehicle use, lighting, heating, pumps)	Electricity use on the farm	1438.8168	kWh		
8			Electricity from local hydro renewable energy used in field	0	kWh		
9			Electricity from local wind used in field	0	kWh		
10			Electricity from solar (photovoltaic cells)	0	kWh		
11							
12							
13				Quantity	Units		
14		Other	Diesel	0	litres		
15			Petrol	0	litres		
16			Biodiesel	0	litres		
17			Bioethanol	0	litres		
18			High density biomass	0	kg		
19			Fuel wood	0	kg		

	B	C	D	E	F	G	H	I
2								
3								
4								
5					**Quantity**	**Units**		
6		**Electricity from grid or local renewables**		Electricity used from National or Local Grid	0	kWh		
7				Electricity from local hydro renewable energy used in factory	0	kWh		
8				Electricity from local wind used in factory	0	kWh		
9				Electricity from solar (photovoltaic cells)	0	kWh		
10								
11								
12					**Quantity**	**Units**		
13				Diesel Use, e.g. generators, pumping	0	litres		
14								
15					**Quantity**	**Units**		
16		**Energy from burning biomass and fossil fuels in factory**		High density biomass	0	kg		
17				Fuel wood	0	kg		
18				Coal	0	kg		
19				Gas	0	therms		
20				Oil	0	litres		
21				Liquid propane	0	litres		
22				Other (user defined energy density/emissions)	0	[Select]		
23								
24								
25		**Waste water containing organic compounds**					Biochemical (BOD) or chemical (COD) oxygen demand	
26				Quantity of waste water produced annually	0	litres		
27				Oxygen demand	0	mg/litre	[Select]	
28				Treatment	None - river/lake/sea			
29								
31								
32								
33								

Transport

YOUR RESULTS SO

by land

by produ

Road

	quantity	unit	distance	unit	mode
1	6000	kgs	192	km	Light Goods vehicle
2	6000	kgs	192	km	Light Goods vehicle
3	6000	kgs	192	km	Light Goods vehicle
4	6000	kgs	192	km	Light Goods vehicle
5	6000	kgs	192	km	Light Goods vehicle
6	6000	kgs	192	km	Light Goods vehicle
7	6000	kgs	192	km	Light Goods vehicle
8	6000	kgs	192	km	Light Goods vehicle

Assumptions: *This transport includes:* (Type over this message to enter which materials you have included in this section.)

Rail

	quantity	unit	distance	unit
1	0	tonnes	0	km
2	0	tonnes	0	km
3	0	tonnes	0	km
4	0	tonnes	0	km
5	0	tonnes	0	km
6	0	tonnes	0	km
7	0	tonnes	0	km
8	0	tonnes	0	km

Assumptions: *This transport includes:* (Type over this message to enter which materials you have included in this section.)

Air

	quantity	unit	distance	unit	type
1	0	tonnes	0	km	Very Short Haul
2	0	tonnes	0	km	Very Short Haul
3	0	tonnes	0	km	Very Short Haul
4	0	tonnes	0	km	Very Short Haul
5	0	tonnes	0	km	Very Short Haul
6	0	tonnes	0	km	Very Short Haul
7	0	tonnes	0	km	Very Short Haul
8	0	tonnes	0	km	Very Short Haul

Assumptions: *This transport includes:* (Type over this message to enter which materials you have included in this section.)

Ship		quantity	unit	distance	unit	type
	1	0	tonnes	0	km	
	2	0	tonnes	0	km	
	3	0	tonnes	0	km	
	4	0	tonnes	0	km	
	5	0	tonnes	0	km	
	6	0	tonnes	0	km	
	7	0	tonnes	0	km	
	8	0	tonnes	0	km	
		Assumptions:		*This transport includes:*		(Type over this message to enter which materials you have included in this section.)

units	kg CO2 eq
Road	6,869.1
Rail	-
Air	-
Shipping	-
Total	**6,869.1**

Additional sheets if required

		quantity	unit	distance	unit	mode
Road	9	6000	kgs	192	km	Light Goods vehicle
Road	10	6000	kgs	192	km	Light Goods vehicle
Road	11	6000	kgs	192	km	Light Goods vehicle
Road	12	6000	kgs	192	km	Light Goods vehicle
Road	13	6000	kgs	192	km	Light Goods vehicle
Road	14	1054.348	kgs	192	km	Light Goods vehicle
Road	15	0	[Select]	0	[Select]	0
Road	16	0	[Select]	0	[Select]	0
Road	17	0	[Select]	0	[Select]	0
Road	18	0	[Select]	0	[Select]	0
Road	19	0	[Select]	0	[Select]	0
Road	20	0	[Select]	0	[Select]	0
Road	21	0	[Select]	0	[Select]	0
Road	22	0	[Select]	0	[Select]	0
Road	23	0	[Select]	0	[Select]	0
Road	24	0	[Select]	0	[Select]	0
Road	25	0	[Select]	0	[Select]	0
Road	26	0	[Select]	0	[Select]	0
Road	27	0	[Select]	0	[Select]	0
Road	28	0	[Select]	0	[Select]	0

		quantity	unit	distance	unit
Rail	9	0	[Select]	0	[Select]

Rail	10	0	[Select]	0	[Select]
Rail	11	0	[Select]	0	[Select]
Rail	12	0	[Select]	0	[Select]
Rail	13	0	[Select]	0	[Select]
Rail	14	0	[Select]	0	[Select]
Rail	15	0	[Select]	0	[Select]
Rail	16	0	[Select]	0	[Select]
Rail	17	0	[Select]	0	[Select]
Rail	18	0	[Select]	0	[Select]
Rail	19	0	[Select]	0	[Select]
Rail	20	0	[Select]	0	[Select]
Rail	21	0	[Select]	0	[Select]
Rail	22	0	[Select]	0	[Select]
Rail	23	0	[Select]	0	[Select]
Rail	24	0	[Select]	0	[Select]
Rail	25	0	[Select]	0	[Select]
Rail	26	0	[Select]	0	[Select]
Rail	27	0	[Select]	0	[Select]
Rail	28	0	[Select]	0	[Select]

		quantity	unit	distance	unit	type
Air	9	0	[Select]	0	[Select]	Very Short Haul
Air	10	0	[Select]	0	[Select]	Very Short Haul
Air	11	0	[Select]	0	[Select]	Very Short Haul
Air	12	0	[Select]	0	[Select]	Very Short Haul
Air	13	0	[Select]	0	[Select]	Very Short Haul
Air	14	0	[Select]	0	[Select]	Very Short Haul
Air	15	0	[Select]	0	[Select]	Very Short Haul
Air	16	0	[Select]	0	[Select]	Very Short Haul
Air	17	0	[Select]	0	[Select]	Very Short Haul
Air	18	0	[Select]	0	[Select]	Very Short Haul
Air	19	0	[Select]	0	[Select]	Very Short Haul
Air	20	0	[Select]	0	[Select]	Very Short Haul
Air	21	0	[Select]	0	[Select]	Very Short Haul
Air	22	0	[Select]	0	[Select]	Very Short Haul
Air	23	0	[Select]	0	[Select]	Very Short Haul
Air	24	0	[Select]	0	[Select]	Very Short Haul
Air	25	0	[Select]	0	[Select]	Very Short Haul
Air	26	0	[Select]	0	[Select]	Very Short Haul
Air	27	0	[Select]	0	[Select]	Very Short Haul
Air	28	0	[Select]	0	[Select]	Very Short Haul

		quantity	unit	distance	unit	type
Ship	9	0	[Select]	0	[Select]	0
Ship	10	0	[Select]	0	[Select]	0
Ship	11	0	[Select]	0	[Select]	0
Ship	12	0	[Select]	0	[Select]	0
Ship	13	0	[Select]	0	[Select]	0
Ship	14	0	[Select]	0	[Select]	0
Ship	15	0	[Select]	0	[Select]	0
Ship	16	0	[Select]	0	[Select]	0
Ship	17	0	[Select]	0	[Select]	0
Ship	18	0	[Select]	0	[Select]	0
Ship	19	0	[Select]	0	[Select]	0
Ship	20	0	[Select]	0	[Select]	0
Ship	21	0	[Select]	0	[Select]	0

Ship	22	0	[Select]	0	[Select]	0
Ship	23	0	[Select]	0	[Select]	0
Ship	24	0	[Select]	0	[Select]	0
Ship	25	0	[Select]	0	[Select]	0
Ship	26	0	[Select]	0	[Select]	0
Ship	27	0	[Select]	0	[Select]	0
Ship	28	0	[Select]	0	[Select]	0

FAR

d area: 1,630,541.8 kg CO2 eq Per hectare

uction: 20.6 kg CO2 eq Per kilogram

NERGY USE | PROCESSING | TRANSPORT | RESULTS

add vehicle weight?

yes - single journey
yes - single journey
yes - single journey
yes - single journey
yes - single journey
yes - single journey
yes - single journey
yes - single journey

Heavy Goods Vehicle: (e.g. diesel - loads greater than 3.5 tonnes/3.9 US tons)

Light Goods vehicle: (loads less than 3.5 tonnes/3.9 US tons)

CNG or **LPG**: compressed natural gas or liquid petroleum gas

Very Short Haul: < 500 miles or 800 kms
Short Haul: Between 500 miles (800 kms) and 1000 miles (1600kms)
Long Haul: > 1000 miles or 1600 kms

deadweights:
Small tanker: ~1,000 tonnes
Large tanker: ~20,000 tonnes
Very large tanker: ~100,000 tonnes
Small bulk carrier: ~ 2,000 tonnes
Large bulk carrier: ~15,000 tonnes
Very large bulk carrier: ~70,000 tonnes
Small container vessel: ~ 2,500 tonnes
Large container vessel: ~20,000 tonnes

add vehicle weight?
yes - single journey
yes - single journey
yes - single journey
yes - single journey
yes - single journey
yes - single journey
yes - returning empty
yes - returning empty
yes - returning empty
yes - returning empty
yes - returning empty
yes - returning empty
yes - returning empty
yes - returning empty
yes - returning empty
yes - returning empty
yes - returning empty
yes - returning empty
yes - returning empty
yes - returning empty

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Small bulk carrier: ~ 2,000 tonnes
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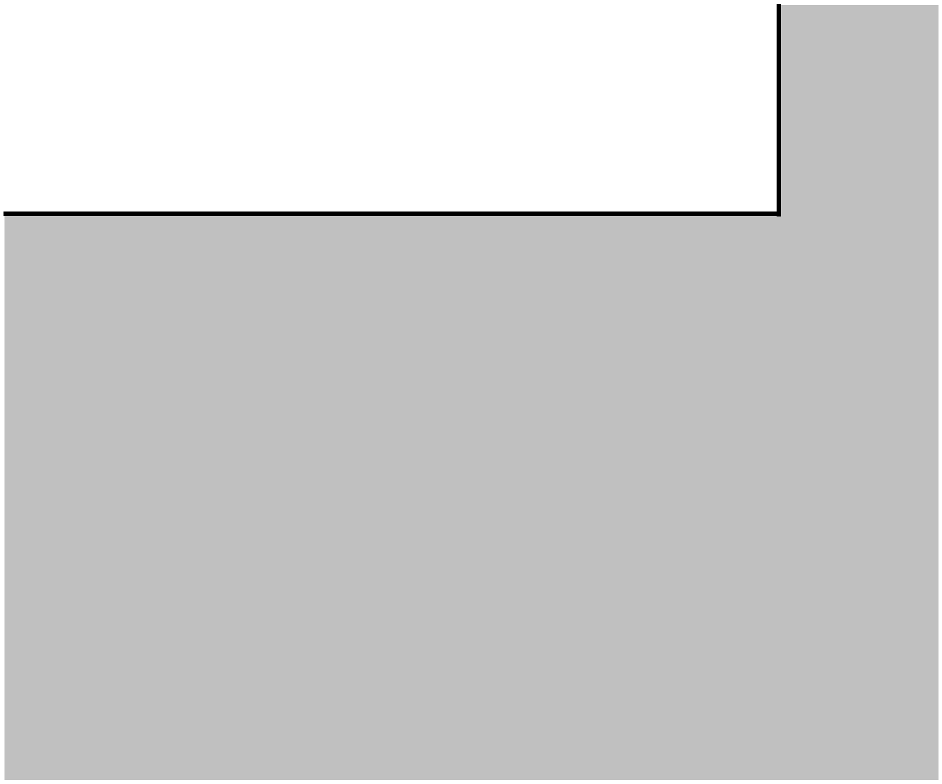
Very large bulk carrier: ~70,000 tonnes
Small container vessel: ~ 2,500 tonnes
Large container vessel: ~20,000 tonnes



	CO2 equiv	multiplier	tonnes	kms
0.001	521.3416	0.3395	6	192
	521.3416	0.3395	6	192
	521.3416	0.3395	6	192
	521.3416	0.3395	6	192
	521.3416	0.3395	6	192
	521.3416	0.3395	6	192
	521.3416	0.3395	6	192
	521.3416	0.3395	6	192
	0	0.021	0	0
	0	0.021	0	0
	0	0.021	0	0
	0	0.021	0	0
	0	0.021	0	0
	0	0.021	0	0
	0	0.021	0	0
	0	0.021	0	0
	0	1.93623	0	0
	0	1.93623	0	0
	0	1.93623	0	0
	0	1.93623	0	0
	0	1.93623	0	0
	0	1.93623	0	0
	0	1.93623	0	0
	0	1.93623	0	0

0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0

Emissions CO2-equiv		
6869.1	kg CO2 eq	1.0000
0.0	tonnes CO	0.0010
0.0	pounds CC	2.2046
0.0	tons CO2 ε	0.0011
6869.1		

CO2 equiv	multiplier	tonnes	kms
521.3416	0.3395	6	192
521.3416	0.3395	6	192
521.3416	0.3395	6	192
521.3416	0.3395	6	192
521.3416	0.3395	6	192
91.61262	0.3395	1.054348	192
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
total 2698.321			
0	0.021	0	0

	0	0.021	0	0
	0	0.021	0	0
	0	0.021	0	0
	0	0.021	0	0
	0	0.021	0	0
	0	0.021	0	0
	0	0.021	0	0
	0	0.021	0	0
	0	0.021	0	0
	0	0.021	0	0
	0	0.021	0	0
	0	0.021	0	0
	0	0.021	0	0
	0	0.021	0	0
	0	0.021	0	0
	0	0.021	0	0
	0	0.021	0	0
	0	0.021	0	0
	0	0.021	0	0
total	0			
	0	1.93623	0	0
	0	1.93623	0	0
	0	1.93623	0	0
	0	1.93623	0	0
	0	1.93623	0	0
	0	1.93623	0	0
	0	1.93623	0	0
	0	1.93623	0	0
	0	1.93623	0	0
	0	1.93623	0	0
	0	1.93623	0	0
	0	1.93623	0	0
	0	1.93623	0	0
	0	1.93623	0	0
	0	1.93623	0	0
	0	1.93623	0	0
	0	1.93623	0	0
	0	1.93623	0	0
	0	1.93623	0	0
	0	1.93623	0	0
total	0			
	0	0	0	0
	0	0	0	0
	0	0	0	0
	0	0	0	0
	0	0	0	0
	0	0	0	0
	0	0	0	0
	0	0	0	0
	0	0	0	0
	0	0	0	0
	0	0	0	0
	0	0	0	0
	0	0	0	0

	0	0	0	0
	0	0	0	0
	0	0	0	0
	0	0	0	0
	0	0	0	0
	0	0	0	0
	0	0	0	0
total	0			

definitions of short flight haulage from wikipedia

very short < 500 miles or 1.5 hours
short < 3 hours (from which I inferred 1000 miles)

km	1	1
mile	2	1.612

806
1612

kgs	*0.001*
tonnes	*1*

				tons (US, s	*0.90718*	
				litres	*0.001*	
		Road		Heavy Goo	1	0.12038
				Light Good	2	0.3395
				Light Good	3	[illegible]
				Light Good	4	0.04227
Rail	Rail		1	0.021		
Air	Very Short		1	1.93623		
	Short Haul		2	1.41831		
	Long Haul		3	0.60076		
		Ship		Small tank	1	0.02016
				Large tank	2	0.00504
				Very large	3	0.00403
				Small bulk	4	0.01109
				Large bulk	5	0.00706
				very large	6	0.00605
				Small cont	7	0.01512
				Large cont	8	0.01311
					assuming truck weight is 1/3 of laden weight	
				no	1	
				yes - single	1.333	
				yes - returi	1.6667	

Results

YOUR RESULTS SO F

by land a

by product

HOME | GENERAL | CROPS | SEQUESTRATION | LIVESTOCK | E

on this page: 1. Summary 2. 3. Field Management Emissions 4. Carbon Storage in System

Summary

Summary reporting units kg CO2 eq

Key Results:

1. The total annual emissions from your farm system are 20.64 kg CO2 eq per kilogram finished prod

2. In terms of CO2 equivalents the greatest emissions in your case come from fertiliser production, w kg CO2 eq per kilogram.

3. In terms of compounds the largest emissions in CO2 equivalents come from CO2.

- with a total of 20.05kgs of CO2 per kilogram.

Summary Table:

Tomate	CO2	N2O	CH4	Emissions for total area, kg CO2 eq
fertiliser production	1,582,652.9			1,582,652.9
direct and indirect field N2O	485.3	0.6		649.5
paddy methane			-	-
pesticides	410.0			410.0
crop residue management	-	11.2	1,444.7	39,434.6
carbon stock changes	-			-
livestock enteric emissions			-	-
livestock manure management		-	-	-
livestock feed	-			-
field energy use	525.6			525.6
primary processing	-			-

waste water			-	-
off-farm transport				6,869.1
totals	#########	11.8	1,444.7	1,630,541.8

Summary Comments

(Type over this message to enter notes about modeling assumptions)

Livestock

Key Livestock Results:

1. 0% of your emissions for livestock come from 0

	CO2	N2O	CH4	Per kilogram
enteric digestion				0.0
manure management				0.0
feed				0.0

0

Field management emissions

Key Field Management Results:

1. For the field management side the greater part of your emissions come from fertiliser production; r

2. Changing fertiliser type may help - emissions do differ between fertiliser types.

3. Also, be aware that recent technologies such as N2O recapture have allowed for lower emissions

process	CO2	N2O	CH4	Emissions for total area, kg CO2 eq
fertiliser production	1582652.9	0.0	0.0	1582652.9
fertiliser application	485.3	0.6	0.0	649.5
paddy methane	0.0	0.0	0.0	0.0
pesticides	410.0	0.0	0.0	410.0
crop residue management	0.0	11.2	1444.7	39434.6

Carbon storage in system

Key Carbon Storage Results:

1. This is for carbon which is stored over periods of time longer than a typical growing season
2. Above ground biomass represents mainly the woody biomass in trees or bushes.
3. in your case this is zero
4. Below ground biomass is typically that in living roots
5. in your case this is zero
6.

7.

	Annual totals, kg CO2 eq	Cumulative, kg CO2 eq
Above ground biomass	0.00	0.00
Below ground biomass	0.00	0.00
Soil C	0.00	0.00
Total	0	0.00

Machinery operations

Direct energy use and emissions. Not including transport

Key Energy and Emissions Results:

Most of your energy emissions come from Fossil Fuels - representing 52.1537006599463% of the tot

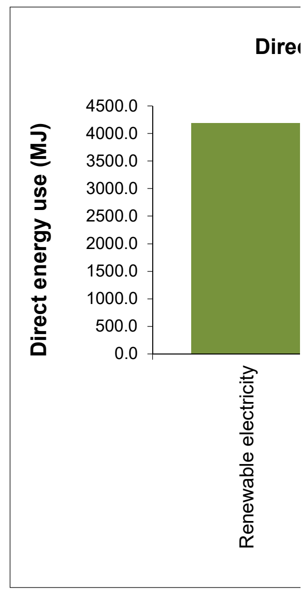
On farm use accounts for most (100%) of your energy use

Non renewable electricity constitutes 100% of your electricity use. Is it possible to consider renerwabl

	MJ	kg CO2 eq
Renewable electricity	4188.5	0.0
Non renewable electricity	991.2	251.5

Grid electricity	5179.7	251.5
Local wind, solar, hydro-electric	0.0	0.0
Biomass & Bioenergy	0.0	0.0
Fossil Fuels	4119.4	274.1

On farm use	9299.1	525.6
Primary processing	0.0	0.0



Transport

	kg CO2 eq
Road	6869.1
Rail	0.0
Air	0.0
Shipping	0.0
total	**6869.1**

As a general rule, emissions factors tend to increase in the following order; ship, rail, road, air.

DUMMY NUMBERS FOR INDICATOR BAR ON NAVIGATION PANEL

kg/acre	tonnes/acre	pounds/acre	tons/acre	kg/ha
-9071.8474	-9.0718474	-20000	-10	-21863.15223
-8164.66266	-8.16466266	-18000	-9	-19676.83701
-7257.47792	-7.25747792	-16000	-8	-17490.52179

-6350.29318	-6.35029318	-14000	-7	-15304.20656
-5443.10844	-5.44310844	-12000	-6	-13117.89134
-4535.9237	-4.5359237	-10000	-5	-10931.57612
-3628.73896	-3.62873896	-8000	-4	-8745.260894
-2721.55422	-2.72155422	-6000	-3	-6558.94567
-1814.36948	-1.81436948	-4000	-2	-4372.630447
-907.18474	-0.90718474	-2000	-1	-2186.315223
0	0	0	0	0
907.18474	0.90718474	2000	1	2186.315223
1814.36948	1.81436948	4000	2	4372.630447
2721.55422	2.72155422	6000	3	6558.94567
3628.73896	3.62873896	8000	4	8745.260894
4535.9237	4.5359237	10000	5	10931.57612
5443.10844	5.44310844	12000	6	13117.89134
6350.29318	6.35029318	14000	7	15304.20656
7257.47792	7.25747792	16000	8	17490.52179
8164.66266	8.16466266	18000	9	19676.83701
9071.8474	9.0718474	20000	10	21863.15223

AR

rea: 1,630,541.8 kg CO2 eq Per hectare

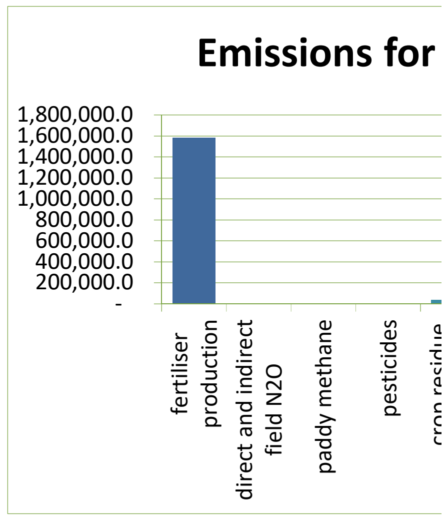
tion: 20.6 kg CO2 eq Per kilogram

NERGY USE | PROCESSING | TRANSPORT | RESULTS

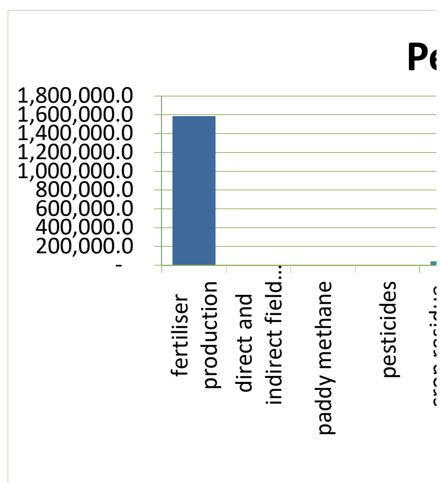
n | 5. Machinery Operations | 6. Energy Use and Emissions | 7. Transport

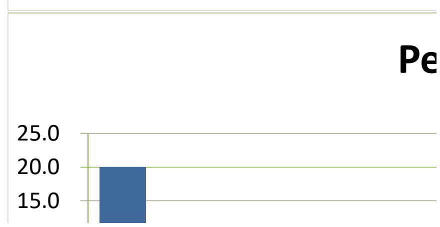
luct.

ith a total of 20

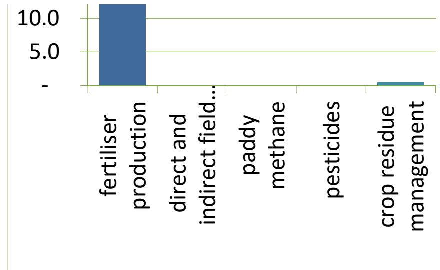


Per hectare	Per kilogram	Per tree (if relevant)
1,582,652.9	20.0	
649.5	0.0	
-	-	
410.0	0.0	
39,434.6	0.5	
-	-	
-	-	
-	-	
-	-	
525.6	0.0	
-	-	

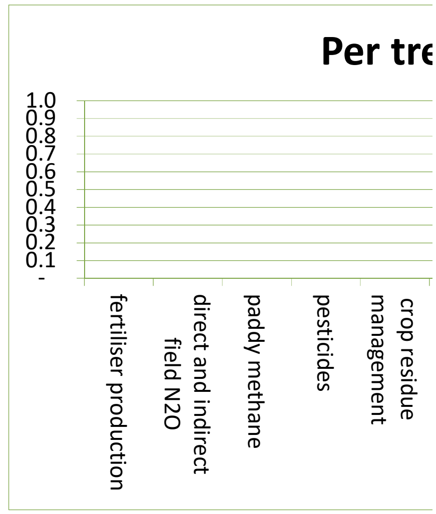




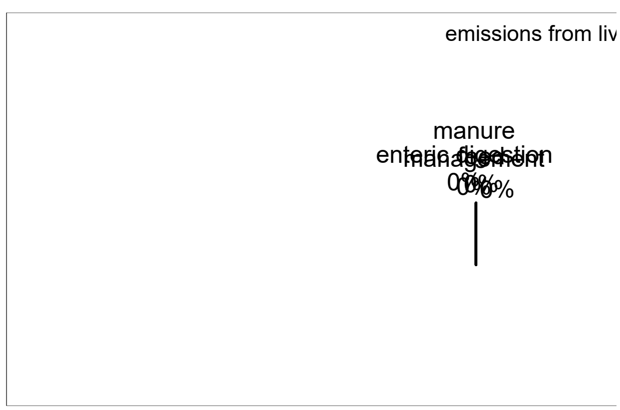
-	-	
6,869.1	0.1	
##########	20.6	



10.0
5.0
-
fertiliser production
direct and indirect field...
paddy methane
pesticides
crop residue management



Per tre
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
-
fertiliser production
direct and indirect field N2O
paddy methane
pesticides
crop residue management

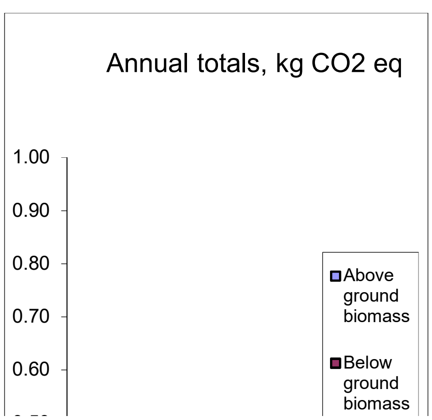


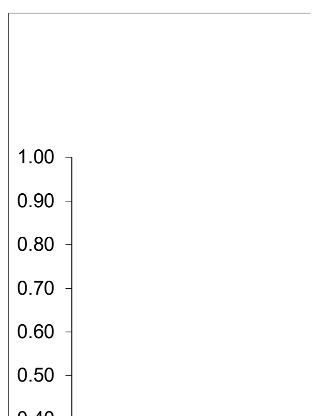
emissions from liv
manure management
enteric digestion
0%

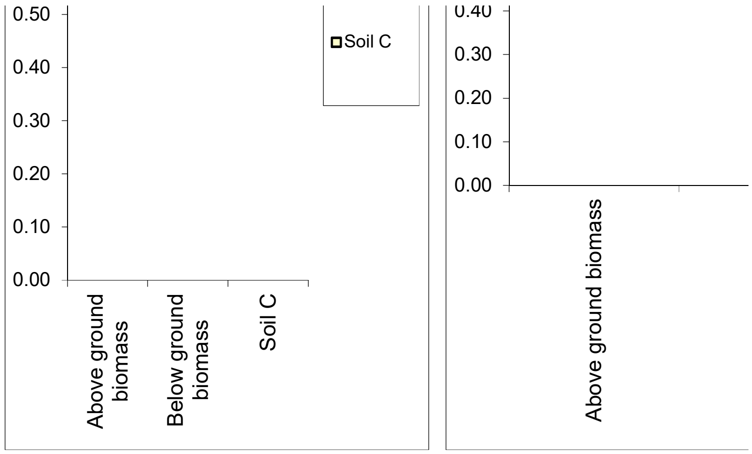
making 97.5% of the total

from synthetic fertiliser production.

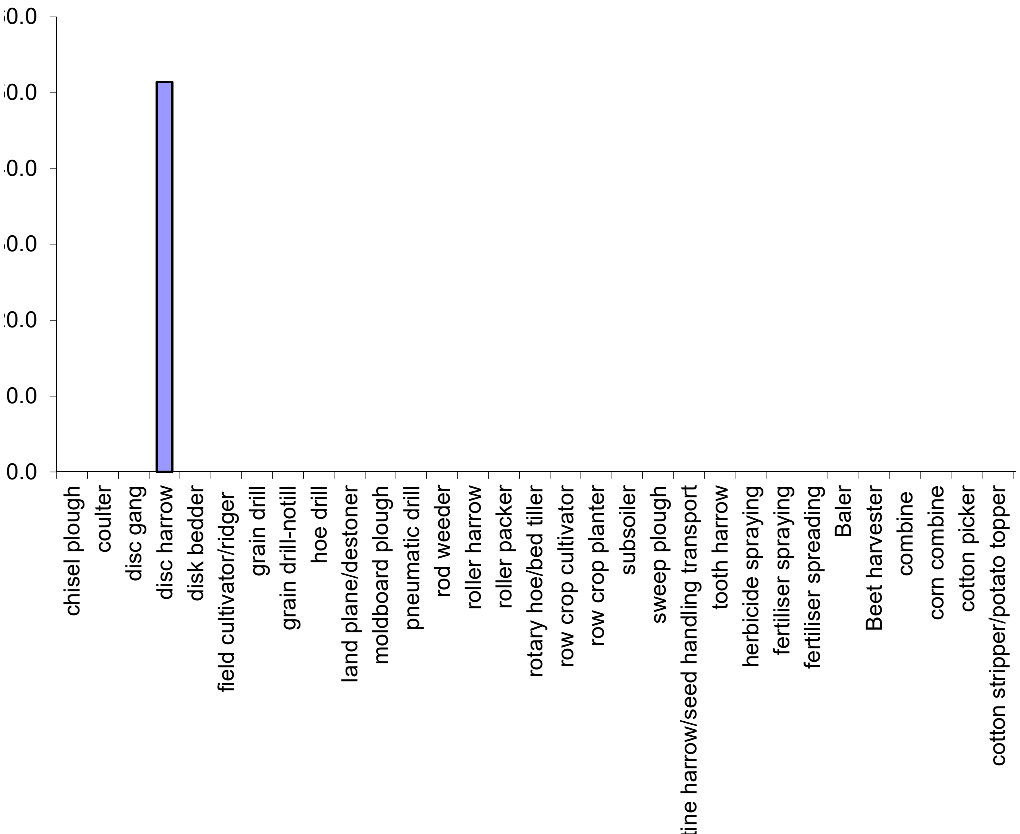
per hectare	per kilogram	% emissions
1582652.9	20.0	97.5
649.5	0.0	0.0
0.0	0.0	0.0
410.0	0.0	0.0
39434.6	0.5	2.4





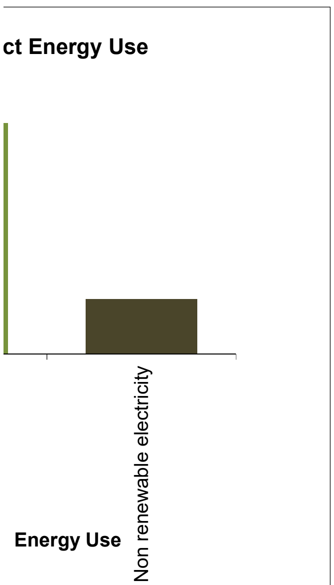


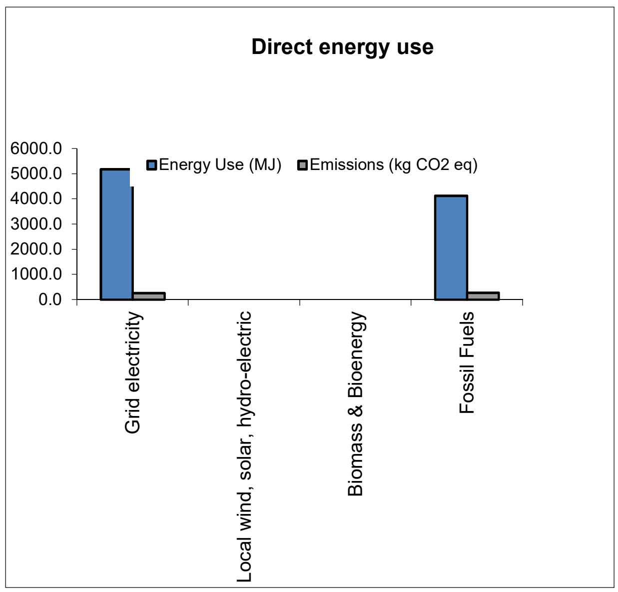
Machinery emissions, kg Co2-equiv

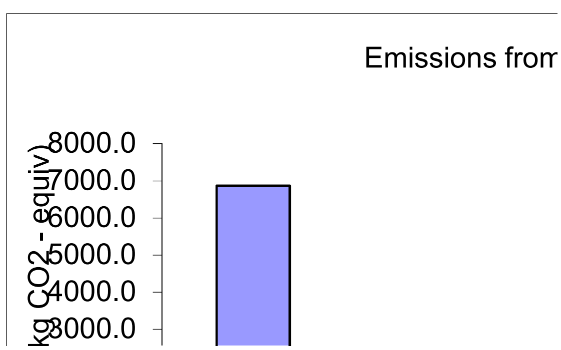


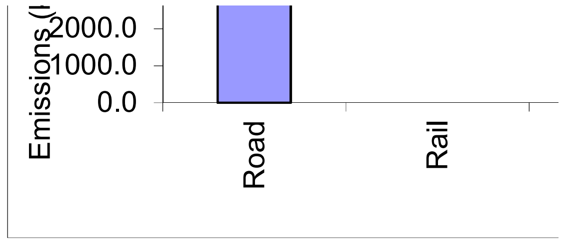
:al.

e options which may have lower emission factors?





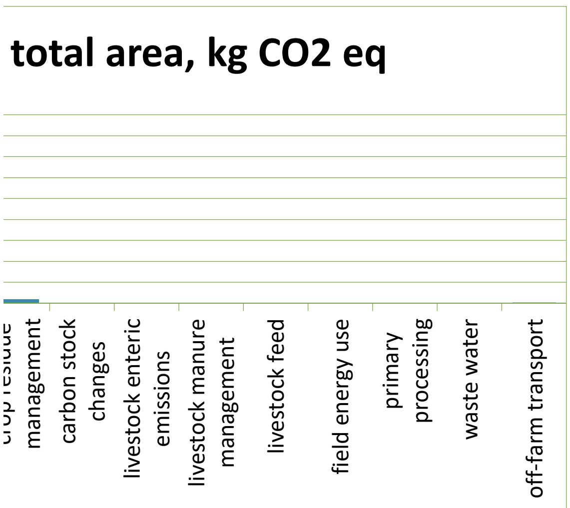




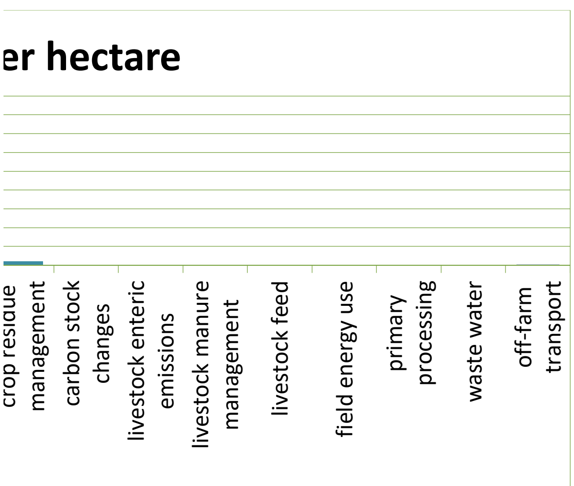
Emissions (
2000.0
1000.0
0.0
Road
Rail

tonnes/ha	pounds/ha	tons/ha
-22.41653493	-49420	-24.71
-20.17488143	-44478	-22.239
-17.93322794	-39536	-19.768

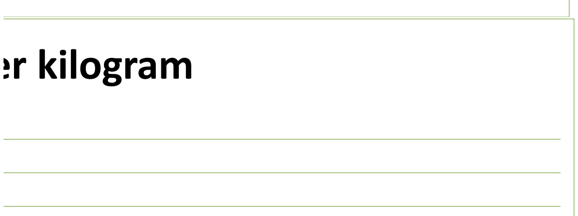
-15.69157445	-34594	-17.297
-13.44992096	-29652	-14.826
-11.20826746	-24710	-12.355
-8.96661397	-19768	-9.884
-6.724960478	-14826	-7.413
-4.483306985	-9884	-4.942
-2.241653493	-4942	-2.471
0	0	0
2.241653493	4942	2.471
4.483306985	9884	4.942
6.724960478	14826	7.413
8.96661397	19768	9.884
11.20826746	24710	12.355
13.44992096	29652	14.826
15.69157445	34594	17.297
17.93322794	39536	19.768
20.17488143	44478	22.239
22.41653493	49420	24.71



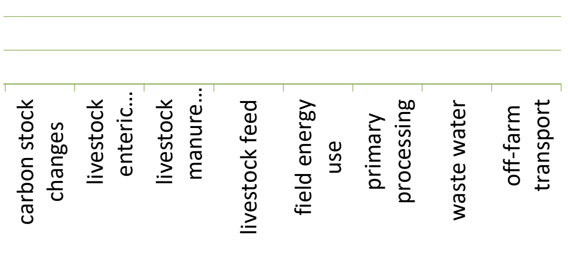
total area, kg CO2 eq
crop residue management
carbon stock changes
livestock enteric emissions
livestock manure management
livestock feed
field energy use
primary processing
waste water
off-farm transport

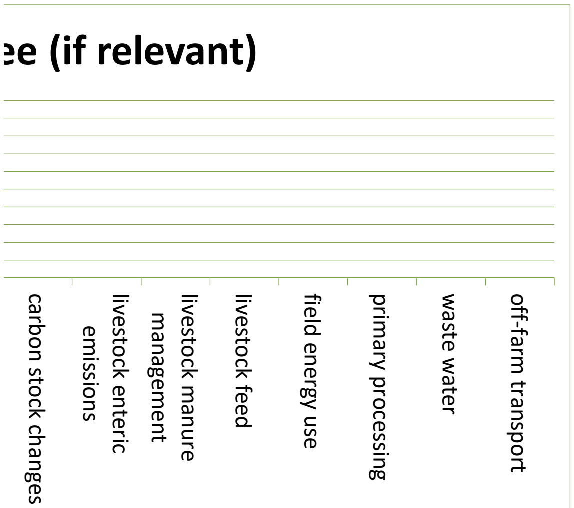


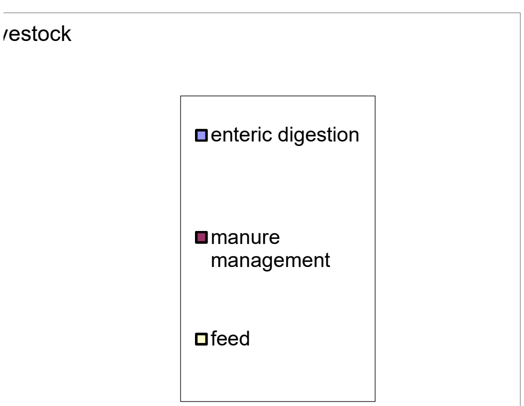
er hectare
crop residue management
carbon stock changes
livestock enteric emissions
livestock manure management
livestock feed
field energy use
primary processing
waste water
off-farm transport

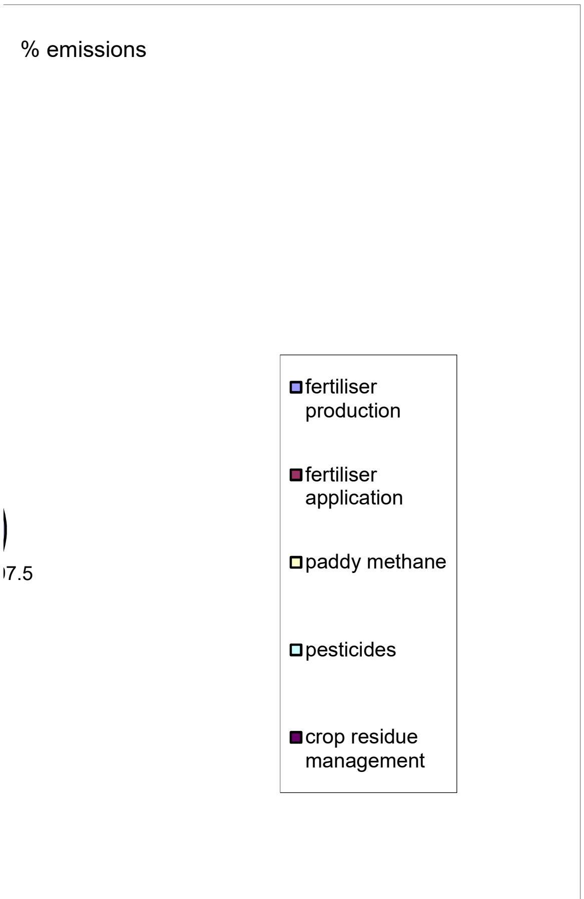


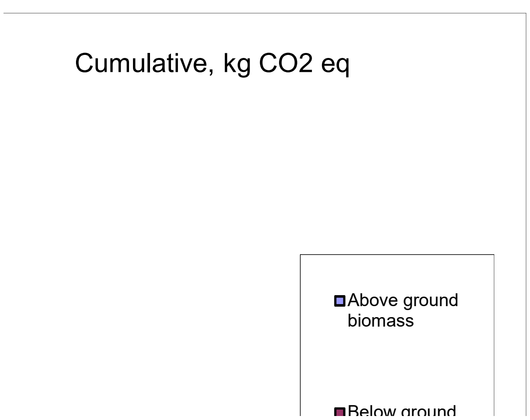
er kilogram

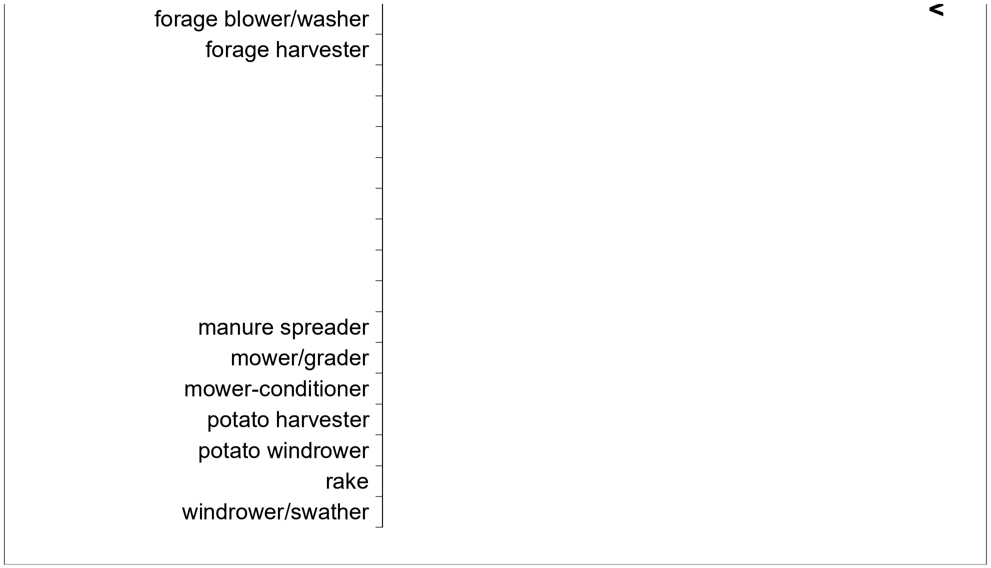

carbon stock changes
livestock enteric...
livestock manure...
livestock feed
field energy use
primary processing
waste water
off-farm transport

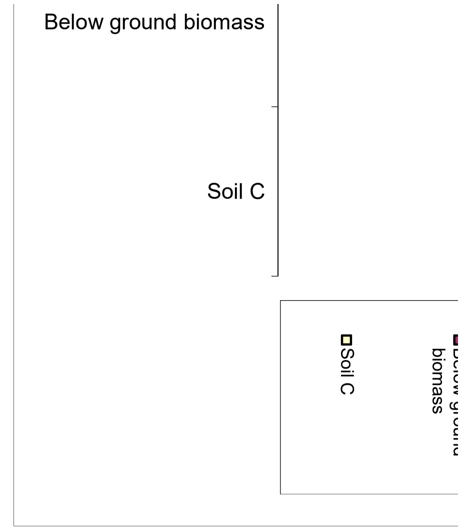

ee (if relevant)
carbon stock changes
livestock enteric emissions
livestock manure management
livestock feed
field energy use
primary processing
waste water
off-farm transport

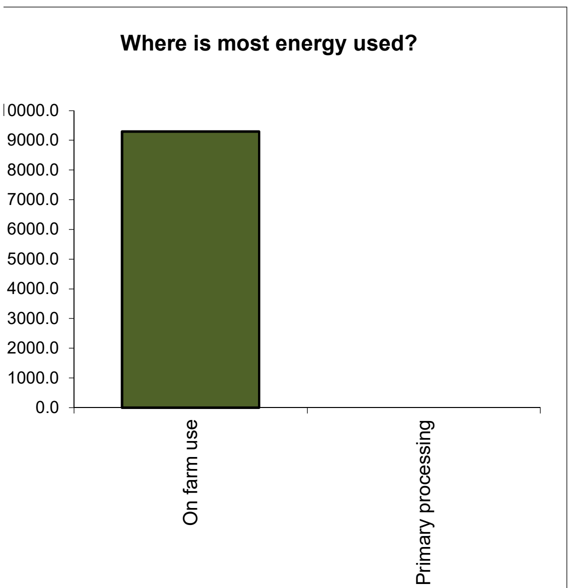

vestock
enteric digestion
manure management
feed

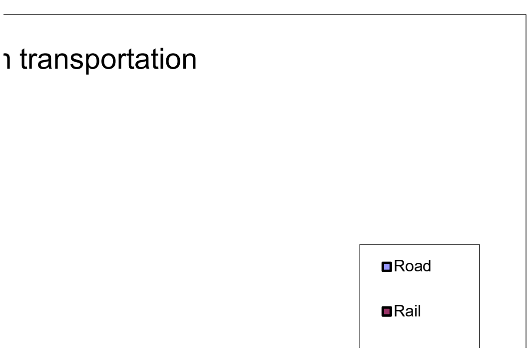

% emissions
)7.5
fertiliser production
fertiliser application
paddy methane
pesticides
crop residue management

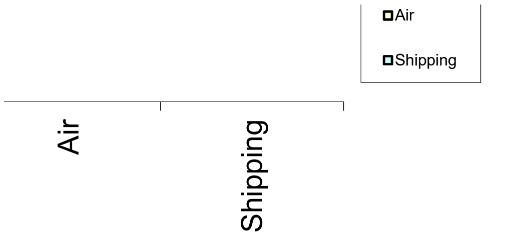

Cumulative, kg CO2 eq
Above ground biomass


forage blower/washer
forage harvester
manure spreader
mower/grader
mower-conditioner
potato harvester
potato windrower
rake
windrower/swather


Below ground biomass
Soil C
biomass
Soil C


Where is most energy used?
10000.0
9000.0
8000.0
7000.0
6000.0
5000.0
4000.0
3000.0
2000.0
1000.0
0.0
On farm use
Primary processing


n transportation
Road
Rail


Air
Shipping
Air
Shipping

hectare	kilogram				
	""				
			FALSE	0	1
Fat/protein adju	FALSE		TRUE	1	0.2534
fertiliser production	20	20			########
		1			########
		2			########
		3			1.00
		4			1
		5			1584074
		6			CO2
		7			- the 20.05
		8			- with a tota
		9			78987.6
		10			
		11			
		12			
		13			

0.0	0	0	1	Methane fr
			2	Lagoons, li
			3	Emissions
			4	

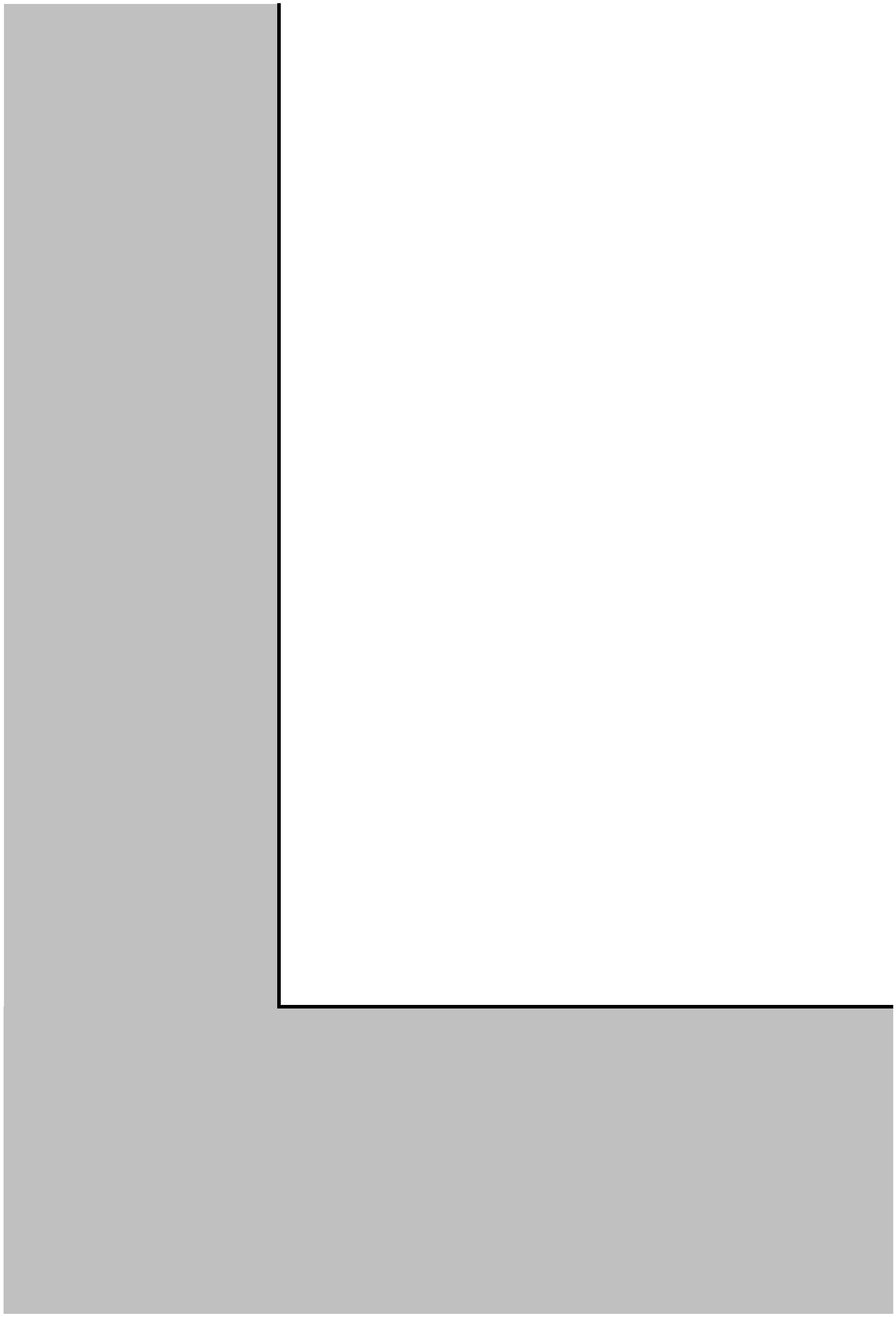
		1	2
		97.5	97.5

	fertiliser production		
1	Type	Changing fertili	Also, be aw
2	App	Can you reduce	Or fertiliser
3	Paddy	Is is an option to modify you	
4	Pesticide	Can you reduce the pesticid	
5	Residue	This may be offset by soil s	

Energy U	MJ	274.116768	Fossil Fuel
		52.15370066	
		9299.11848	On farm us
		100	
		251.4773213	Non renew
		100	

Renewab 4188.52
Energy U MJ

Overall energy use (not including transport)



Emissions for	kg CO2 eq
Emissions for	tonnes CO
Emissions for	pounds CO
Emissions for	tons CO2 e

12	1445	1630542	1630542	**20.64**
3481.128	36117.73			

########	
296	25
2	3
1584074	

 kgs of CO2 equate to 20.055 kg CO2 eq per kilogram.

l of 20.05kgs of CO2 per kilogram.

om enteric digestion is, of course, naturally higher for some species (ruminants) than other, in which case
quid slurries, and deep bedding systems tend to have the highest methane emissions, although direct an
from feed will usually depend on the production method of the feed consitituents. Feed mix, of course, ca

3

vare that recent technologies such as N2O recapture have allowed for lower emissions from synthetic fer

s with for example nitrification inhi NI 1

ır flooding regime or residue incorporation?

de requirements of your crop?

sequestration if, for example, incorporated into the soil or composted and applied to the soil. If not are the

[redacted]

[redacted]

s	1
	2
	3
e	4

Non renewable electricity constitutes 100% of your electricity use.

Is it possible to consider renerwable options which may have lower emission factors?

Field ene	Grid electricity
	Local wind, solar, hydro-
	Diesel
	Petrol
	Biodiesel
	Bioethano l
	Other bio
	other fossil
	Total (kg CO2 equiv)
	Total /hectare (kg CO2 equiv)
Primary processing	Grid electricity
	Local wind, solar, hydro- electric
	Biomass
	Fossil Fuels
	Totals
	Totals/ hectare

1.0000	dummy
0.0010	
2.2046	
0.0011	

any trees involved?

FALSE 0

		FALSE
1582652.9	**fertiliser production**	#DIV/0!
649.5	**fertiliser application**	#DIV/0!
0.0	**paddy methane**	#DIV/0!
410.0	**pesticides**	#DIV/0!
39434.6	**crop residue management**	#DIV/0!
0.0	**carbon stock changes**	#DIV/0!
0.0	**livestock enteric emissions**	#DIV/0!
0.0	**livestock manure managemen**	#DIV/0!
0.0	**livestock feed**	#DIV/0!
525.6	**livestock residues**	#REF!
0.0	**field energy use**	#DIV/0!
0.0	**primary processing**	#DIV/0!
6869.1	**waste water**	#DIV/0!

1630541.8	

off-farm transport	#DIV/0!
totals	#DIV/0!

es changes to diet will affect this.

ıd indirect nitrous oxide emissions can also be a factor.

an affect emissions from enteric digestion.

tiliser production.

ese options for you?

Energy Use (MJ)	Emissions (kg CO2 eq)

	field energy	primary processin
Grid electricity	5179.7	0.0
Local wind, solar, hydro-electric	0.0	0.0

5179.7	251.5
0.0	0.0
1948.8	137.8
0.0	0.0
0.0	0.0
0.0	0.0
0	0
2,171	136.311168
9299.1	**525.6**
9299.1	**525.6**
0.0	0.0
0.0	0.0
0.0	0.0
0.0	0.0
0	**0**
0	**0**

Diesel	1948.8	0.0
Biomass/bioenergy	0.0	0.0

The total annual emissions from your farm system are 20.64 kg CO_2-equiv per tree.

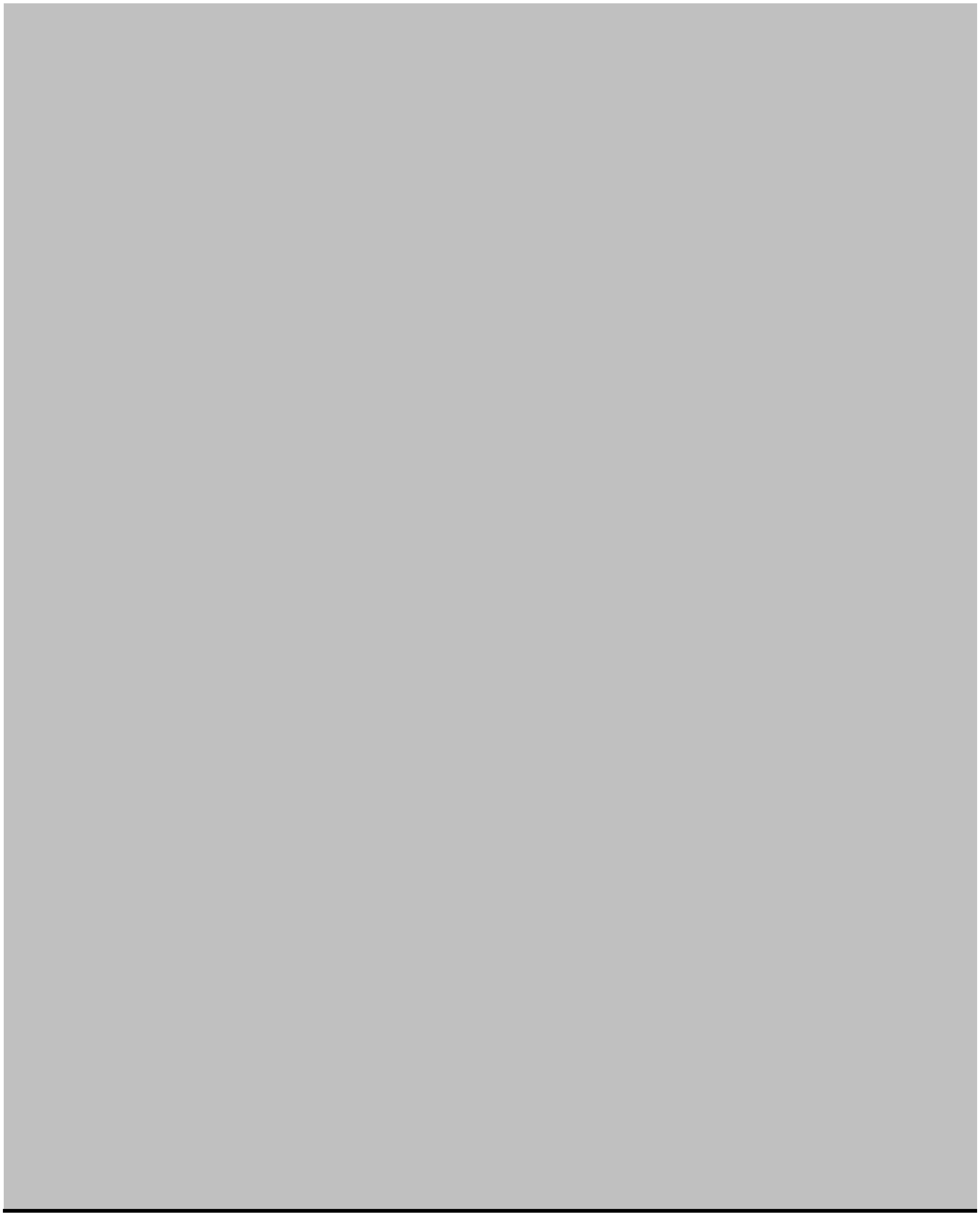
In terms of CO_2 equivalents the greatest emissions in your case come from fertiliser pro

In terms of compounds the largest emissions in CO_2 equivalents come from CO_2

- with a total of 20.0547174493212kgs of CO_2 per tree.

- the 20.054715436347 kgs of CO_2 equating to 20.0547174493212 kgs of CO_2 per tree

- with a total of 20.0547174493212kgs of CO_2 per tree.



field energy	primary processin		Grid electricity
251.5	0.0	field energy u	5179.7
0.0	0.0	primary processing	0.0

137.8	0.0	field energy emis	251.5
0.0	0.0	primary processing e	0.0

oduction, with a total of 20kg CO_2 equiv per tree.

e.

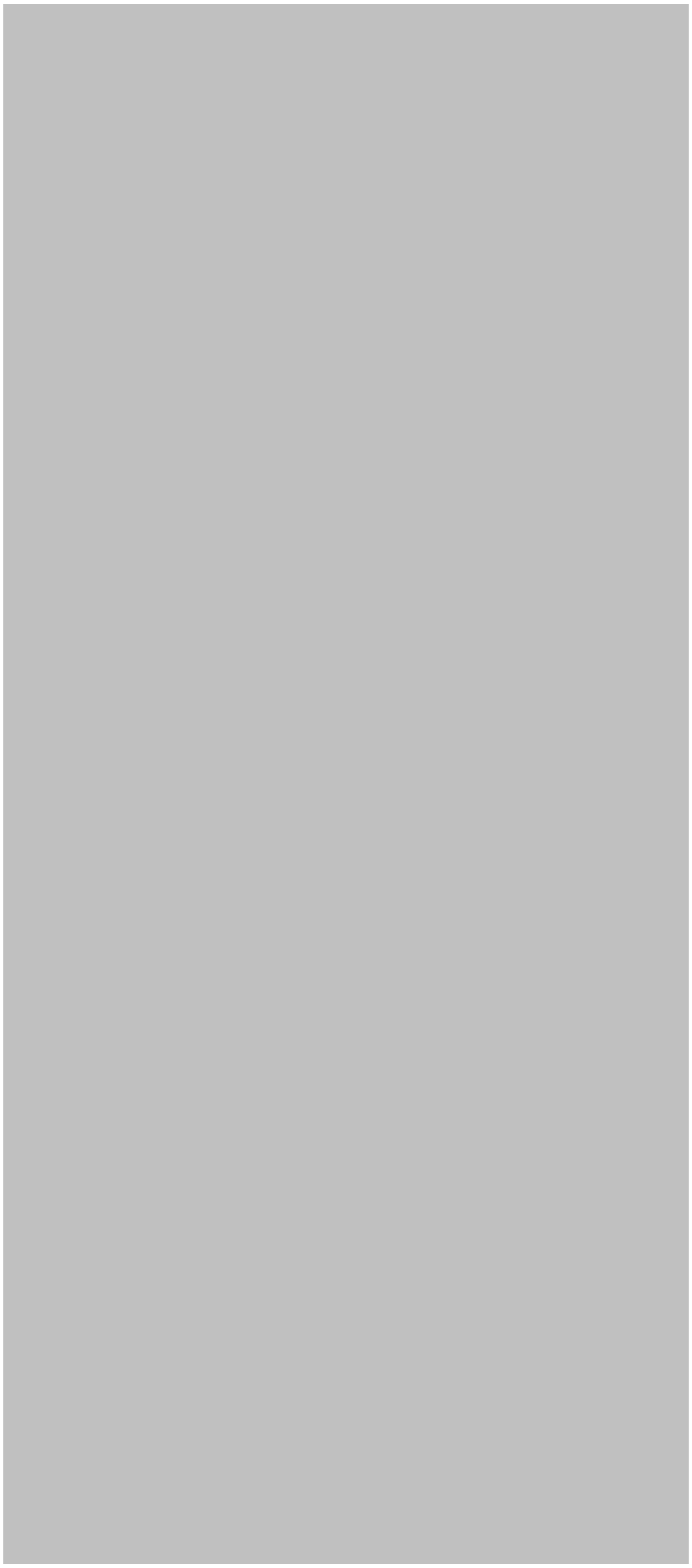
Machinery emissions

chisel plou	#N/A
coulter	#N/A
disc gang	#N/A
disc harrov	51.4
disk bedde	#N/A
field cultiva	#N/A
grain drill	#N/A
grain drill-r	#N/A
hoe drill	#N/A
land plane/	#N/A
moldboard	#N/A
pneumatic	#N/A
rod weede	#N/A
roller harrc	#N/A
roller pack	#N/A
rotary hoe/	#N/A
row crop cı	#N/A
row crop p	#N/A
subsoiler	#N/A
sweep plou	#N/A
tine harrow	#N/A
tooth harrc	#N/A

herbicide s	#N/A
fertiliser sp	#N/A
fertiliser sp	#N/A
Baler	#N/A
Beet harve	#N/A
combine	#N/A
corn comb	#N/A
cotton pick	#N/A
cotton strip	#N/A
forage blov	#N/A
forage har	#N/A
manure sp	#N/A
mower/gra	#N/A
[illegible]	[illegible]

Local wind	Fossil fuel	Biomass/ bioenergy
0.0	1948.8	0.0
0.0	0.0	0.0

0.0	137.8	0.0
0.0	0.0	0.0



Results

Summary

Summary reporting units kg CO2 eq

Key Results:

1. The total annual emissions from your farm system are 20.64 kg CO2 eq per kilogram finished prod

2. In terms of CO2 equivalents the greatest emissions in your case come from fertiliser production, w
kg CO2 eq per kilogram.

3. In terms of compounds the largest emissions in CO2 equivalents come from CO2.

- with a total of 20.05kgs of CO2 per kilogram.

Summary Table:

Tomate	CO2	N2O	CH4	Emissions for total area, kg CO2 eq*
fertiliser production	1,582,652.9			1,582,652.9
direct and indirect field N2O	485.3	0.6		649.5
paddy methane			-	-
pesticides	410.0			410.0
crop residue management	-	11.2	1,444.7	39,434.6
livestock enteric emissions			-	-
livestock manure management		-	-	-
livestock feed	-			-
field energy use	525.6			525.6
primary processing	-			-
waste water			-	-

off-farm transport				6,869.1
totals	#########	11.8	1,444.7	1,630,541.8

Co-products	*for total area*	*for total area*	*for total area*	*for total area*
fertiliser production	0	0	0	0
direct and indirect field N2O	0	0	0	0
paddy methane	0	0	0	0
pesticides	0	0	0	0
crop residue management	0	0	0	0
livestock enteric emissions	0	0	0	0
livestock manure management	0	0	0	0
livestock feed	0	0	0	0
field energy use	0	0	0	0
primary processing	0	0	0	0
waste water	0	0	0	0
off-farm transport	0	0	0	0
totals	0	0	0	0

Summary Comments

(Type over this message to enter which materials you have included in this section.)

Livestock

Key Livestock Results:

1. 0% of your emissions for livestock come from 0

	CO2	N2O	CH4	Per kilogram*
enteric digestion				0.0
manure management				0.0
feed				0.0

0

Field management emissions

Key Field Management Results:

1. For the field management side the greater part of your emissions come from fertiliser production; r

2. Changing fertiliser type may help - emissions do differ between fertiliser types.

3. Also, be aware that recent technologies such as N2O recapture have allowed for lower emissions

process	CO2	N2O	CH4	Emissions for total area, kg CO2 eq*
fertiliser production	1582652.9	0.0	0.0	1582652.9

fertiliser application	485.3	0.6	0.0	649.5
paddy methane	0.0	0.0	0.0	0.0
pesticides	410.0	0.0	0.0	410.0
crop residue management	0.0	11.2	1444.7	39434.6

Machinery operations

Direct energy use and emissions. Not including transport

Key Energy and Emissions Results:

Most of your energy emissions come from Fossil Fuels - representing 52.1537006599463% of the tot

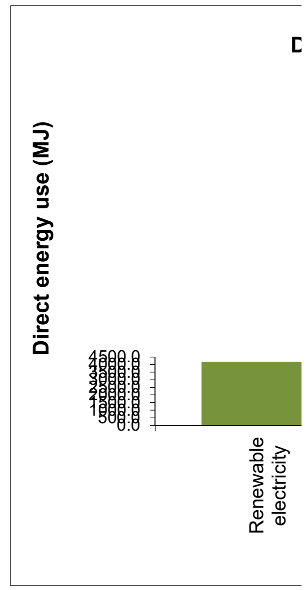
On farm use accounts for most (100%) of your energy use

Non renewable electricity constitutes 100% of your electricity use. Is it possible to consider renerwabl

	MJ	kg CO2 eq
Renewable electricity	4188.5	0.0
Non renewable electricity	991.2	251.5

Grid electricity	5179.7	251.5
Local wind, solar, hydro-electric	0.0	0.0
Biomass & Bioenergy	0.0	0.0
Fossil Fuels	4119.4	274.1

On farm use	9299.1	525.6
Primary processing	0.0	0.0



Transport

	kg CO2 eq
Road	6869.1
Rail	0.0
Air	0.0
Shipping	0.0
total	**6869.1**

As a general rule, emissions factors tend to increase in the following order; ship, rail, road, air.

DUMMY NUMBERS FOR INDICATOR BAR ON NAVIGATION PANEL

kg/acre	tonnes/acre	pounds/acre	tons/acre	kg/ha
-9071.8474	-9.0718474	-20000	-10	-21863.15223
-8164.66266	-8.16466266	-18000	-9	-19676.83701
-7257.47792	-7.25747792	-16000	-8	-17490.52179
-6350.29318	-6.35029318	-14000	-7	-15304.20656
-5443.10844	-5.44310844	-12000	-6	-13117.89134
-4535.9237	-4.5359237	-10000	-5	-10931.57612
-3628.73896	-3.62873896	-8000	-4	-8745.260894
-2721.55422	-2.72155422	-6000	-3	-6558.94567
-1814.36948	-1.81436948	-4000	-2	-4372.630447
-907.18474	-0.90718474	-2000	-1	-2186.315223
0	0	0	0	0
907.18474	0.90718474	2000	1	2186.315223
1814.36948	1.81436948	4000	2	4372.630447
2721.55422	2.72155422	6000	3	6558.94567
3628.73896	3.62873896	8000	4	8745.260894

4535.9237	4.5359237	10000	5	10931.57612
5443.10844	5.44310844	12000	6	13117.89134
6350.29318	6.35029318	14000	7	15304.20656
7257.47792	7.25747792	16000	8	17490.52179
8164.66266	8.16466266	18000	9	19676.83701
9071.8474	9.0718474	20000	10	21863.15223

FAR

rea: 1,630,541.8 kg CO2 eq Per hectare

tion: 20.6 kg CO2 eq Per kilogram

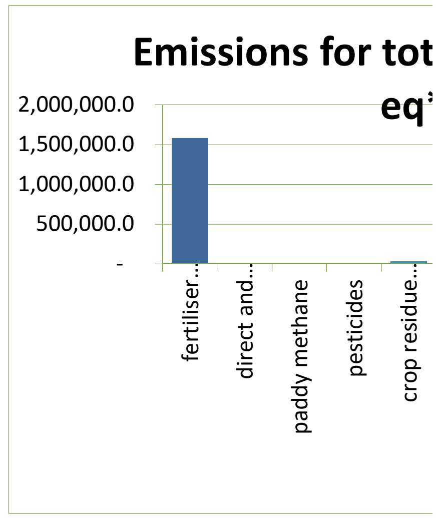
NERGY USE | PROCESSING | TRANSPORT | RESULTS

chinery Operations | 6. Energy Use and | 7. Transport

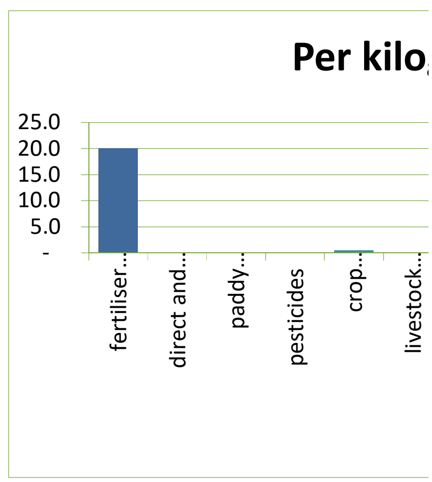
luct.

ith a total of 20

*100% of emissions are allocated to main product



Per hectare*	Per kilogram*	Per tree (if relevant)
1,582,652.9	20.0	
649.5	0.0	
-	-	
410.0	0.0	
39,434.6	0.5	
-	-	
-	-	
-	-	
525.6	0.0	
-	-	
-	-	



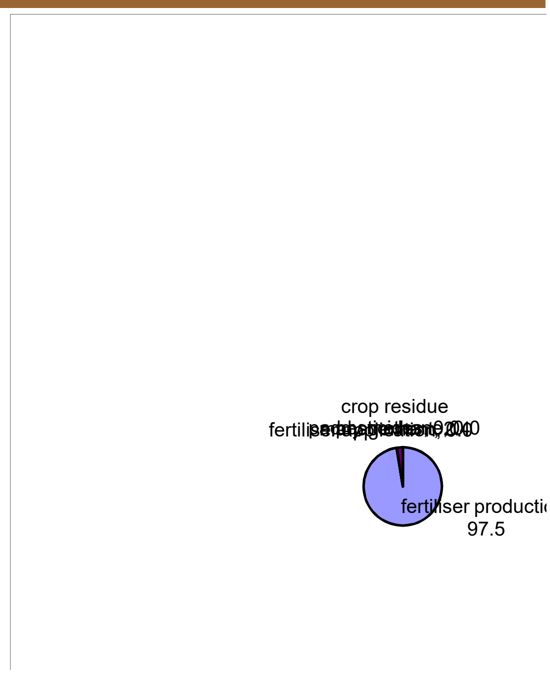
6,869.1	0.1	
##########	**20.6**	

per hectare	per hectare	per hectare	per hectare	per kilogram	per kilogram	per kilogram
0	0	0	0	NA	NA	NA
0	0	0	0	NA	NA	NA
0	0	0	0	NA	NA	NA
0	0	0	0	NA	NA	NA
0	0	0	0	NA	NA	NA
0	0	0	0	NA	NA	NA
0	0	0	0	NA	NA	NA
0	0	0	0	NA	NA	NA
0	0	0	0	NA	NA	NA
0	0	0	0	NA	NA	NA
0	0	0	0	NA	NA	NA
0	0	0	0	NA	NA	NA
0	0	0	0	0	0	0

making 97.5% of the total

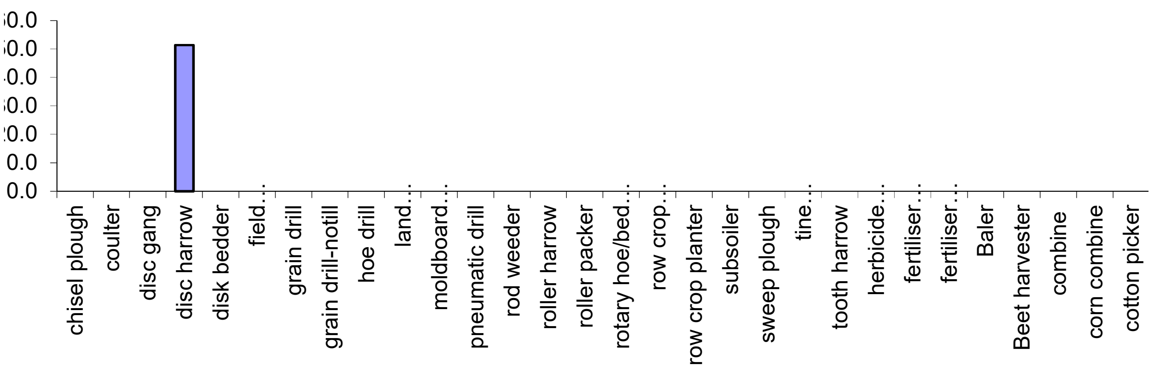
from synthetic fertiliser production.

per hectare	per kilogram	% emissions
1582652.9	20.0	97.5



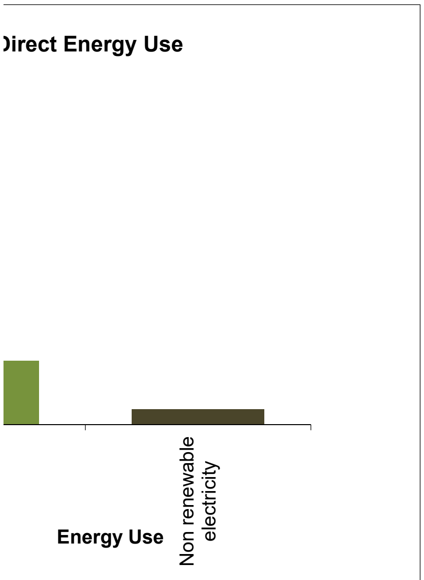
649.5	0.0	0.0
0.0	0.0	0.0
410.0	0.0	0.0
39434.6	0.5	2.4

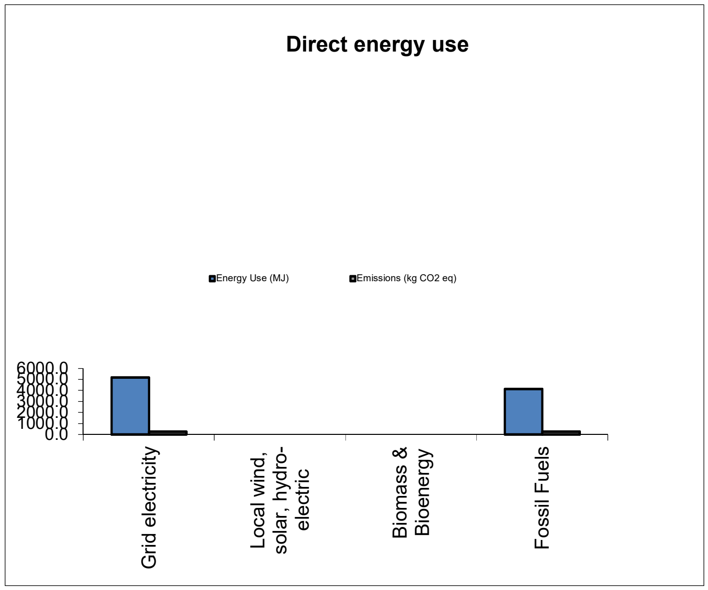
Machinery emissions, kg Co2-equiv

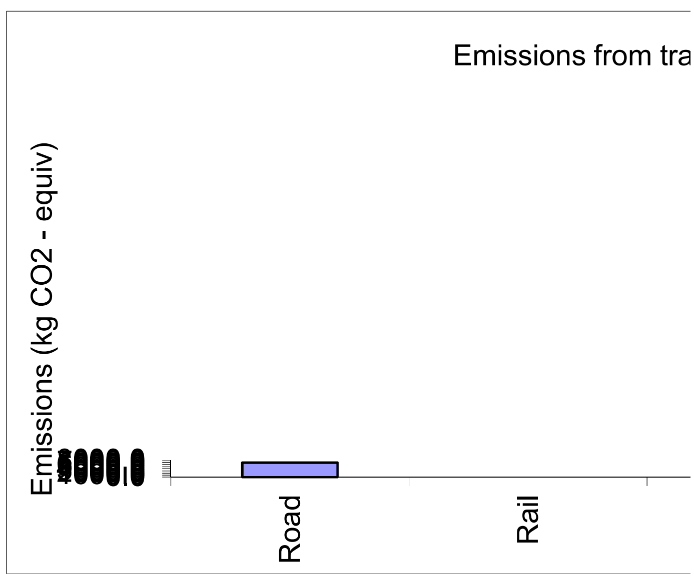


al.

e options which may have lower emission factors?

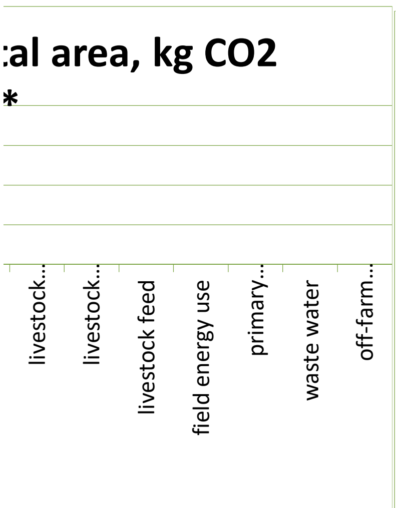


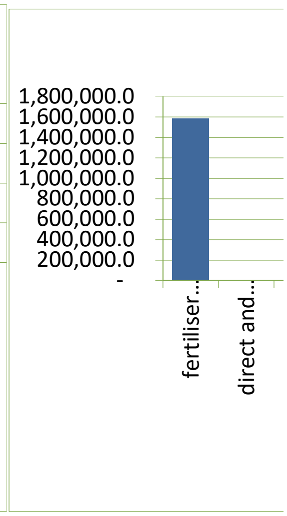


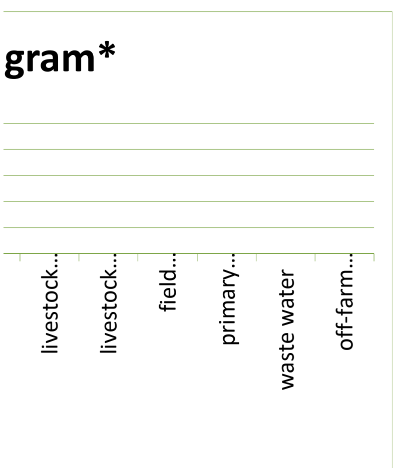


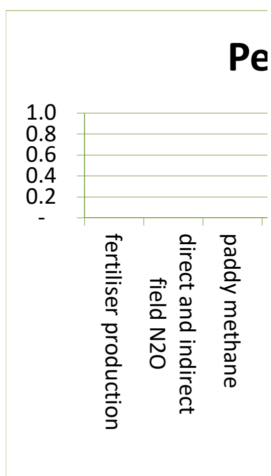
tonnes/ha	pounds/ha	tons/ha
-22.41653493	-49420	-24.71
-20.17488143	-44478	-22.239
-17.93322794	-39536	-19.768
-15.69157445	-34594	-17.297
-13.44992096	-29652	-14.826
-11.20826746	-24710	-12.355
-8.96661397	-19768	-9.884
-6.724960478	-14826	-7.413
-4.483306985	-9884	-4.942
-2.241653493	-4942	-2.471
0	0	0
2.241653493	4942	2.471
4.483306985	9884	4.942
6.724960478	14826	7.413
8.96661397	19768	9.884

11.20826746	24710	12.355
13.44992096	29652	14.826
15.69157445	34594	17.297
17.93322794	39536	19.768
20.17488143	44478	22.239
22.41653493	49420	24.71


al area, kg CO2
*
livestock…
livestock…
livestock feed
field energy use
primary…
waste water
off-farm…


1,800,000.0
1,600,000.0
1,400,000.0
1,200,000.0
1,000,000.0
800,000.0
600,000.0
400,000.0
200,000.0
-
fertiliser…
direct and…

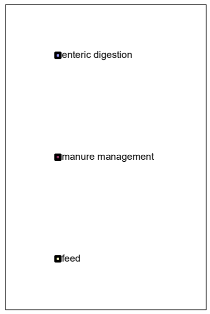

gram*
livestock…
livestock…
field…
primary…
waste water
off-farm…


Pe
1.0
0.8
0.6
0.4
0.2
-
fertiliser production
direct and indirect field N2O
paddy methane

per kilogram
NA
NA
NA
NA
NA
NA
NA
NA
NA
NA
NA
NA
0

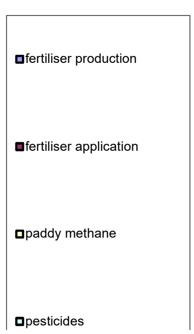
tock

hent

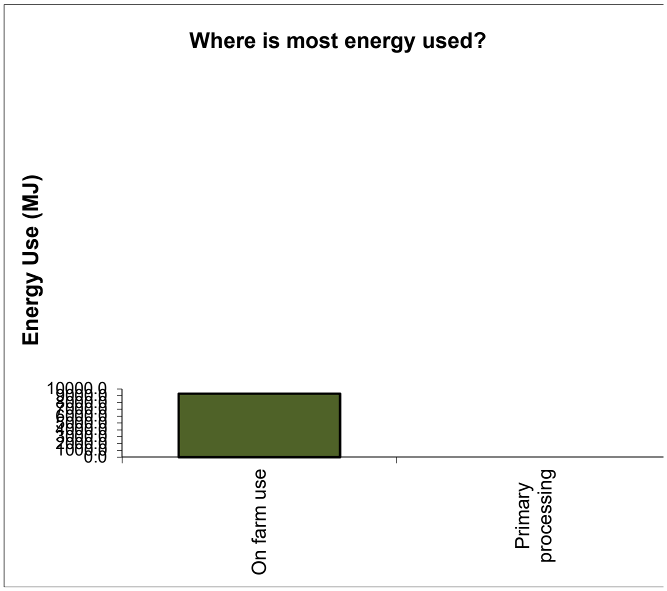


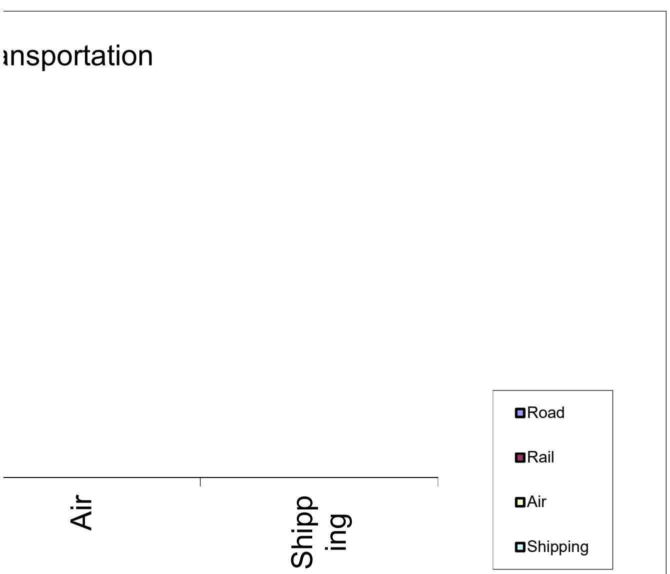
% emissions

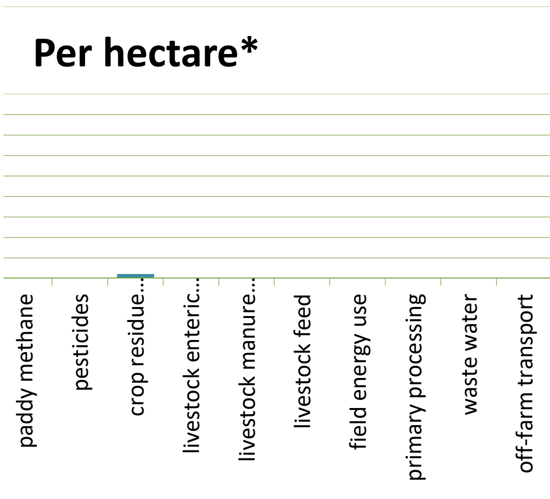
on,

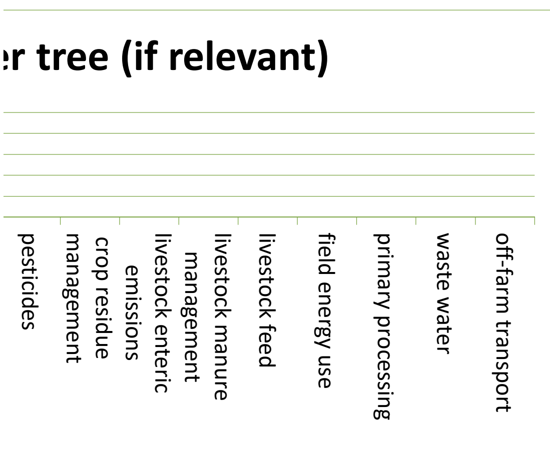


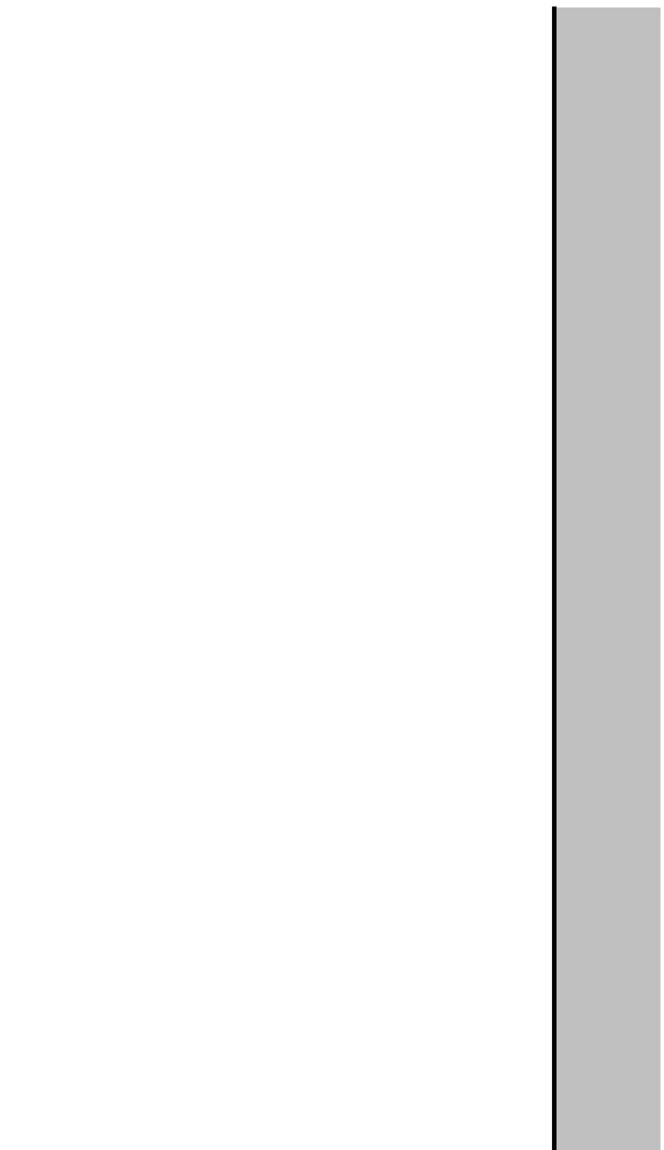

crop residue management
cotton…
forage…
forage harvester
manure…
mower/grader
mower-…
potato harvester
potato…
rake
windrower/sw…

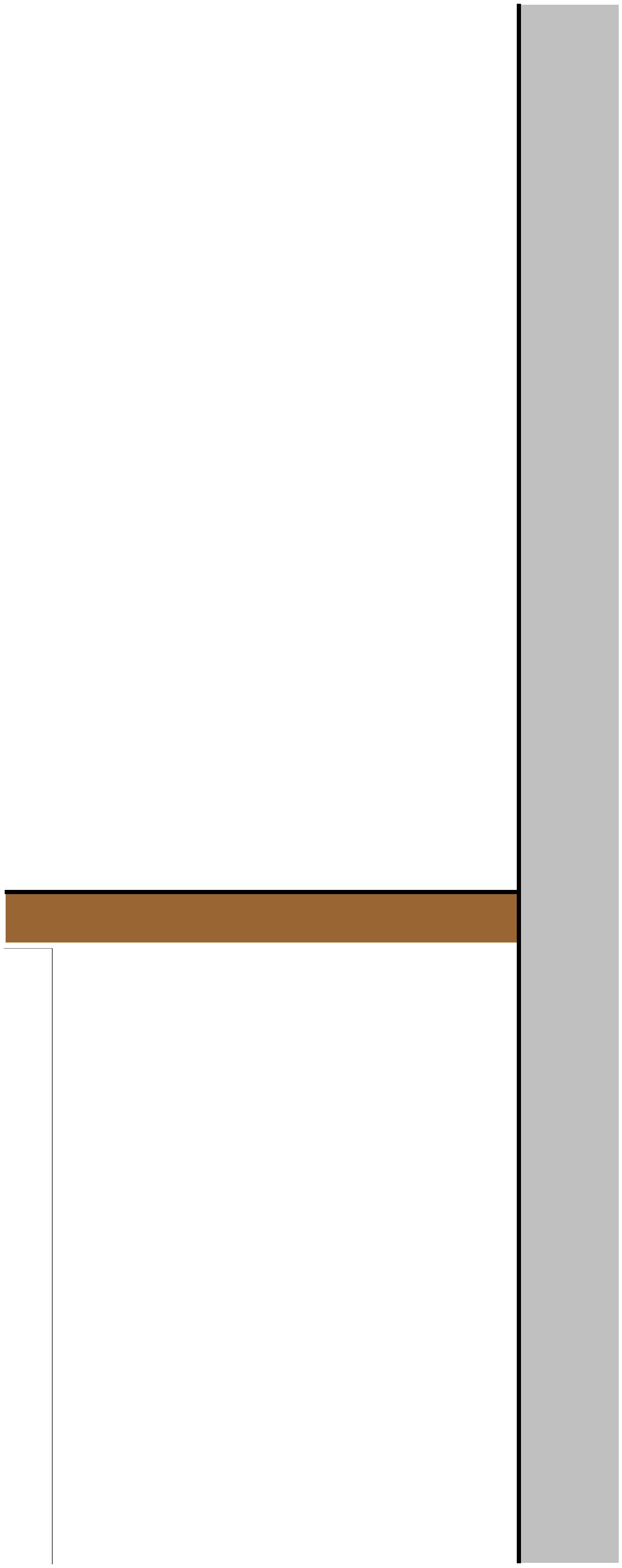

Where is most energy used?
Energy Use (MJ)
On farm use
Primary processing

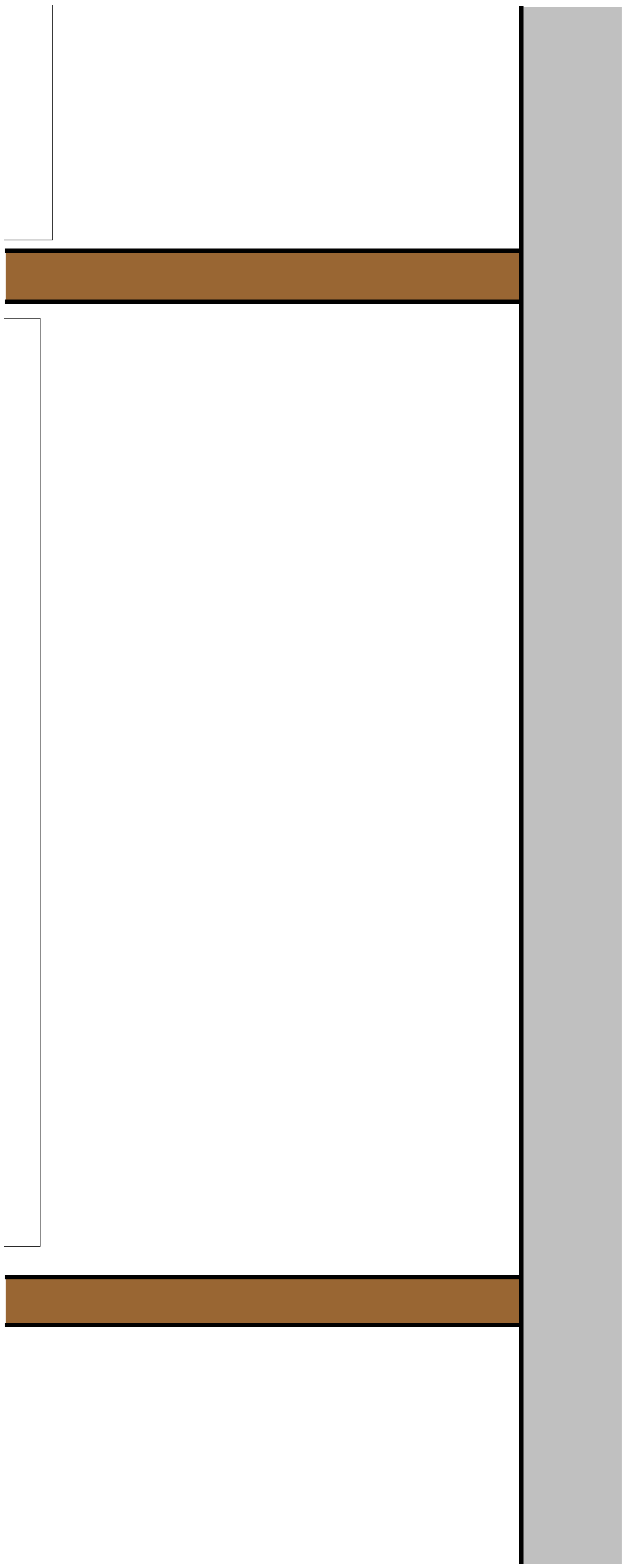

ansportation
Air
Shipp ing
Road
Rail
Air
Shipping

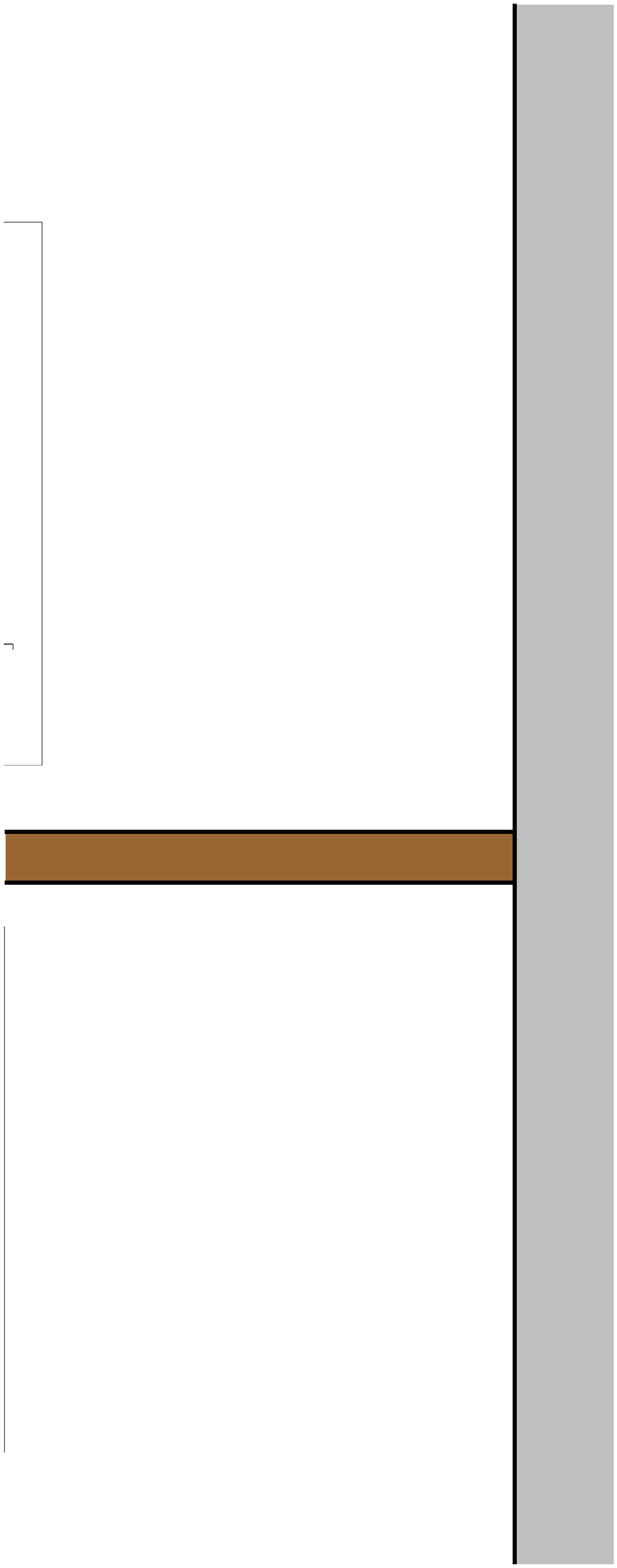

Per hectare*
paddy methane
pesticides
crop residue…
livestock enteric…
livestock manure…
livestock feed
field energy use
primary processing
waste water
off-farm transport

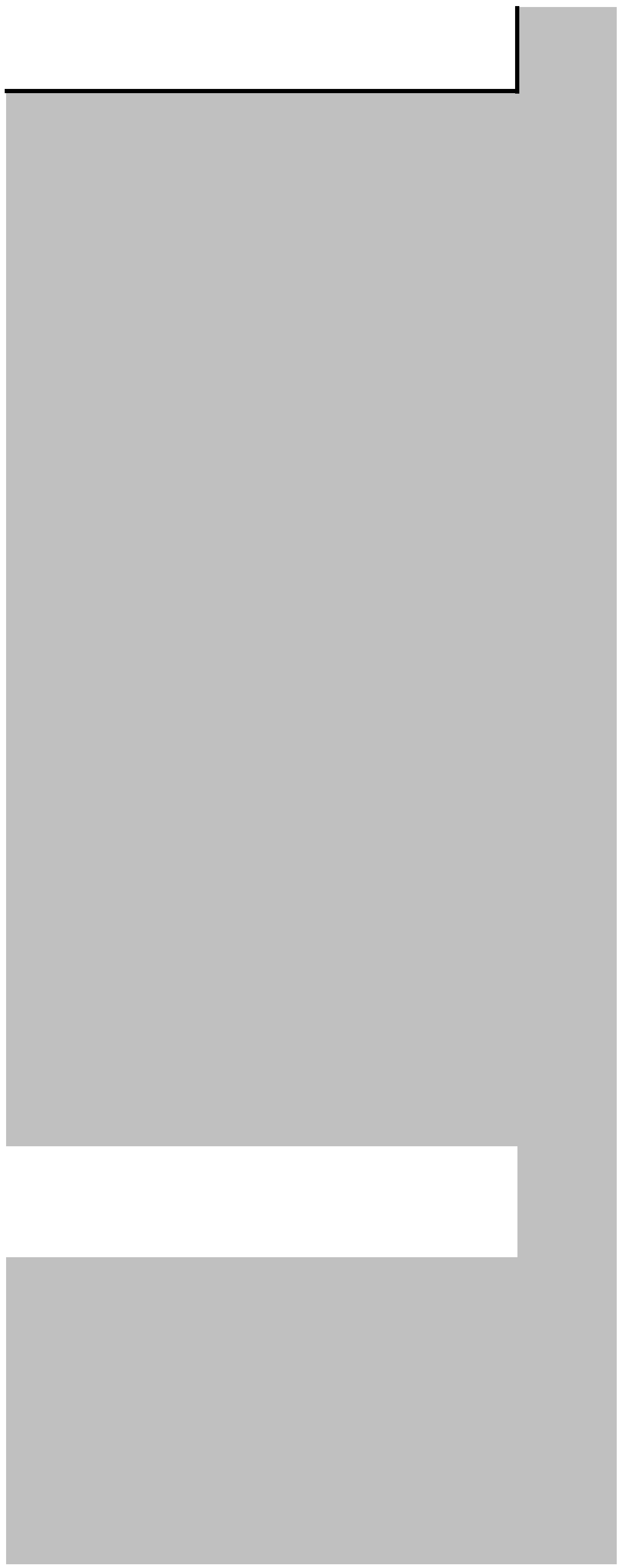

er tree (if relevant)
pesticides
crop residue management
livestock enteric emissions
livestock manure management
livestock feed
field energy use
primary processing
waste water
off-farm transport











7

hectare	kilogram				
	""				
			FALSE	0	1
Fat/protein adju	FALSE		TRUE	1	0.2534
fertiliser production	20	20			########
		1			########
		2			########
		3			1.00
		4			1
		5			1584074
		6		CO2	
		7		- the 20.05	
		9			78987.6
		10			
		11			
		12			
		13			
		14			

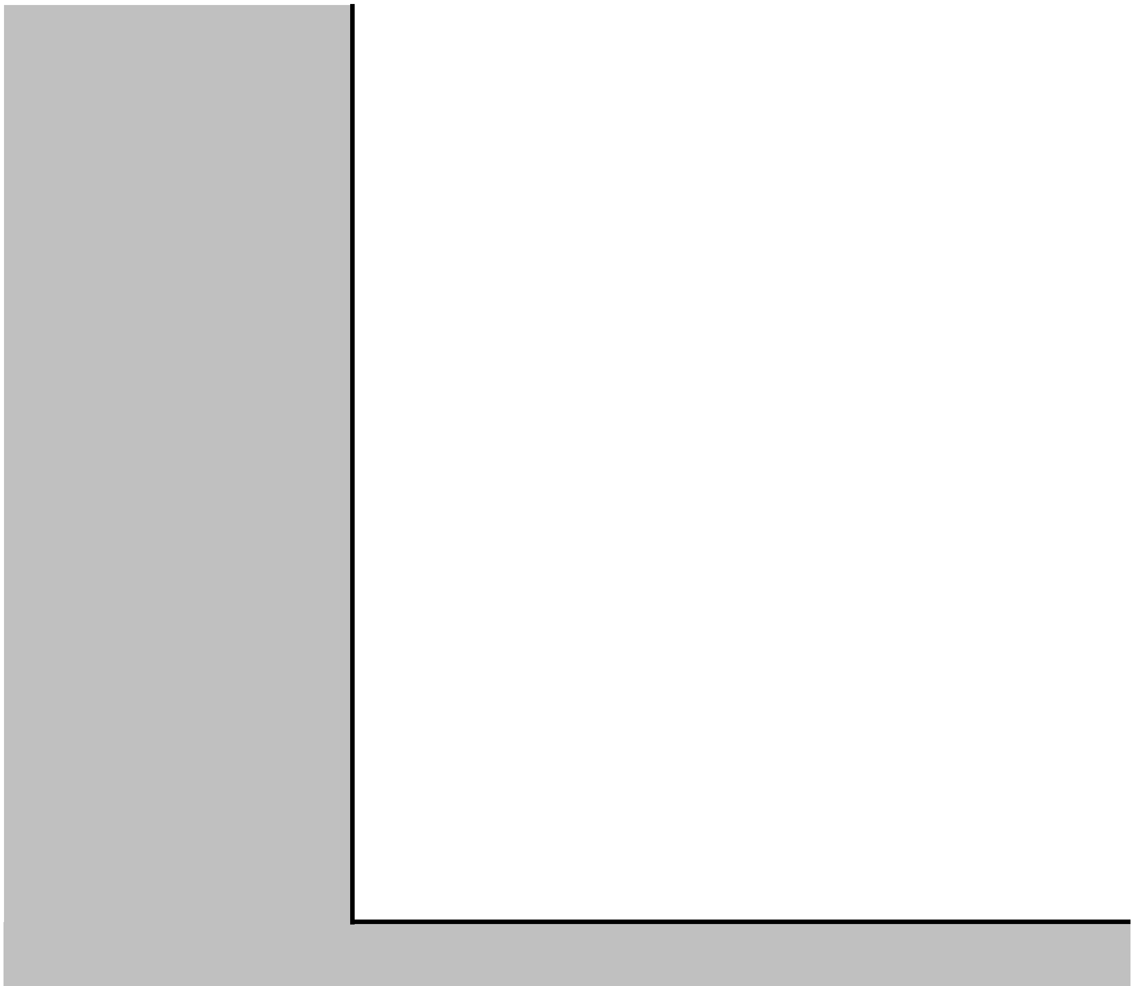
0.0	0	0	1	Methane fr
			2	Lagoons, li
			3	Emissions
			4	

1	2
97.5	97.5

	fertiliser production		
1	Type	Changing fertili	Also, be aw
2	App	Can you reduce	Or fertiliser
3	Paddy	Is is an option to modify you	
4	Pesticide	Can you reduce the pesticid	
5	Residue	This may be offset by soil s	

Energy U MJ		274.116768	Fossil Fuel:
		52.15370066	
		9299.11848	On farm us
		100	
		251.4773213	Non renew:
		100	
Renewab	4188.52		
Energy U MJ			

Overall energy use (not including transport)



Emissions for	kg CO2 eq
Emissions for	tonnes CO
Emissions for	pounds CC
Emissions for	tons CO2 e

12	1445	1630542	1630542	**20.64**
3481.128	36117.73			

########	
296	25
2	3
1584074	

; kgs of CO2 equate to 20.055 kg CO2 eq per kilogram.

co-product names

0	0

om enteric digestion is, of course, naturally higher for some species (ruminants) than other, in which case
quid slurries, and deep bedding systems tend to have the highest methane emissions, although direct ar
from feed will usually depend on the production method of the feed consitituents. Feed mix, of course, ca

3

vare that recent technologies such as N2O recapture have allowed for lower emissions from synthetic fer

s with for example nitrification inhi NI 1

ur flooding regime or residue incorporation?

de requirements of your crop?

sequestration if, for example, incorporated into the soil or composted and applied to the soil. If not are the

s 1

2

3

e 4

Non renewable electricity constitutes 100% of your electricity use.

Is it possible to consider renerwable options which may have lower emission factors?

Field en

Grid electricity

Local wind, solar, hydro-

Diesel

Petrol

Biodiesel

Bioethanol

	Other bio other fossil
	Total (kg CO2 equiv)
	Total /hectare (kg CO2 equiv)
Primary processing	Grid electricity
	Local wind, solar, hydro-electric
	Biomass
	Fossil Fuels
	Totals
	Totals/ hectare

1.0000	null
0.0010	
2.2046	
0.0011	

any trees involved?

FALSE 0

			FALSE
########	1582652.9	fertiliser production	#DIV/0!
649.5	649.5	fertiliser application	#DIV/0!
0.0	0.0	paddy methane	#DIV/0!
410.0	410.0	pesticides	#DIV/0!
39434.6	39434.6	crop residue management	#DIV/0!
0.0	0.0	carbon stock changes	#DIV/0!
0.0	0.0	livestock enteric emissions	#DIV/0!
0.0	0.0	livestock feed	#DIV/0!
525.5941	525.6	livestock residues	#REF!
0	0.0	field energy use	#DIV/0!
0.0	0.0	primary processing	#DIV/0!
6869.1	6869.1	waste water	#DIV/0!
########	**1630541.8**	off-farm transport	#DIV/0!

totals	#DIV/0!

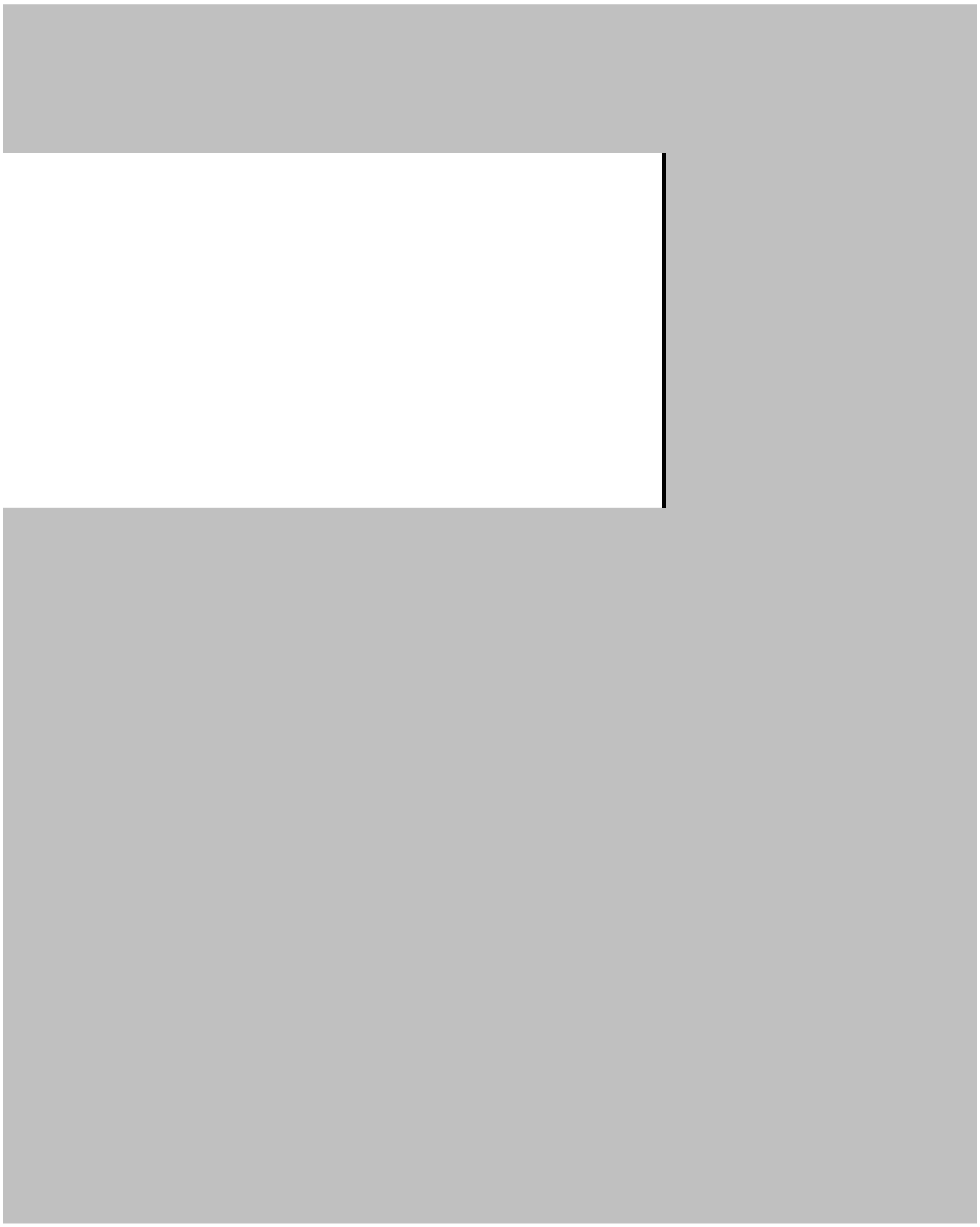
0	0

Co-product 1 for total area	*product 2 for total area*	*product 3 for total area*	*product 4 for total area*
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0

es changes to diet will affect this.
nd indirect nitrous oxide emissions can also be a factor.
an affect emissions from enteric digestion.

tiliser production.

ese options for you?



Energy Use (MJ)	Emissions (kg CO2 eq)
5179.7	251.5
0.0	0.0
1948.8	137.8
0.0	0.0
0.0	0.0
0.0	0.0

	field energy	primary processin
Grid electricity	5179.7	0.0
Local wind, solar, hydro-electric	0.0	0.0
Diesel	1948.8	0.0
Biomass/bioenergy	0.0	0.0

0	0
2,171	136.311168
9299.1	**525.6**
9299.1	**525.6**
0.0	0.0
0.0	0.0
0.0	0.0
0.0	0.0
0	**0**
0	**0**

The total annual emissions from your farm system are 20.64 kg CO_2-equiv per tree.

In terms of CO_2 equivalents the greatest emissions in your case come from fertiliser pro

In terms of compounds the largest emissions in CO_2 equivalents come from CO_2

- with a total of 20.0547174493212kgs of CO_2 per tree.

- the 20.054715436347 kgs of CO_2 equating to 20.0547174493212 kgs of CO_2 per tre

- with a total of 20.0547174493212kgs of CO_2 per tree.

*product 1, Per hectare**	*product 2, Per hectare**	*Co-product 3, Per hectare**	*product 4, Per hectare**	*product 1, per kilogram*	*product 2, per kilogram*
0	0	0	0	#DIV/0!	#DIV/0!
0	0	0	0	#DIV/0!	#DIV/0!
0	0	0	0	#DIV/0!	#DIV/0!
0	0	0	0	#DIV/0!	#DIV/0!
0	0	0	0	#DIV/0!	#DIV/0!
0	0	0	0	#DIV/0!	#DIV/0!
0	0	0	0	#DIV/0!	#DIV/0!
0	0	0	0	#DIV/0!	#DIV/0!
0	0	0	0	#DIV/0!	#DIV/0!
0	0	0	0	#DIV/0!	#DIV/0!
0	0	0	0	#DIV/0!	#DIV/0!
0	0	0	0	#DIV/0!	#DIV/0!

field energy	primary processin		Grid electricity
251.5	0.0	field energy u	5179.7
0.0	0.0	primary processing	0.0
137.8	0.0	field energy emis	251.5
0.0	0.0	primary processing e	0.0

oduction, with a total of 20kg CO_2 equiv per tree.

		2. Finished product in kgs		3. Proportion of finished product value (%)	In tonnes	weightings
e.						
	Co-product 1		kgs		0	0
	Co-product 2		kgs		0	0
	Co-product 3		kgs		0	0
	Co-product 4		kgs		0	0
	main product				78.9876	7898.76
				product		1

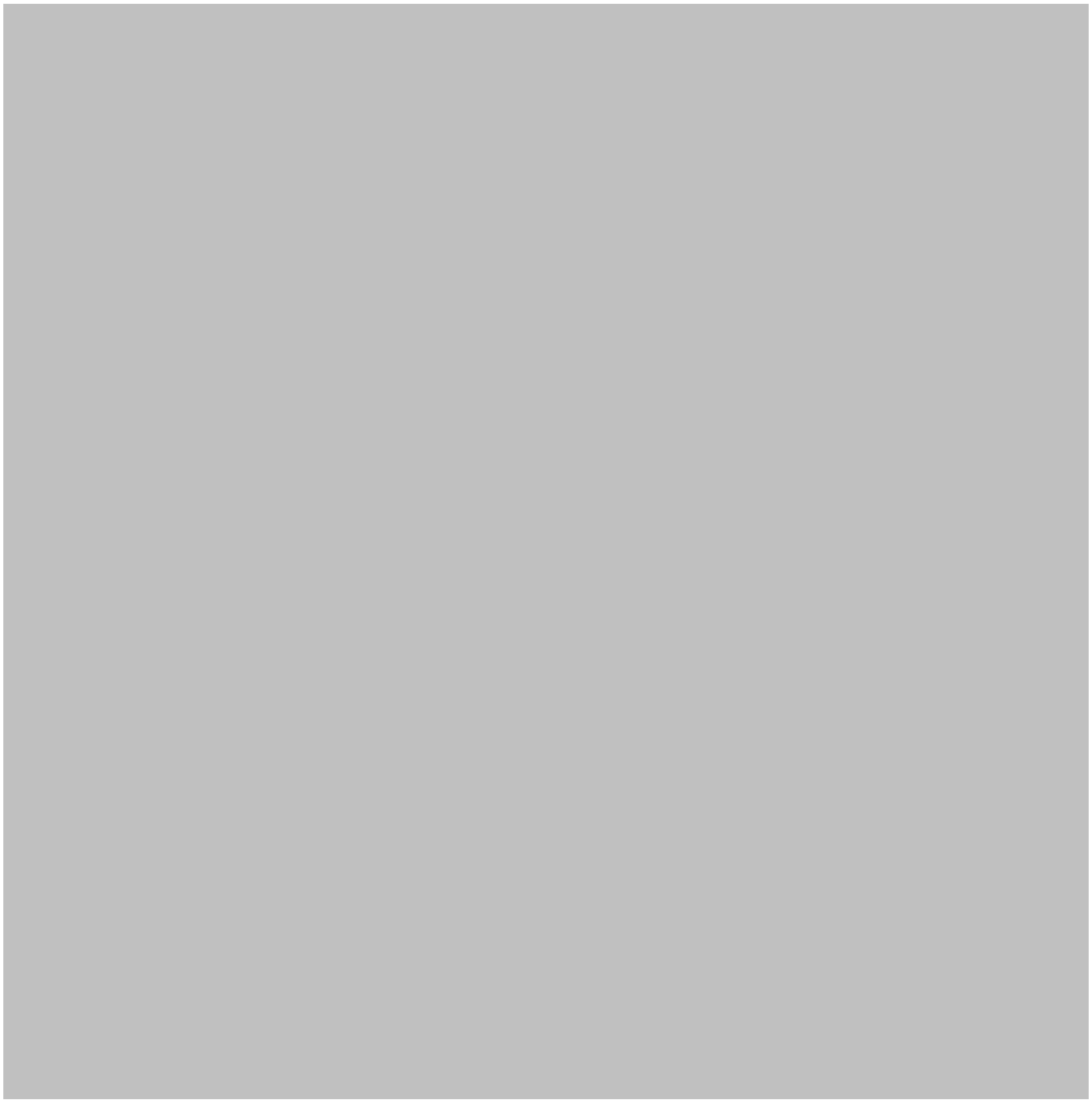
product 3, per kilogram	*product 4, per kilogram*
#DIV/0!	#DIV/0!
#DIV/0!	#DIV/0!
#DIV/0!	#DIV/0!
#DIV/0!	#DIV/0!
#DIV/0!	#DIV/0!
#DIV/0!	#DIV/0!
#DIV/0!	#DIV/0!
#DIV/0!	#DIV/0!
#DIV/0!	#DIV/0!
#DIV/0!	#DIV/0!
#DIV/0!	#DIV/0!
#DIV/0!	#DIV/0!

chisel plough	#N/A
coulter	#N/A
disc gang	#N/A
disc harrow	51.4
disk bedder	#N/A
field cultivator/ridger	#N/A
grain drill	#N/A
grain drill-notill	#N/A
hoe drill	#N/A
land plane/destoner	#N/A
moldboard plough	#N/A
pneumatic drill	#N/A
rod weeder	#N/A
roller harrow	#N/A
roller packer	#N/A
rotary hoe/bed tiller	#N/A
row crop cultivator	#N/A
row crop planter	#N/A
subsoiler	#N/A
sweep plough	#N/A
tine harrow/seed handlin	#N/A
tooth harrow	#N/A
herbicide spraying	#N/A
fertiliser spraying	#N/A
fertiliser spreading	#N/A
Baler	#N/A
Beet harvester	#N/A
combine	#N/A

corn combine	#N/A
cotton picker	#N/A
cotton stripper/potato top	#N/A
forage blower/washer	#N/A
forage harvester	#N/A

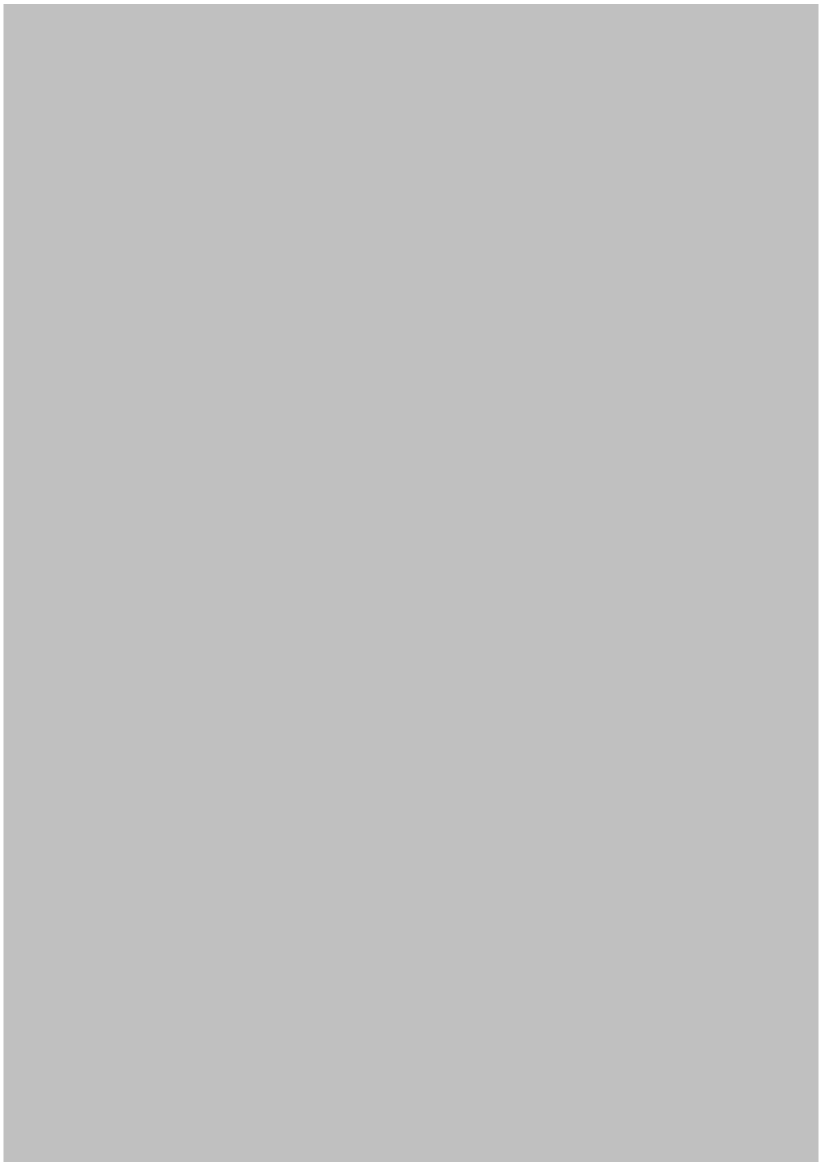
manure spreader	#N/A
mower/grader	#N/A
[illegible]	[illegible]

Local wind	Fossil fuel	Biomass/bioenergy
0.0	1948.8	0.0
0.0	0.0	0.0
0.0	137.8	0.0
0.0	0.0	0.0



Quantity conversions

				[Select]	Conversion factor to tonnes
				kgs	0.001
				tonnes	1
				tons (US, short)	0.90718474
				litres	0.001
0	0	0	0	pieces	1
				trees	1
0					
0				gallons	0.003785412
0				pounds	0.000453592



	Para
Pesticides	Embodied emissions in pesticides
Fossil fuels (Emissions per litre)	Diesel
	Petrol
Liquid Biofuels	Bioethanol
	Biodiesel
Fossil Fuels (energy density)	Coal
	Propane gas
	Heavy oil
	Other
Biomass (energy density)	High density biomass
	Fuel wood
Fossil Fuels (emissions per MJ)	Coal
	Gas
	Oil
	Other
Biomass (emissions per MJ)	High density biomass
	Fuel wood
Emissions - renewable electricity	Grid
	Hydro
	Wind
	Photo-voltaic

meter	Unit	Value	Default
Emissions per dose per hectare	kg CO2-eq / dose per hectare	20.50	20.50
Emissions per litre	kg CO2-eq/litre	2.68	2.68
Emissions per litre	kg CO2-eq/litre	2.32	2.32
Emissions per litre	kg CO2-eq/litre	2.32	2.32
Emissions per litre	kg CO2-eq/litre	2.68	2.68
Energy Density	MJ/kg	31.50	31.50
Energy Density	MJ/kg	47.50	47.50
Energy Density	MJ/litre	40.33	40.33
Energy Density	MJ/kg	0.00	0.00
Energy Density	MJ/kg	20.08	20.08
Energy Density	MJ/kg	12.99	12.99
Emissions per MJ	kg CO2-eq/MJ	0.0927	0.0927
Emissions per MJ	kg CO2-eq/MJ	0.0628	0.0628
Emissions per MJ	kg CO2-eq/MJ	0.0784	0.0773
Emissions per MJ	kg CO2-eq/MJ	0	0
Emissions per MJ	kg CO2-eq/MJ	0	0
Emissions per MJ	kg CO2-eq/MJ	0	0
Emissions per MJ	kg CO2-eq/MJ	0.04855018	0.048550178
Emissions per MJ	kg CO2-eq/MJ	0.0016667	0.001666667
Emissions per MJ	kg CO2-eq/MJ	0.033333	0.003333333
Emissions per MJ	kg CO2-eq/MJ	0.0197222	0.019722222

Average from Audsley Harmonisation 1997
UK Department for Environment, Food and Rural Affairs (DEFRA) Data, http://www.ghgprotocol.org
UK Department for Environment, Food and Rural Affairs (DEFRA) Data, http://www.ghgprotocol.org
Assumed as diesel - if you have more accurate factors include them in cell S12.
Assumed as petrol - if you have more accurate factors include them in cell S11.
Average of several from www.fao.org/DOCREP/006/AD582E/ad582e00.pdf
www.dti.gov.uk/energy/inform/table_a1_a2.xls
The carbon Trust Energy and carbon conversion figures
#N/A
Average of various - see submodels and data
Average of various - see submodels and data
GHG Protocol website - Coal
GHG Protocol website LPG
GHG Protocol website
#N/A
Assumed
Assumed
From EIA 2009 data for countries/regions. From US EPA EGRID for US state emissions factors.
European average, Ecoinvent, (T Garcia-Suarez, Unilever)
European average from 3 main technologies (T Garcia-Suarez, Unilever)
Average from several countries (T Garcia-Suarez, Unilever)

metric used	metric default			
20.50	20.5	hectares	1	hectare
2.68	2.68	litres	1	litre
2.32	2.32	litres	1	litre
2.32	2.32	litres	1	litre
2.68	2.68	litres	1	litre
31.50	32		1	
47.50	48	litres	1	litre
40.33	40	litres	1	litre
0.00	0		1	
20.08	20		1	
12.99	13		1	

EDITING THIS DATA WILL AFFECT CALCULATIONS ELSE

Ammonium Bicarbonate - 30% N
Ammonium nitrate - 35% N
Ammonium sulphate - 21% N
Ammonium sulphate nitrate - 26%N
Anhydrous ammonia - 82% N
Calcium ammonium nitrate -27% N
Calcium nitrate - 15% N
Compound NK - 14% N; 44% K2O
Compound NPK 15%N 15% K2O 15% P2O5
Diammonium phosphate - 18% N; 46% P2O5
Kainit / Magnesium Sulphate - 11% K2O; 5% MgO
Lime - 52% CaO
Limestone - 55% CaCO3 / 29%CaO
Lime, algal - 30% CaO
Monoammonium phosphate - 11% N; 52% P2O5
Muriate of potash / Potassium Chloride - 60% K2O
Phosphate/Rock Phosphate - 25% P2O5
Potassium sulphate - 50% K2O; 45% SO3
Super phosphate - 21% P2O5
Triple super phosphate - 48% P2O5
Urea - 46.4% N
Urea ammonium nitrate solution - 32% N
Compost (zero emissions) - 1% N
Compost (fully aerated production) - 1% N
Compost (non-fully aerated production) - 1% N
Cattle Farmyard manure - 0,6% N
Pig Farmyard manure - 0,7% N
Sheep Farmyard manure - 0,7% N
Horse Farmyard Manure - 0,7% N
Poultry layer manure - 1,9% N
Broiler/Turkey litter - 3% N
Cattle Slurry - 0,26% N

Pig slurry - 0,36% N
Separated Pig slurry - liquid part - 0,36% N
Separated Pig slurry - solid part - 0,5% N

straw

EMISSIONS ARISING FROM SOIL MANAGEMENT OPTIONS

Temp moist
Land Use Change
Previous
Forest

Grass
arable

Tillage practices change

no till
reduced till
conventional till

Input practice change

low inputs
medium
high

organic inps with amend
Forest/Natural
Pasture/Set-aside
Arable

previous practice/LU is in rows, current in columns

VARIOUS OTHER WORKING DATA/MODELS

No till N2O emissions
1.5
1.13
0.87
GWPs
CH4
N2O
N to N2O conversion

Smith et al 1997 Fym model

compost model
manure model
residue model

Emissions factors for N leaching and volatilisation

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25
26
27
28
29
30
31

WHERE IN THE SPREADSHEET!!

database used for fertiliser production emissions

EFMA (2006)

Ammonium Bicarbonate
Ammonium nitrate
Ammonium sulphate
Ammonium sulphate nitrate
Anhydrous ammonia
Calcium ammonium nitrate
Calcium nitrate
Compound NK
Compound NPK
Diammonium phosphate
Kainit / Magnesium Sulphate
Lime
Limestone
Lime, algal
Monoammonium phosphate
Muriate of potash / Potassium Chloride
Phosphate/Rock Phosphate
Potassium sulphate
Super phosphate
Triple super phosphate
Urea
Urea ammonium nitrate solution
Compost (zero emissions)
Compost (fully aerated production)
Compost (non-fully aerated production)
Cattle Farmyard manure
Pig Farmyard manure
Sheep Farmyard manure
Horse Farmyard Manure
Poultry layer manure
Broiler/Turkey litter
Cattle Slurry

Pig slurry
Separated Pig slurry - liquid part
Separated Pig slurry - solid part

This is only an option for rice

EMISSIONS FROM N FERTILISER APPLICATION

Bouwman N2O-model
Croptype
SoilTexture
SOC
pH
CEC
Drainage
Climate

Bouwman NO-model
Croptype
SoilTexture
SOC
pH
CEC
Drainage
Climate

Bouwman NH4-model
Croptype
SoilTexture
SOC
pH
CEC
Drainage
Climate
Application method

S AND LAND USE CHANGE

forest

1

1.219512195
1.408450704
no till
1
1.064220183
1.16
low inputs
1
0.91
0.81981982
0.65942029
No tillage
Low tillage
Conventional tillage
direct from Ogle
derived from Ogle assuming reciprocity (e.g arable -> forest = 1/(forest ->

ELECTRICITY EMISSIONS BY COUNTRY/REGION

Country
[Select]
- Albania
- Algeria
- Angola
- Argentina
- Armenia
- Australia
- Austria
- Azerbaijan
- Bahrain
- Bangladesh
- Belarus
- Belgium
- Benin

- Bolivia
- Bosnia & Herzegovina
- Brazil
- Brunei Darussalam
- Bulgaria
- Cameroon
- Canada
- Chile
- China, People's Rep. of
- Chinese Taipei
- Colombia
- Congo Dem. Rep.
- Costa Rica
- Cote d'Ivoire
- Croatia
- Cuba
- Cyprus
- Czech Republic
- Denmark
- Dominican Republic
- Ecuador
- Egypt
- El Salvador
- Eritrea
- Estonia
- Ethiopia
- Finland
- France
- Gabon
- Georgia
- Germany
- Ghana
- Greece
- Guatemala
- Haiti
- Honduras
- Hong Kong (China)
- Hungary
- Iceland
- India
- Indonesia
- Iran Islamic Rep.
- Iraq
- Ireland
- Israel
- Italy
- Jamaica
- Japan
- Jordan
- Kazakhstan
- Kenya
- Korea, Dem Rep. of
- Korea, Rep. of
- Kuwait
- Kyrgyzstan
- Latvia

- Lebanon
- Libya
- Lithuania
- Luxembourg
- Malaysia
- Malta
- Mexico
- Moldova
- Morocco
- Mozambique
- Myanmar
- Namibia
- Nepal
- Netherlands
- Netherlands Antilles
- New Zealand
- Nicaragua
- Nigeria
- Norway
- Oman
- Pakistan
- Panama
- Paraguay
- Peru
- Philippines
- Poland
- Poland
- Portugal
- Qatar
- Romania
- Russia
- Saudi Arabia
- Senegal
- Serbia & Montenegro
- Singapore
- Slovak Republic
- Slovenia
- South Africa
- Spain
- Sri Lanka
- Sudan
- Sweden
- Switzerland
- Syria
- Tajikistan
- Tanzania United Rep.
- Thailand
- The former Yugoslav Republic of Macedonia
- Togo
- Trinidad & Tobago
- Tunisia
- Turkey
- Turkmenistan
- Ukraine
- United Arab Emirates
- United Kingdom

- United States
-- AL
-- AK
-- AZ
-- AR
-- CA
-- CO
-- CT
-- DE
-- DC
-- FL
-- GA
-- HI
-- ID
-- IL
-- IN
-- IA
-- KS
-- KY
-- LA
-- ME
-- MD
-- MA
-- MI
-- MN
-- MS
-- MO
-- MT
-- NE
-- NV
-- NH
-- NJ
-- NM
-- NY
-- NC
-- ND
-- OH
-- OK
-- OR
-- PA
-- RI
-- SC
-- SD
-- TN
-- TX
-- UT
-- VT
-- VA
-- WA
-- WV
-- WI
-- WY
- Uruguay
- Uzbekistan
- Venezuela
- Vietnam

- Yemen
- Zambia
- Zimbabwe
Africa
Asia
Central and Eastern Europe
China (including Hong Kong)
Former USSR
Latin America
Middle East
North America
Pacific
Rest of Europe

Conversion figures for Transport and Fuel

Figures used for converting miles per gallon to litres

car
hgv

Ref: Transport Statistics Great Britain 2005, Dept for Transport, Publishec

Figures used for converting MJ per litre for fuel use.

Conversion figures
Diesel
Petrol
Biodiesel
Bioethanol

Ref: University of Strathclyde and HM Treasury

Biofuels - Greenhouse Gas emissions

Estimated at 50% of fossil alternatives (Email Christof Walter 290108)

Fine - moist
medium
coarse

25
296
1.571428571

intercept
1
1
1

volatilisation
Limestone
Urea

Removed; left untreated in heaps or pits
Removed; non-Forced Aeration Compost
Removed; Forced Aeration Compost
Left on field; Incorporated or mulch
Burned
Exported off farm

The default (left untreated method) using the IPCC shallow landfill scenario.

Fine classification
Alfalfa
Apple
Barley
Clover
Coffee
Cotton
Dry Bean
Grass-clover mix

Maize
Millet
Oats
Peanut
Perennial grass
Potato
Rice
Rye
Sorghum
Soyabean
Spring wheat
Tea
Tomato
Tree Crop
Vegetable
Winter wheat
Other grain
Other legume
Other N-fixing forage
Other Non-N-fixing forage
Other root crops
Other tuber crop
Other

	Index
Ammonium Bicarbonate - 30% N	1
Ammonium nitrate - 35% N	2
Ammonium sulphate - 21% N	3
Ammonium sulphate nitrate - 26%N	4
Anhydrous ammonia - 82% N	5
Calcium ammonium nitrate -27% N	6
Calcium nitrate - 15% N	7
Compound NK - 14% N; 44% K2O	8
Compound NPK 15%N 15% K2O 15% P2O5	9
Diammonium phosphate - 18% N; 46% P2O5	10
Kainit / Magnesium Sulphate - 11% K2O; 5% MgO	11
Lime - 52% CaO	12
Limestone - 55% CaCO3 / 29%CaO	13
Lime, algal - 30% CaO	14
Monoammonium phosphate - 11% N; 52% P2O5	15
Muriate of potash / Potassium Chloride - 60% K2O	16
Phosphate/Rock Phosphate - 25% P2O5	17
Potassium sulphate - 50% K2O; 45% SO3	18
Super phosphate - 21% P2O5	19
Triple super phosphate - 48% P2O5	20
Urea - 46.4% N	21
Urea ammonium nitrate solution - 32% N	22
Compost (zero emissions)	23
Compost (fully aerated production)	24
Compost (non-fully aerated production)	25
Cattle Farmyard manure	26
Pig Farmyard manure	27
Sheep Farmyard manure	28
Horse Farmyard Manure	29
Poultry layer manure	30
Broiler/Turkey litter	31
Cattle Slurry	32

Pig slurry	33
Separated Pig slurry - liquid part	34
Separated Pig slurry - solid part	35
	36
	37
	38
	39
straw	40

-0.4136	
-1.268	-1.242
0	-0.472
0	0.14
0	0.109
0	0
0	-0.42
0	0.824
-1.527	
0	0
0	0
0	0
0	0
0	0
0	0.946
0	0
0	
-0.158	-0.158
0	0
0	0
-1.072	-0.933
0.088	0.012
0	0
-0.402	0
-1.292	-1.305

grass	**arable**
0.82	0.71

1	0.865853659
1.154929577	1
reduced till	**conventional till**
0.939655172	0.862068966
1	0.917431193
1.09	1
medium	**high**
1.098901099	1.21978022
1	1.11
0.900900901	1
0.724637681	0.804347826

Low input
Medium input
High input (e.g. organic manure)
High input with amendments

arable) OR composition (e.g. red till -> no till = (conv till -> no till) / (conv till -> red till)

kg co2e/MJ electricity produced - Data from IEA CO2 Highlights for countries and regions. 2009 figures. Data for US states from EGRID - 2007 figures.	% National/State Renewables
0.003095364	98.33
0.159542831	0.80
0.065773567	66.47
0.098421175	31.70
0.029916277	33.13
0.236261887	7.80
0.045215264	65.91
0.12282867	12.73
0.184169045	0.00
0.162124582	5.71
0.083745465	0.02
0.060356361	4.32
0.200827188	1.23

0.108945513	51.13
0.214942416	46.83
0.017763401	86.17
0.209197436	0.00
0.128374791	8.13
0.067222554	95.38
0.046323264	58.68
0.10327114	48.43
0.205740504	16.19
0.175834586	4.54
0.048550178	80.86
0.000812663	99.68
0.011027675	98.19
0.118112301	32.35
0.078498393	53.10
0.208176358	4.66
0.206163455	10.88
0.142448081	3.93
0.083861473	25.12
0.163578361	12.01
0.080231471	58.90
0.128953112	13.00
0.088302753	54.38
0.186029433	0.35
0.194967281	0.58
0.032771621	99.29
0.056897185	30.50
0.024888727	12.44
0.089232088	58.56
0.035633834	87.36
0.119247392	11.34
0.051669336	87.45
0.200104523	11.10
0.096702916	47.14
0.15155357	47.53
0.095377471	48.48
0.211343355	0.00
0.08367062	2.85
0.000117448	99.95
0.263539434	13.53
0.206556241	13.59
0.174499668	6.46
0.18949185	1.53
0.128871203	6.84
0.192482591	0.08
0.107035847	24.91
0.150815254	3.46
0.114874393	11.70
0.160811796	0.62
0.132976177	12.04
0.109399904	75.88
0.138185411	56.89
0.137862623	1.71
0.24088064	0.00
0.02242761	93.09
0.042401553	68.12

0.198518255	10.99
0.241484223	0.00
0.030789353	5.81
0.106447222	24.13
0.179675413	7.03
0.235565038	0.00
0.126030291	15.33
0.110827257	1.63
0.176849154	9.39
0.000139414	99.70
0.054249536	36.21
0.06562166	96.91
0.001203039	99.83
0.103732345	6.82
0.195810829	0.00
0.046121331	73.32
0.140110007	24.77
0.115158373	34.18
0.004788776	99.56
0.233369148	0.00
0.126789742	29.95
0.08370217	66.01
0	100.00
0.065456928	72.92
0.132450182	33.73
0.177334846	4.08
0.177334846	3.25
0.102001926	28.51
0.136840465	0.00
0.114776003	29.23
0.087920908	34.84
0.209753403	0.00
0.170202733	23.18
0.188450468	30.98
0.143723334	0.00
0.061415332	14.01
0.087538925	27.67
0.256475657	2.23
0.082763168	20.28
0.127450138	36.85
0.098500037	27.22
0.011948395	45.49
0.011061718	56.95
0.177526918	13.24
0.008095713	97.66
0.077898522	95.08
0.142206509	6.99
0.196643297	22.24
0.055835278	61.07
0.19910965	0.36
0.149048022	1.52
0.132940333	30.75
0.218678315	0.03
0.103585535	6.54
0.174855004	0.00
0.124511777	4.40

	0.14076309	9.58
0.167188353		5.5183
0.142907264		19.0936
0.148765655		5.9685
0.151653016		8.9568
0.071344095		24.8481
0.228145833		5.3542
0.087413724		3.1047
0.227696187		0.5638
0.350762647		0.0000
0.158716482		1.8879
0.177192403		3.6015
0.195078785		7.2460
0.017679168		84.2430
0.139784393		0.7183
0.2591424		0.5204
0.224989352		7.7733
0.217381592		2.3204
0.264717336		2.1951
0.136539307		4.1117
0.06794532		49.1853
0.169056733		4.4508
0.151463694		2.5151
0.179026959		2.1583
0.192410222		8.3709
0.15577121		2.6376
0.22520903		1.7744
0.203942493		34.4644
0.180376136		3.3416
0.146444751		10.0563
0.084020076		10.2520
0.08836193		1.2824
0.225939103		4.6622
0.095049226		18.8142
0.156036836		3.6827
0.281714		6.2121
0.228354869		0.3648
0.187376151		6.7217
0.051856152		65.0223
0.152623323		1.7677
0.114252256		2.2571
0.114648804		2.2622
0.154933697		45.7928
0.171467284		5.4732
0.164882439		2.9425
0.244458058		1.6164
0.001061638		19.0631
0.143845908		3.2140
0.032760913		77.2029
0.248493665		1.5138
0.201099434		4.4486
0.282775638		3.2527
	0.070130528	81.64
	0.127828824	12.84
	0.055011591	71.00
	0.106396642	38.38

0.174635675	0.00
0.000899308	99.39
0.171449399	56.81
0.178111	17.09
0.206365	15.47
0.093903	16.25
0.205811	
0.096388889	28.70
0.048475	69.76
0.19113	2.82
Choose a sub category	15.72
Choose a sub category	10.96
0.107222222	19.81

petrol	30
rigid	8.3

l Oct 2005	

MJ/l
37.9
31.5
35.6
21.1

slope - fresh weight	slope - dry weight
0.000835955	0.001
0.00036	0.001545064
0.00124	0.001

0.01
0.12
0.2

Methane emissions (for untreated, use IPCC method for small h	N2O
kg/kg residue	kg/kg
0.065333333	0.00050675
0.005	0.00050675
0.003	0.000337833
0	#N/A
0.0027	0.00007
0	0

The equation is CH4 = 16/12 * L * DOC * DOCf * MCF * residue amount, using IPCC default values of	**L**
	DOC
	DOCf
	MCF

Gross classification	**Bouwman equivalent**
Alfalfa	Other crop
Tree Crop	Other crop
Grain	Other crop
N-fixing forage	Legume
Tree Crop	Other crop
Other	Other crop
Beans & pulses	Legume
Grass-clover mix	Grass-clover

Grain	Other crop
Grain	Other crop
Grain	Other crop
Beans & pulses	Legume
Perennial grass	Grass
Tuber	Other crop
Grain	Wetland rice
Grain	Other crop
Grain	Other crop
Beans & pulses	Legume
Grain	Other crop
Tree Crop	Other crop
Tomato	Other crop
Bush crop	Other crop
Vegetable	Other crop
Grain	Other crop
Grain	Other crop
Beans & pulses	Legume
N-fixing forage	Legume
Non-N-fixing forage	Grass
Root crop	Other crop
Tuber	Other crop
Other	Other crop

Parent index	Dry matter	Al	C
1	#N/A	N	0.00%
2	#N/A	N	0.00%
3	#N/A	N	0.00%
4	#N/A	N	0.00%
5	#N/A	N	0.00%
6	#N/A	N	0.00%
7	#N/A	N	0.00%
8	#N/A	N	0.00%
9	#N/A	N	0.00%
10	#N/A	N	0.00%
11	#N/A	K	0.00%
12	#N/A	CaO	0.00%
13	#N/A	CaO	0.00%
14	#N/A	CaO	0.00%
15	#N/A	N	0.00%
16	#N/A	K	0.00%
17	#N/A	P2O5	0.00%
18	#N/A	K2O	0.00%
19	#N/A	P2O5	0.00%
20	#N/A	P2O5	0.00%
21	#N/A	N	0.00%
22	#N/A	N	0.00%
23	60	N	15.00%
24	60	N	15.00%
25	60	N	15.00%
26	25	N	11.40%
27	25	N	9.80%
28	25	N	11.20%
29	30	N	21.00%
30	35	N	11.40%
31	60	N	48.00%
32	6	N	1.53%

33		4	N	2.10%
34		3	N	2.10%
35		20	N	2.92%
0		0	0	0.00%
0		0	0	0.00%
0		0	0	0.00%
0		0	0	0.00%
	40		N	30.00%

-0.023	0	-2.536	
-0.008			
0.58	1.045		
-0.352	-0.352		
0	0		
0	0	0	
0			
2.571	2.571		
0	0		
0	0		
-0.045	-0.045	0	
0			
0	0		
-0.608	0		
0.163	0		
-1.844	-2.465	-1.895	-1.292

	Temperate Dry		
Previous	**forest**		**grass**
Forest		1	0.93

	Grass		1.075268817	1
	arable		1.219512195	1.134146
		no till		reduced ti
	no till		1	0.936364
	reduced till		1.067961165	1
	conventional till		1.1	1.03
		low inputs		medium
1.516483516	low inputs		1	1.086957
1.38	medium		0.92	1
1.243243243	high		0.859813084	0.934579
1	organic inps with amend		0.686567164	0.746269

	Calorific Va
Biomass briquettes	19
Coco shell	22
RB chips	20
Bagasse	12
Fibre/shell (oil palm factory waste)	15
Firewood (daddaps)	12
Firewood/fuelwood grown on	16
Coal Leco	26
Coal SFC	36
Steam coal	36
Imported coal	28
Propane gas	49
Other petroleum gas	46
Heavy oil	42
Furnace oil	40

Light oil	39
Other	insert

	Emission p
Coal Leco	0.0927
Coal SFC	0.0927
Steam coal	0.0927
Imported coal	0.0927
Propane gas	0.0628
Other petroleum gas	0.0628
Heavy oil	0.0784
Furnace oil	0.0784
Light oil	0.0751
Other	Total

as venezuela

mpg	diesel	40	mpg
mpg	Articulated	7.9	mpg

	assume 60% dry weight in compost	
	FYM, assume 23,3% dry ma	23.3
	residues	

Note
See below explanation
CARB
CARB
N2O accounted for as an emission from soil
V4, C2, table 2.5 (agricultural residues)
someone elses problem if it goes off-site

0.5	V5 Ch3
0.49	V5 C2
0.5	V5 C3
0.4	V5 C3

Dry matter fraction harvested	slope	intercept	N content - above
0.9	0.29	0	0.027
#N/A	#N/A	#N/A	0.015167
0.89	0.98	0.59	0.007
0.9	0.3	0	0.025
#N/A	#N/A	#N/A	0.014561
0.791666667	0.665	0.721666667	0.015167
0.9	0.36	0.68	0.01
0.9	0.3	0	0.025

0.87	1.03	0.61	0.006
0.9	1.43	0.14	0.007
0.89	0.91	0.89	0.007
0.94	1.07	1.54	0.016
0.9	0.3	0	0.015
0.22	0.1	1.06	0.019
0.89	0.95	2.46	0.007
0.88	1.09	0.88	0.005
0.89	0.88	1.33	0.007
0.91	0.93	1.35	0.008
0.89	1.29	0.75	0.006
#N/A	#N/A	#N/A	0.0152
0.9	0	3.22667	0.015167
#N/A	#N/A	#N/A	0.015167
0.1235	0.155061111	0.116638889	0.032
0.89	1.61	0.4	0.006
0.88	1.09	0.88	0.006
0.91	1.13	0.85	0.008
0.9	0.3	0	0.027
0.9	0.3	0	0.015
0.94	1.07	1.54	0.016
0.22	0.1	1.06	0.019
0.791666667	0.665	0.721666667	0.015167

N	P	K	P2O5	K2O	MgO	Na2O
30.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
35.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
21.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
26.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
82.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
27.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
15.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
14.00%	0.00%	36.35%	0.00%	44.00%	0.00%	0.00%
15.00%	6.54%	12.39%	15.00%	15.00%	0.00%	0.00%
18.00%	20.06%	0.00%	46.00%	0.00%	0.00%	0.00%
0.00%	0.00%	9.09%	0.00%	11.00%	5.00%	26.00%
0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
11.00%	22.67%	0.00%	52.00%	0.00%	0.00%	0.00%
0.00%	0.00%	49.57%	0.00%	60.00%	0.00%	0.00%
0.00%	10.90%	0.00%	25.00%	0.00%	0.00%	0.00%
0.00%	0.00%	41.30%	0.00%	50.00%	0.00%	0.00%
0.00%	9.16%	0.00%	21.00%	0.00%	0.00%	0.00%
0.00%	20.93%	0.00%	48.00%	0.00%	0.00%	0.00%
46.40%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
32.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
0.60%	0.14%	0.66%	0.32%	0.80%	0.18%	0.00%
0.70%	0.26%	0.66%	0.60%	0.80%	0.18%	0.00%
0.70%	0.14%	0.66%	0.32%	0.80%	0.16%	0.00%
0.70%	0.22%	0.50%	0.50%	0.60%	0.00%	0.00%
1.90%	0.61%	0.78%	1.40%	0.95%	0.26%	0.00%
3.00%	1.09%	1.49%	2.50%	1.80%	0.44%	0.00%
0.26%	0.05%	0.26%	0.12%	0.32%	0.06%	0.00%

0.36%	0.08%	0.20%	0.18%	0.24%	0.07%	0.00%
0.36%	0.07%	0.20%	0.16%	0.24%	0.00%	0.00%
0.50%	0.20%	0.18%	0.46%	0.22%	0.00%	0.00%
0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

		Tropical moist			
arable	**Previous**	**forest**	**grass**	**arable**	
0.82	**Forest**	1	0.663832	0.58	

0.88172043		**Grass**	1.506405198	1	0.873715015	
1		**arable**	1.724137931	1.144538	1	
conventional till			**no till**	**reduced ti**	**conventional till**	
0.909090909		**no till**	1	0.943089	0.81300813	
0.970873786		**reduced till**	1.060344828	1	0.862068966	
1		**conventional till**	1.23	1.16	1	
high			**low inputs**	**medium**	**high**	
1.163043478	1.456522	**low inputs**	1	1.098901	1.21978022	1.516484
1.07	1.34	**medium**	0.91	1	1.11	1.38
1	1.252336	**high**	0.81981982	0.900901	1	1.243243
		organic inps				
0.798507463	1	**with amend**	0.65942029	0.724638	0.804347826	1

alue, MJ/kg	REF
MJ/kg	www.fao.org/DOCREP/006/AD582E/ad582e00.pdf
MJ/kg	Unilever
MJ/kg	Unilever
MJ/kg	www.localpower.org/documents_pub/report_bagasse_cogeneration.pdf
MJ/kg	Unilever
MJ/kg	www.dti.gov.uk/energy/inform/table_a1_a2.xls
MJ/kg	http://www.fao.org/DOCREP/004/AB780E/AB780E06.htm
MJ/kg	www.fao.org/DOCREP/006/AD582E/ad582e00.pdf
MJ/kg	www.fao.org/DOCREP/006/AD582E/ad582e00.pdf
MJ/kg	www.fao.org/DOCREP/006/AD582E/ad582e00.pdf
MJ/kg	www.dti.gov.uk/energy/inform/table_a1_a2.xls
MJ/kg	www.dti.gov.uk/energy/inform/table_a1_a2.xls
MJ/kg	www.dti.gov.uk/energy/inform/table_a1_a2.xls
MJ/l	The carbon Trust Energy and carbon conversion figures
MJ/l	The carbon Trust Energy and carbon conversion figures

MJ/l	The carbon Trust Energy and carbon conversion figures
MJ/kg	
kg CO2/MJ	
0	
0	GHG Protocol website - Coal
0	GHG Protocol website - Coal
0	GHG Protocol website - Coal
0	GHG Protocol website LPG
0	GHG Protocol website LPG
0	GHG Protocol website
0	GHG Protocol website - Heavy Oil
0	GHG Protocol website
0	estimate

below:above ratio	N content below	
0.4	0.019	
0	0.013167	
0.22	0.014	
0.8	0.16	
0	0.013167	*values mostly as for tree crop
0.291666667	0.013167	
0.19	0.01	
0.8	0.16	

	averages or borrows from ot
Not IPCC	Not IPCC

0.22	0.007	
1	0	
0.25	0.008	
1	0	
0.54	0.012	
0.2	0.014	
0.16	0	
0.635	0.011	
1	0	
0.19	0.008	
0.28	0.009	
0.0000	0.0132	
0.291666667	0.013167	* values mostly as for other crop
0	0.0132	
0.3956	0.032	
0.23	0.009	
0.22	0.009	
0.19	0.008	
0.4	0.022	
0.54	0.012	
0.2	0.014	
0.2	0.014	
0.291666667	0.013167	

				Current tech	New tech	Old tech
Ca	CaO	CaCO3	SO3	EFMA (2006) 1	EFMA (2011) 2	Ecoinvent (2002) 3
0.00%	0.00%	0.00%	0.00%	1.24	1.24	1.24
0.00%	0.00%	0.00%	0.00%	2.14	0.96	3.04
0.00%	0.00%	0.00%	50.56%	0.59	0.59	0.59
0.00%	0.00%	0.00%	32.50%	1.14	0.72	1.46
0.00%	0.00%	0.00%	0.00%	1.74	1.74	1.74
10.00%	0.00%	0.00%	0.00%	1.66	0.75	2.38
0.00%	0.00%	0.00%	0.00%	1.49	0.56	0.60
0.00%	0.00%	0.00%	0.00%	2.67	2.67	2.67
0.00%	0.00%	0.00%	0.00%	0.96	0.96	0.96
0.00%	0.00%	0.00%	0.00%	0.70	0.70	1.27
0.00%	0.00%	0.00%	10.00%	0.00	0.00	0.00
0.00%	52.00%	0.00%	0.00%	0.10	0.10	0.10
0.00%	29.00%	55.00%	0.00%	0.01	0.01	0.01
0.00%	30.00%	0.00%	0.00%	0.07	0.07	0.07
0.00%	0.00%	0.00%	0.00%	1.18	1.18	1.18
0.00%	0.00%	0.00%	0.00%	0.36	0.36	0.32
0.00%	0.00%	0.00%	0.00%	0.33	0.33	0.33
0.00%	0.00%	0.00%	45.00%	0.77	0.77	0.77
0.00%	0.00%	0.00%	0.00%	0.57	0.57	0.57
0.00%	0.00%	0.00%	0.00%	0.35	0.35	1.00
0.00%	0.00%	0.00%	0.00%	0.73	0.52	2.55
0.00%	0.00%	0.00%	0.00%	1.26	0.64	1.91
0.00%	0.00%	0.00%	0.00%	0	0	0
0.00%	0.00%	0.00%	0.00%	0.242	0.242	0.242
0.00%	0.00%	0.00%	0.00%	0.362	0.362	0.362
0.00%	0.00%	0.00%	0.24%			
0.00%	0.00%	0.00%	0.34%			
0.00%	0.00%	0.00%	0.30%			
0.00%	0.00%	0.00%	0.00%			
0.00%	0.00%	0.00%	0.40%			
0.00%	0.00%	0.00%	0.80%			
0.00%	0.00%	0.00%	0.07%			

0.00%	0.00%	0.00%	0.10%			
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	0	0
0.00%	0.00%	0.00%	0.00%	0	0	0
0.00%	0.00%	0.00%	0.00%	0	0	0
0.00%	0.00%	0.00%	0.00%	0	0	0
0.00%	0.00%	0.00%	0.00%	0	0	0

	Tropical Dry		
Previous	**forest**	**grass**	**arable**
Forest	1	0.789731192	0.69

Grass	1.266253644	1	0.873715015	
arable	1.449275362	1.144537959	1	

	no till	**reduced till**	**conventional till**
no till	1	0.94017094	0.854700855
reduced ti	1.063636364	1	0.909090909
conventio	1.17	1.1	1

	low inputs	**medium**	**high**	
low inputs	1	1.086956522	1.163043478	1.456521739
medium	0.92	1	1.07	1.34
high	0.859813084	0.934579439	1	1.252336449
organic inps with amend	0.686567164	0.746268657	0.798507463	1

:her crops in list

Not from Database Assumption made

For Smith e

assumed C content for smith et al is 13.35%

Older tech

Kongshaug (1998), "Av europe" 4	C:N ratio	Bouwman N2O	Bouwman NO	Bouwman NH3	Used in ca 1	synthetic /FYM/Compost/lime
1.24		0.0051	0.0056	0.387	1.236	0
2.38		0.0061	0.004	-0.35	2.14	0
0.59		0.0051	0.0056	0.429	0.58674	0
1.23		0.005457143	0.005028571	0.150785714	1.141476	0
1.91		0.0056	0.0051	-1.151	1.737416	0
1.82		0.0037	0.0062	-1.064	1.66	0
1.69		0.0034	0.0054	-1.585	1.49	0
2.67		0.0034	0.0054	-1.585	2.67	0
0.60		0.0039	0.0055	-1.585	0.96	0
0.46		0.0039	0.0055	0.182	0.7	0
0.00		0	0	0	0	0
0.10		0	0	0	0.1	3
0.01		0	0	0	0.00551	3
0.07		0	0	0	0.0681	3
0.31		0.0039	0.0055	-0.622	1.18	0
0.20		0	0	0	0.36	0
0.33		0	0	0	0.333375	0
0.13		0	0	0	0.766	0
0.02		0	0	0	0.57	0
0.17		0	0	0	0.35	0
0.61		0.0051	0.0061	0.666	0.73	0
1.31		0.0053	0.0004	0	1.26	0
0	15	0.0021	0.0016	0.995	0	2
0.242	15	0.0021	0.0016	0.995	0.242	2
0.362	15	0.0021	0.0016	0.995	0.362	2
	19	0.0021	0.0016	0.995	0	1
	14	0.0021	0.0016	0.995	0	1
	16	0.0021	0.0016	0.995	0	1
	30	0.0021	0.0016	0.995	0	1
	6	0.0021	0.0016	0.995	0	1
	16	0.0021	0.0016	0.995	0	1
	5.9	0.0021	0.0016	0.995	0	1

	5.83	0.0021	0.0016	0.995	0	1	
	5.83	0.0021	0.0016	0.995	0	1	
	5.83	0.0021	0.0016	0.995	0	1	
0	0	0	0	0	0	0	
0	0	0	0	0	0	0	
0	0	0	0	0	0	0	
0	0	0	0	0	0	0	
0	30	0.0021	0.0016	0.995			1

et al 1997

N	1
P	2
K	3
P2O5	4
K2O	5
MgO	6
Na2O	7
Ca	8
CaO	9
CaCO3	10
SO3	11

All data on this sheet is taken from the IPCC method, except for composting MCFs, and N2O.
"Emissions from Livestock Production"

Emission factors for N_2O emissions from manure management		offset
Daily spread		7
Solid storage	0.005	3
Dry lot	0.02	4
Liquid slurry with natural crust cover	0.005	2
Liquid slurry without natural crust cover	0	2
Uncovered anaerobic lagoon	0	1
Pit storage below animal confinemen	0.002	5
Anaerobic digester	0	8
Deep bedding - no mixing	0.01	9
Deep bedding - active mixing	0.07	10
Composting - forced aeration	0.00666667	11
Composting - non-forced aeration	0.01	12
Poultry manure with litter	0.001	13
Poultry manure without litter	0.001	14
Aerobic treatment - natural aeration	0.01	15
Aerobic treatment - forced aeration	0.005	16
grazing		17

		1	2	3
MCFs				
	Temperature	Lagoon	Liquid slurry	Solid storage
	10	66	17	2
	11	68	19	2
	12	70	20	2
	13	71	22	2
	14	73	25	2
	15	74	27	4
	16	75	29	4
	17	76	32	4
	18	77	35	4
	19	77	39	4
	20	78	42	4
	21	78	46	4
	22	78	50	4
	23	79	55	4
	24	79	60	4
	25	79	65	4
	26	79	71	5
	27	80	78	5

			28	80	80	5

Mass, B, and VS

Breeding swine

	Mass	B	VS
North America	198	0.48	0.5
Western Europe	198	0.45	0.46
Eastern Europe	180	0.45	0.5
Oceania	180	0.45	0.5
Latin America	28	0.29	0.3
Africa	28	0.29	0.3
Middle East	28	0.29	0.3
Asia	28	0.29	0.3
Indian Subcontinent	28	0.29	0.3

Market Swine

	Mass	B	VS
North America	46	0.48	0.27
Western Europe	50	0.45	0.3
Eastern Europe	50	0.45	0.3
Oceania	45	0.45	0.28
Latin America	28	0.29	0.3
Africa	28	0.29	0.3
Middle East	28	0.29	0.3
Asia	28	0.29	0.3
Indian Subcontinent	28	0.29	0.3

Buffalo

	Mass	B	VS
North America	380	0.1	3.9
Western Europe	380	0.1	3.9
Eastern Europe	380	0.1	3.9
Oceania	380	0.1	3.9
Latin America	380	0.1	3.9
Africa	380	0.1	3.9
Middle East	380	0.1	3.9
Asia	380	0.1	3.9
Indian Subcontinent	295	0.1	3.1

Other Cattle

	Mass	B	VS
North America	389	0.19	2.4
Western Europe	420	0.18	2.6
Eastern Europe	391	0.17	2.7
Oceania	330	0.17	3
Latin America	305	0.1	2.5

Africa	173	0.1	1.5
Middle East	173	0.1	1.5
Asia	319	0.1	2.3
Indian Subcontinent	110	0.1	1.4

Dairy Cows

	Mass	B	VS
North America	604	0.24	5.4
Western Europe	600	0.24	5.1
Eastern Europe	550	0.24	4.5
Oceania	500	0.24	3.5
Latin America	400	0.13	2.9
Africa	275	0.13	1.9
Middle East	275	0.13	1.9
Asia	350	0.13	2.8
Indian Subcontinent	275	0.13	2.6

Other animals, Mass, B, and VS

	mass	B	VS	
sheep	48.5	0.19	0.4	developed
	28	0.13	0.32	developing
goats	38.5	0.18	0.3	developed
	30	0.13	0.35	developing
camels	217	0.26	2.49	developed
	217	0.21	2.49	developing
horses	377	0.3	2.13	developed
	238	0.26	1.72	developing
mule/ass	130	0.33	0.94	developed
	130	0.26	0.94	developing
layers - dry	1.8	0.39	0.02	developed
layers - dry	1.8	0.39	0.02	developing
layers - wet	1.8	0.39	0.02	developed
layers - wet	1.8	0.39	0.02	developing
broilers	0.9	0.36	0.01	developed
broilers	0.9	0.36	0.01	developing
turkeys	6.8	0.36	0.07	developed
turkeys	6.8	0.36	0.07	developing
ducks	2.7	0.36	0.02	developed
	2.7	0.24	0.02	developing

N excretion rates

	North Amer	Western E	Eastern Eu	Oceania	Latin Amer
Dairy cattle	0.44	0.48	0.35	0.44	0.48
Other cattle	0.31	0.33	0.35	0.5	0.36
Market Swine	0.42	0.51	0.55	0.53	1.57
Breeding Swi	0.24	0.42	0.46	0.46	0.55
hens	0.83	0.96	0.82	0.82	0.82
pullets	0.62	0.55	0.6	0.6	0.6
other chicken	0.83	0.83	0.82	0.82	0.82
broilers	1.1	1.1	1.1	1.1	1.1

turkeys	0.74	0.74	0.74	0.74	0.74
ducks	0.83	0.83	0.83	0.83	0.83
sheep	0.42	0.85	0.9	1.13	1.17
goats	0.45	1.28	1.28	1.42	1.37
Horses	0.3	0.26	0.3	0.3	0.46
Camels	0.38	0.38	0.38	0.38	0.46
Buffalo	0.32	0.32	0.32	0.32	0.32
Mink/Polecat	4.59	4.59	4.59	4.59	4.59
Rabbits	8.1	8.1	8.1	8.1	8.1
Fox/Racoon	12	12	12	12	12

	Ym	DE
Feedlot fed cattle	3	
Dairy cows	6.5	
Other cattle - low quality crop residue	6.5	
Other cattle/buffalo grazing	6.5	

Lambs	4.5
Mature sheep	6.5

	NE	DE
High Grain Diet	8	80.00%
High quality forage	7	70.00%
Moderate quality forage	6	60.00%
Low quality forage	4.5	50.00%

	immature	lactating	non-lactati	bulls	castrates	EF grazing
cattle	other cattle	dairy cows	other cattle	other cattle	other cattle	0.02
buffalo	buffalo, growi	buffalo, ma	buffalo, ma	buffalo, ma	buffalo, ma	0.02
sheep	sheep	sheep	sheep	sheep	sheep	0.01

Daily spread	0
Solid storage	0.005
Dry lot	0.02
Liquid slurry with natural crust cover	0.005
Liquid slurry without natural crust cov	0
Uncovered anaerobic lagoon	0
Pit storage below animal confinemen	0.002
Deep bedding - active mixing	0.07
Composting in vessel	0.006
Composting - static pile	0.006

Composting - intensive windrow	0.1
Composting - passive windrow	0.01
Poultry manure with litter	0.001
Poultry manure without litter	0.001
Aerobic treatment - natural aeration	0.01
Aerobic treatment - forced aeration	0.005
Pasture/Range paddock/grazing	defined by data entry

	% N lost from volatilisation
Swine - anaerobic lagoon	40
Swine - pit storage	25
Swine Deep bedding	40
Swine Liquid slurry	48
Swine Solid store	45
Dairy cow - Anaerobic lagoc	35
Dairy cow - Liquid slurry	40
Dairy cow Pit storage	28
Dairy cow - Dry lot	20
Dairy cow - Solid storage	30
Dairy cow - daily spread	7
Poultry - without litter	55
Poultry - anaerobic lagoon	40
Poultry - with litter	40
Other cattle - dry lot	30
Other cattle - Solid storage	45
Other cattle - Deep bedding	30
Other animal (not pigs, cattl	25
Other animal (not pigs, cattl	12
grazing	20

4	5	6	7	8
	MCF			
Dry lot	Pit < 1month	Pit > 1month	Daily spread	Anaerobic digester
1	3	17	0.1	0
1	3	19	0.1	0
1	3	20	0.1	0
1	3	22	0.1	0
1	3	25	0.1	0
1.5	3	27	0.5	0
1.5	3	29	0.5	0
1.5	3	32	0.5	0
1.5	3	35	0.5	0
1.5	3	39	0.5	0
1.5	3	42	0.5	0
1.5	3	46	0.5	0
1.5	3	50	0.5	0
1.5	3	55	0.5	0
1.5	3	60	0.5	0
1.5	3	65	0.5	0
2	30	71	1	0
2	30	78	1	0

2	30	80	1	0

Africa	Middle East	Asia	India	
0.6	0.7	0.47		0.47
0.63	0.79	0.34		0.34
1.57	1.57	0.42		0.42
0.55	0.55	0.24		0.24
0.82	0.82	0.82		0.82
0.6	0.6	0.6		0.6
0.82	0.82	0.82		0.82
1.1	1.1	1.1		1.1

0.74	0.74	0.74	0.74
0.83	0.83	0.83	0.83
1.17	1.17	1.17	1.17
1.37	1.37	1.37	1.37
0.46	0.46	0.46	0.46
0.46	0.46	0.46	0.46
0.32	0.32	0.32	0.32
4.59	4.59	4.59	4.59
8.1	8.1	8.1	8.1
12	12	12	12

9	10	11	12	13	14	15	16	17
Deep bedding - no mixing	Deep bedding - active mixing	Composting - forced aeration	Composting - non-forced aeration	Poultry manure with litter	Poultry manure without litter	Aerobic treatment - natural aeration	Aerobic treatment - forced aeration	
3	3	0.33	0.5	1.5	1.5	0	0	1
3	3	0.33	0.5	1.5	1.5	0	0	1
3	3	0.33	0.5	1.5	1.5	0	0	1
3	3	0.33	0.5	1.5	1.5	0	0	1
3	3	0.33	0.5	1.5	1.5	0	0	1
3	3	0.67	1	1.5	1.5	0	0	1.5
3	3	0.67	1	1.5	1.5	0	0	1.5
3	3	0.67	1	1.5	1.5	0	0	1.5
3	3	0.67	1	1.5	1.5	0	0	1.5
3	3	0.67	1	1.5	1.5	0	0	1.5
3	3	0.67	1	1.5	1.5	0	0	1.5
3	3	0.67	1	1.5	1.5	0	0	1.5
3	3	0.67	1	1.5	1.5	0	0	1.5
3	3	0.67	1	1.5	1.5	0	0	1.5
3	3	0.67	1	1.5	1.5	0	0	1.5
3	3	0.67	1	1.5	1.5	0	0	1.5
30	30	1.00	1.5	1.5	1.5	0	0	2
30	30	1.00	1.5	1.5	1.5	0	0	2

30	30	1.00	1.5	1.5	1.5	0	0	2

dairy
cows
other cattle
buffalo
sheep
goats
camels
llamas
alpacas

deer
horses
rabbits
mules
asses
growing buffalo
mature swine
growing swine
hens
pullets
turkeys
ducks

0		dairy cow	other
North Ame	1	128	53
Western E	2	117	57
Eastern Eu	3	99	58
Oceania	4	90	60
Latin Amer	5	72	56
Africa	6	46	31
Middle Eas	7	46	31
Asia	8	68	47
Indian Sub	9	58	27
	10		
	11		
	12		
	13		
	14		
	15		
	16		
	17		
	18		
	19		
	20		
	21		
	22		
	23		
	24		
	25		
	26		
	27		
	28		

Mass, VS, and B indexing

dairy cows	104
other cattle	91
pigs, matur	52
pigs, growi	65
buffalo, ma	79
buffalo, gro	79
sheep	116
goats	118
camels	120
horses	122
rabbits	0
hens	126
pullets	130
turkeys	132
ducks	134

* assumed broilers

Conversion Units

[Select]	Conversion factor to tonnes
kilograms	0.001
tonnes	1
tons (US, short)	0.90718474
litres	1

[Select]	Conversion factor to kg/ha
tonnes/ha	1000
kg/acre	2.47
tonnes/acre	2470

[Select]	
kg/ha	1
kg/acre	2.47105163
pounds/ha (US)	0.45359237
pounds/acre (US)	1.120849251
ounces/ha (US)	0.028349523
ounces/acre (US)	0.070053135
fluid ounces/ha (US)	0.037495619
fluid ounces/acre (US)	0.092653611
bushels/ha(US)	44.65728252
bushels/acre(US)	110.3504508

[Select]	
kWh	3.6
MJ	1
therms	105.5
Btu	0.001055

kg
cubic metres

[Select]	
kg	1
tonnes	1000
pounds	0.45359237
tons (US short)	907.18474

[Select]	conversion to kgs
kWh	0.075789
MJ	0.021053
therms	2.221053
Btu	0.000022
kg	1.000000
cubic metres	0.714000

[Select]	
Litres	1
US Gallons	3.785412
Imperial Gallons	4.54609

natural gas MJ/kg
48

Per hectare default emissions from crops

http://www.fertilizer.org/ifa/Home-Page/LIBRARY/Our-selection2/World-Fertilizer-Use-Manual/by-type-of-cr

Fertilizer nutrient	kg CO2-eq per kg fertilizer nutrient produced			average fuel use emissions from operations
	Low	High	Average	160.04
N	3.3	6.6	4.95	N to N20 convers
P	0.36	1.1	0.73	
K	0.36	0.73	0.545	

Fertilizer use per crop kg/ha	N	P kg/ha	K kg/ha	Nitrogen emissions factor per ha
Calcium supplement				
Chickpea	4	15.93	30.30	24
Cotton	65	24.00	45.66	393
Field Bean [Broad Bean, Faba Bean]	0	-	-	-
Field Pea	0	-	-	-
Fodder Legumes		29.46	199.22	-
Fodderbeet	162	31.86	200.88	980
Groundnut [Peanut]	0	29.46	60.18	-
Lentil	4	15.93	30.30	24
Maize	170	36.66	64.75	1,028
Millet	60	17.46	58.11	363
Oats	70	15.27	87.16	423
Oilseed Rape	57.5	16.37	-	348
Pigeon pea/cowpea/mungbean	12.5	15.27	20.75	76
Potato	109	64.16	130.70	657
Rice	103	17.89	29.05	623

Rye	120	52.37	83.01	726
Safflower	58.37	16.08	-	353
Sorghum	60	17.46	41.51	363
Soybean	0	15.27	62.26	-
Spring barley	120	43.64	83.01	726
Sugarbeet		43.64	166.02	-
Sunflower	65	34.91	99.61	393
Sweet Potato	59	53.24	146.10	357
Temperate Grassland: Grass/Legume Swards	0	17.46	49.81	-
Temperate Grassland: Permanent Grass and Sown Grass or Leys	275	8.73	-	1,663
Tropical Grasses	0	15.27	29.05	-
Wheat	60	26.18	99.61	363
Winter barley	140	52.37	99.61	847
Yams and Cocoyams	40	26.18	33.20	242

	N application rate kg/hectare	Pesticide applications per year	Assumed yield (t/ha)	CO2 equiv/tonne
User defined 1	0	0	0	#DIV/0!
User defined 2	0	0	0	#DIV/0!
User defined 3	0	0	0	#DIV/0!
User defined 4	0	0	0	#DIV/0!
User defined 5	0	0	0	#DIV/0!
User defined 6	0	0	0	#DIV/0!

ops

emissions kg per ha from pesticides	Emissions factor per pest or herb use in CO2-eq	20.5	Total emissions - non-fertilizer. Per ha.
51.25	Average pesticide+herbicide applications per year	2.5	211.29
1.571428571	Emissions estimate for pest and herbicide use annually CO2-eq per ha	51.25	

Yield in tonnes DM per hectare	Fertilizer emissions kg per crop per hectare	Emissions from fertilizer: kg CO2-eq per tonne crop	**Emissions CO2-eq per tonne crop total**
			19
1.5	72	48	**189**
2.5	757	303	**387**
5	-	-	**42**
6	-	-	**35**
17.5	130	7	**20**
15	1,914	128	**142**
3	54	18	**89**
1.6	72	45	**177**
7.9	1,932	244	**271**
3	704	235	**305**
5	828	166	**208**
2	644	322	**428**
1.64	160	98	**226**
16.8	1,313	78	**91**
7.5	1,162	155	**183**

5.9	1,403	238	274
2	654	327	432
6	695	116	151
2.6	45	17	99
4.8	1,397	291	335
33	122	4	10
3.5	795	227	287
10	767	77	98
8	40	5	31
7.5	3,031	404	432
5.25	27	5	45
6.7	733	109	141
6.8	1,632	240	271
18	477	27	38
			188

User defined fertilisers. 1. Name any new fertilizers you wish to define in column A (rows 4-7). 2. Sele color indicates, this is required). 3. Modify the Nutrient concentrations below the table in rows 10-13, of compost, the C:N ratios, you may unprotect this page and enter that in the table. The password to appear in the dropdown list on the Crop Management tab.

Fertiliser name (optional)	Base	Index	Dry matter	**AI**
		0	0	0
		0	0	0
		0	0	0
		0	0	0

Name	**Actual N, P2O5, and K2O values in your fertiliser - %**	N	P (as P205)	K (as K2O)
		0	0	0
		0	0	0
		0	0	0
		0	0	0

Note: If you know the **elemental** values of the nutrients in your fertilizer, unprotect this page and enter that information in columns g, h, and i

Note: N-P-K ratios are typically actually N-P2O5-K2O ratios. To convert P2O5 to P multiply by 0.44 (e.g. 10 lbs P2O5 applied x 0.44 = 4.4 lbs P applied). Similarly convert K2O to K by mulitplying by 0.83 (e.g. 10 lbs K2O x 0.83 = 8.3 lbs K applied).

[Select]
Ammonium Bicarbonate
Ammonium nitrate
Ammonium sulphate
Anhydrous ammonia
Calcium ammonium nitrate
Calcium nitrate
Compound NK

Compound NPK
Diammonium phosphate
Kainit / Magnesium Sulphate
Lime
Limestone
Lime, algal
Monoammonium phosphate
Muriate of potash / Potassium Chloride
Phosphate/Rock Phosphate
Potassium sulphate
Super phosphate
Triple super phosphate
Urea
Urea ammonium nitrate solution
Compost (zero emissions)
Compost (fully aerated production)
Compost (non-fully aerated production)
Cattle Farmyard manure
Pig Farmyard manure
Sheep Farmyard manure
Horse Farmyard Manure
Poultry layer manure
Broiler/Turkey litter
Cattle Slurry
Pig slurry
Separated Pig slurry - liquid part
Separated Pig slurry - solid part

ect what fertilizer to base this on from the drop-down list in column B. (as the red
columns C, D and/or E. If you know any of the other qualities such as, in the case
unprotect this page is on the first tab. Any new fertilizer you add in rows 4-7 will

C *	N	P	K	P2O5	K2O	MgO	Na2O	Ca
0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

Assumed N, P2O5, and K2O levels in your selected fertiliser

N	P (P205)	K (K2O)
0.00%	0.00%	0.00%
0.00%	0.00%	0.00%
0.00%	0.00%	0.00%
0.00%	0.00%	0.00%

CaO	CaCO3	SO3	Current Yara	Available technolo	Ecoinvent derived	Bhat	C:N ratio	Bouwman N2O
0.00%	0.00%	0.00%	0	0	0	0	0	0
0.00%	0.00%	0.00%	0	0	0	0	0	0
0.00%	0.00%	0.00%	0	0	0	0	0	0
0.00%	0.00%	0.00%	0	0	0	0	0	0

Bouwman NO	Bouwman NH3	emissions	synthetic/FYM/Compost/lime
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0

Inputs - Crop Management

Label	Index	Value
Location	**1.a**	Boyaca Santa Sofia
Year	**1.b**	2016
Country*/US State	**1.c**	- Colombia
Default Unit system		Metric
Product	**1.d**	Tomate
Production Area*	**1.e**	1.00
Fresh product from production area*	**1.f**	78987.60
Finished product from total area	**1.g**	78987.60
Production Area Units		hectares
Fresh product units		kgs
Finish product units		kgs
Climate*	**1.h**	Temperate
Average annual temperature (if known)		17.30
Average annual temperature Unit		°C
Crop type*	**1.i**	Tomato
Soil texture*	**1.j**	Medium
Soil Organic Matter*	**1.k**	1.72 < SOM <= 5.16
Soil moisture*		Dry
Soil drainage*	**1.l**	Good
Soil pH*	**1.m**	5.5 < pH <= 7.3

See additions for Rice Data at B355

		Fertiliser	Nutrient or pr(	Application rate
Fertiliser 1	**1.q(1-5)**	Compound NK - 14% N; 44% K2O	K2O	79665.71
Fertiliser 2	**1.r(1-5)**	Diammonium phosphate - 18% N; 46% P2O5	Product	106826.40
Fertiliser 3	**1.s(1-5)**	Calcium nitrate - 15% N	Product	513086.40
Fertiliser 4	**1.t(1-5)**	Potassium sulphate - 50% K2O; 45% SO3	Product	338461.20
Fertiliser 5	**1.u(1-5)**	Compound NPK 15%N 15% K2O 15% P2O5	Product	39.63
Fertiliser 6	**1.v(1-5)**	Limestone - 55% CaCO3 / 29%CaO	Product	2005.37

Pesticide				
Number of applications	**1.w**	20.00		
			Unit	
Amount of residue		22112.8983	kg/ha	
Method		Removed; left untreated in heaps or pits		
Rice Only (if applicable)		Rice		

Outputs - Crop Management **C02** **N20**

Fertiliser induced N2O	485.298330	0.000000	
Fertiliser production	1582652.948359	0.000000	
Agrochemicals	410.000000	0.000000	
Sequestration	0.000000		
Crop residue management	0.000000	11.205711	
Totals (kg CO2 eq)	1583548.246689	11.760567	
Methane from Paddy Rice			

Inputs - Sequestration

Land Use Changes	No	
How long ago (years)		0.0
Percent of land changed		0
If conversion from forest	[select]	
Age when converted from woodland		0.0
If conversion to forest	[select]	
Current age of woodland		0.0

Management Changes

	Change Type	**How long ago**	**percent**
Tillage Changes?	No	0	0
Organic input changes?			

[See additions for management changes]

	Species	**density**
Tree species 1	[select]	0

Tree species 2	[select]	0
Tree species 3	[select]	0
Tree species 4	[select]	0
Tree species 5	[select]	0
Tree species 6	[select]	0
Tree species 7	[select]	0
Tree species 8	[select]	0
Tree species 9	[select]	0
Tree species 10	[select]	0

Outputs - Sequestration

Annual totals units	kg CO2 eq	
Above ground biomass (Annual)		0.000000
Below ground biomass (Annual)		0.000000
Soil C		0.000000
Total Annual		0.000000
Cumulative totals units	kg CO2 eq	
Above ground biomass (cumulative)		0.000000
Below ground biomass (cumulative)		0.000000
Soil C since practice changes		0.000000
Total Cumulative		0.000000

Input -Field Energy Use

	Quantity	**Units**

Electricity use on the farm	**3.a.(1,2)**	1438.82	kWh
Electricity from local hydro renewable energy used in field	**3.b.(1,2)**	0.00	kWh
Electricity from local wind used in field	**3.c.(1,2)**	0.00	kWh
Electricity from solar (photovoltaic cells)	**3.d.(1,2)**	0.00	kWh

		Quantity	**Units**
Diesel Field op	**3.e.(1,2)**	0.00	litres
Diesel Other	**3.f.(1,2)**		
Petrol Field op	**3.g.(1,2)**	0.00	litres
Petrol Other	**3.h.(1,2)**		
Biodiesel Field op	**3.i.(1,2)**	0.00	litres
Biodiesel Other	**3.j.(1,2)**		
Bioethanol Field op	**3.k.(1,2)**	0.00	litres
Bioethanol Other	**3.l.(1,2)**		

Fuel type **3.m** Diesel

		Number of operations	**US Gallons fuel used**
Tillage	**3.n.1**	0.00	0.00
Tillage	**3.n.2**	0.00	0.00
Tillage	**3.n.3**	0.00	0.00

Tillage	**3.n.4**	1.00	51.42
Tillage	**3.n.5**	0.00	0.00
Tillage	**3.n.6**	0.00	0.00
Tillage	**3.n.7**	0.00	0.00
Tillage	**3.n.8**	0.00	0.00
Tillage	**3.n.9**	0.00	0.00
Tillage	**3.n.10**	0.00	0.00
Tillage	**3.n.11**	0.00	0.00
Tillage	**3.n.12**	0.00	0.00
Tillage	**3.n.13**	0.00	0.00
Tillage	**3.n.14**	0.00	0.00
Tillage	**3.n.15**	0.00	0.00
Tillage	**3.n.16**	0.00	0.00
Tillage	**3.n.17**	0.00	0.00
Tillage	**3.n.18**	0.00	0.00
Tillage	**3.n.19**	0.00	0.00
Tillage	**3.n.20**	0.00	0.00
Tillage	**3.n.21**	0.00	0.00
Tillage	**3.n.22**	0.00	0.00
Spraying/spreading	**3.o.1**	0.00	0.00
Spraying/spreading	**3.o.2**	0.00	0.00
Spraying/spreading	**3.o.3**	0.00	0.00
Harvesting	**3.p.1**	0.00	0.00
Harvesting	**3.p.2**	0.00	0.00
Harvesting	**3.p.3**	0.00	0.00
Harvesting	**3.p.4**	0.00	0.00
Harvesting	**3.p.5**	0.00	0.00
Harvesting	**3.p.6**	0.00	0.00

Harvesting	**3.p.7**	0.00	0.00
Harvesting	**3.p.8**	0.00	0.00
Harvesting	**3.p.9**	0.00	0.00
Harvesting	**3.p.10**	0.00	0.00
Harvesting	**3.p.11**	0.00	0.00
Harvesting	**3.p.12**	0.00	0.00
Harvesting	**3.p.13**	0.00	0.00
Harvesting	**3.p.14**	0.00	0.00
Harvesting	**3.p.15**	0.00	0.00
Harvesting		0.00	0.00
Total Energy		51.42	
CO2 equivalent		137.805600	

Outputs - Field Energy Use		**Energy Use (MJ)**	**kg CO2 eq**
	Grid electricity in fiel	5179.74	**251.477321**
	Local wind, solar, hy	0.00	**0.000000**
	Diesel	1948.82	**137.805600**
	Petrol	0.00	**0.000000**
	Biodiesel	0.00	**0.000000**
	Bioethanol	0.00	**0.000000**
	Total (kg CO2 equiv)	9299.12	**525.594089**
	Total /hectare (kg CC	9299.12	**525.594089**
	Other energy outputs	2170.56	136.311168

Inputs - Primary Processing

Electricity used from National Grid.	**4.a.(1,2)**	0.00	kWh
Electricity from local hydro renewable energy used in factory	**4.b.(1,2)**	0.00	kWh

Electricity from local wind used in factory	**4.c.(1,2)**		0.00	kWh
Electricity from solar (photovoltaic cells)	**4.d.(1,2)**		0.00	kWh
		Quantity		**Units**
Diesel Use, e.g. generators, pumping	**4.e.(1,2)**		0.00	litres
		Quantity		**Units**
High density biomass	**4.f.(1,2)**		0.00	kg
Fuel wood	**4.g.(1,2)**		0.00	kg
Coal	**4.h.(1,2)**		0.00	kg
Gas	**4.i.(1,2)**		0.00	therms
Oil	**4.j.(1,2)**		0.00	litres
Other (user defined energy density/emissions)	**4.l.(1,2)**		0.00	[Select]
Liquid propane	**4.k.(1,2)**		0.00	litres

			Unit	Biochemical (BOD) c
Quantity of waste wate		0.00	litres	
Oxygen demand		0.00	mg/litre	[Select]
Treatment	None - river/lake/sea discharge			

Outputs - Primary Processing		**Energy Use (MJ)**		**emissions kg CO2 eq**
	Grid electricity		0.00	0.000000
	Local wind, solar, hy		0.00	0.000000
	Biomass		0.00	0.000000
	Fossil Fuels		0.00	0.000000
	Other		0.00	0.000000

Waste water methan	0.00	0.000000
Totals	0.00	0.000000
Totals/hectare	0.00	0.000000

Inputs - Transport

	quantity	unit	distance	unit
Road	6000.00	kgs	192.00	km
Road	6000.00	kgs	192.00	km
Road	6000.00	kgs	192.00	km
Road	6000.00	kgs	192.00	km
Road	6000.00	kgs	192.00	km
Road	6000.00	kgs	192.00	km
Road	6000.00	kgs	192.00	km
Road	6000.00	kgs	192.00	km

	quantity	unit	distance	unit
Rail	0.00	tonnes	0.00	km
Rail	0.00	tonnes	0.00	km
Rail	0.00	tonnes	0.00	km
Rail	0.00	tonnes	0.00	km
Rail	0.00	tonnes	0.00	km
Rail	0.00	tonnes	0.00	km
Rail	0.00	tonnes	0.00	km
Rail	0.00	tonnes	0.00	km

	quantity	unit	distance	unit
Air	0.00	tonnes	0.00	km
Air	0.00	tonnes	0.00	km
Air	0.00	tonnes	0.00	km
Air	0.00	tonnes	0.00	km
Air	0.00	tonnes	0.00	km
Air	0.00	tonnes	0.00	km
Air	0.00	tonnes	0.00	km
Air	0.00	tonnes	0.00	km

	quantity	unit	distance	unit
Ship	0.00	tonnes	0.00	km
Ship	0.00	tonnes	0.00	km
Ship	0.00	tonnes	0.00	km
Ship	0.00	tonnes	0.00	km
Ship	0.00	tonnes	0.00	km
Ship	0.00	tonnes	0.00	km
Ship	0.00	tonnes	0.00	km
Ship	0.00	tonnes	0.00	km

Units	kg CO2 eq
Road	6869.053834
Rail	0.000000
Air	0.000000
Shipping	0.000000
Total	6869.053834

New Content for v 1.0253

Rice Data

days under cultivation	Rice
water management before cultivation	Rice
water management during cultivation	Rice

Management Changes	Change Type	How long ago	percent
Cover cropping	no change	0	0
Compost	no change	0	0
Manure additions	no change	0	0
Residue incorporation	no change	0	0

[Inputs - Livestock]

Life Cycle	**Lifecycle or Snapshot**	Snapshot			
Life Cycle	**Animal type**	[Select]			
Life Cycle	**Animal Breed (if hens)**	NULL			
Life Cycle	**Animal number per phase**			% of diet from feed mix (instead of pasture)	quality of grazing
Life Cycle	Juvenile Phase		0	0.00	[Select]
Life Cycle	Adult Productive Phase		0	0.00	[Select]
Life Cycle	Adult non-Productive Phase		0	0.00	[Select]

Juvenile Phase	Dry matter intake per head		0.00	
Juvenile Phase	Feed component1	Select		% of feed component
Juvenile Phase	Feed component2	Select		% of feed component
Juvenile Phase	Feed component3	Select		% of feed component
Juvenile Phase	Feed component4	Select		% of feed component
Juvenile Phase	Feed component5	Select		% of feed component
Juvenile Phase	Feed component6	Select		% of feed component
Juvenile Phase	Feed component7	Select		% of feed component
Juvenile Phase	Feed component8	Select		% of feed component
Juvenile Phase	Feed component9	Select		% of feed component

	Juvenile Phase	Feed component10	Select		% of feed component
	Adult Productive Phase	Dry matter intake per head		0.00	
	Adult Productive Phase	Feed component1	Select		% of feed component
	Adult Productive Phase	Feed component2	Select		% of feed component
	Adult Productive Phase	Feed component3	Select		% of feed component
	Adult Productive Phase	Feed component4	Select		% of feed component
	Adult Productive Phase	Feed component5	Select		% of feed component
	Adult Productive Phase	Feed component6	Select		% of feed component
Optional Inputs	Adult Productive Phase	Feed component7	Select		% of feed component
	Adult Productive Phase	Feed component8	Select		% of feed component
	Adult Productive Phase	Feed component9	Select		% of feed component
	Adult Productive Phase	Feed component10	Select		% of feed componer
	Adult Productive Phase	Production:Dry ratio	Productive		0
	Adult Productive Phase	Fat content of milk %		0	
	Adult Productive Phase	Protein content of milk %		0	
	Adult Productive Phase	Production (per day)		0	Units
	Adult non-productive phase	Dry matter intake per head		0.00	

		Adult non-productive phase	Feed component1	Select	% of feed component
		Adult non-productive phase	Feed component2	Select	% of feed component
		Adult non-productive phase	Feed component3	Select	% of feed component
		Adult non-productive phase	Feed component4	Select	% of feed component
		Adult non-productive phase	Feed component5	Select	% of feed component
		Adult non-productive phase	Feed component6	Select	% of feed component
		Adult non-productive phase	Feed component7	Select	% of feed component
		Adult non-productive phase	Feed component8	Select	% of feed component
		Adult non-productive phase	Feed component9	Select	% of feed component
		Adult non-productive phase	Feed component10	Select	% of feed component

Output - Livestock		Total in feed	Enteric	Manure Ch4	Manure direct N2O
Output - Livestock	Growing phase	0.000000	0.000000	0.000000	0.000000
Output - Livestock	Productive adults	0.000000	0.000000	0.000000	0.000000
Output - Livestock	Non-productive adults	0.000000	0.000000	0.000000	0.000000
Output - Livestock	Totals	0.000000	0.000000	0.000000	0.000000

Version	Version base	1.0378
	Version	2.0 beta 3
Results	Comments	(Type over this message to enter notes about modeling assumptions)
	co2	**1584073.841**

	n2o	**11.76**	
	ch4	**1444.71**	
	co2e total area	**1630541.76**	
	co2e per unit area	**1630541.76**	
	co2e per unit volume	**20.64**	
	co2e per tree		
Transport	Truck transport assumptions	**This transport includ**	(Type over this message to enter which materials you have included in this section.)
	Rail transport assumptions	**This transport includ**	(Type over this message to enter which materials you have included in this section.)
	Air transport assumptions	**This transport includ**	(Type over this message to enter which materials you have included in this section.)
	Ship transport assumptions	**This transport includ**	(Type over this message to enter which materials you have included in this section.)
Livestock comments	Juvenile manure management comments	(Type over this cell to enter any comments about your manure management strategy	
	Adult non-productive manure management comments	(Type over this cell to enter any comments about your manure management strategy	

	Adult productive manure management comments	(Type over this cell to enter any comments about your manure management strateg)		
		phase length units		
Juvenile phase length	0	0		
Adult productive phase	0	0		
Adult non-productive phase	0	0		

Input -Field Energy Use		Quantity	Units
	High density biomass	0	kg
	Fuel wood	0	kg
	Coal	0	kg
	Gas	64	cubic metres
	Oil	0	litres

	N application rate kg/ha	Pesticide applications	Assumed yield (t/ha)	CO2 equiv/tonne
User defined 1	0	0	0	#DIV/0!
User defined 2	0	0	0	#DIV/0!
User defined 3	0	0	0	#DIV/0!
User defined 4	0	0	0	#DIV/0!
User defined 5	0	0	0	#DIV/0!
User defined 6	0	0	0	#DIV/0!

Fertiliser name (optional)	Base	N	P (as P205)	K (as K2O)
		0	0	0
		0	0	0
		0	0	0
		0	0	0

Summary comments (Type over this message to enter notes about modeling assumptions)

Transport additions	quantity	unit	distance	distance unit	mode
ROAD	6000	kgs	192	km	Light Goods vehicle
	6000	kgs	192	km	Light Goods vehicle
	6000	kgs	192	km	Light Goods vehicle
	6000	kgs	192	km	Light Goods vehicle
	6000	kgs	192	km	Light Goods vehicle
	1054.348381	kgs	192	km	Light Goods vehicle
	0	[Select]	0	[Select]	0
	0	[Select]	0	[Select]	0
	0	[Select]	0	[Select]	0
	0	[Select]	0	[Select]	0
	0	[Select]	0	[Select]	0
	0	[Select]	0	[Select]	0
	0	[Select]	0	[Select]	0
	0	[Select]	0	[Select]	0
	0	[Select]	0	[Select]	0
	0	[Select]	0	[Select]	0
	0	[Select]	0	[Select]	0
	0	[Select]	0	[Select]	0
	0	[Select]	0	[Select]	0
	0	[Select]	0	[Select]	0

RAIL	quantity	unit	distance	unit
	0	[Select]	0	[Select]
	0	[Select]	0	[Select]
	0	[Select]	0	[Select]
	0	[Select]	0	[Select]
	0	[Select]	0	[Select]
	0	[Select]	0	[Select]
	0	[Select]	0	[Select]
	0	[Select]	0	[Select]
	0	[Select]	0	[Select]
	0	[Select]	0	[Select]

0	[Select]	0	[Select]	
0	[Select]	0	[Select]	
0	[Select]	0	[Select]	
0	[Select]	0	[Select]	
0	[Select]	0	[Select]	
0	[Select]	0	[Select]	
0	[Select]	0	[Select]	
0	[Select]	0	[Select]	
0	[Select]	0	[Select]	
0	[Select]	0	[Select]	

AIR	quantity	unit	distance	unit	type
	0	[Select]	0	[Select]	Very Short Haul
	0	[Select]	0	[Select]	Very Short Haul
	0	[Select]	0	[Select]	Very Short Haul
	0	[Select]	0	[Select]	Very Short Haul
	0	[Select]	0	[Select]	Very Short Haul
	0	[Select]	0	[Select]	Very Short Haul
	0	[Select]	0	[Select]	Very Short Haul
	0	[Select]	0	[Select]	Very Short Haul
	0	[Select]	0	[Select]	Very Short Haul
	0	[Select]	0	[Select]	Very Short Haul
	0	[Select]	0	[Select]	Very Short Haul
	0	[Select]	0	[Select]	Very Short Haul
	0	[Select]	0	[Select]	Very Short Haul
	0	[Select]	0	[Select]	Very Short Haul
	0	[Select]	0	[Select]	Very Short Haul
	0	[Select]	0	[Select]	Very Short Haul
	0	[Select]	0	[Select]	Very Short Haul
	0	[Select]	0	[Select]	Very Short Haul
	0	[Select]	0	[Select]	Very Short Haul
	0	[Select]	0	[Select]	Very Short Haul

SHIP	quantity	unit	distance	unit	type
	0	[Select]	0	[Select]	0
	0	[Select]	0	[Select]	0
	0	[Select]	0	[Select]	0

0	[Select]	0	[Select]	0
0	[Select]	0	[Select]	0
0	[Select]	0	[Select]	0
0	[Select]	0	[Select]	0
0	[Select]	0	[Select]	0
0	[Select]	0	[Select]	0
0	[Select]	0	[Select]	0
0	[Select]	0	[Select]	0
0	[Select]	0	[Select]	0
0	[Select]	0	[Select]	0
0	[Select]	0	[Select]	0
0	[Select]	0	[Select]	0
0	[Select]	0	[Select]	0
0	[Select]	0	[Select]	0
0	[Select]	0	[Select]	0
0	[Select]	0	[Select]	0
0	[Select]	0	[Select]	0

Co-products Results	Comments	(Type over this message to enter which materials you have included in this section.)
	coProduct - co2	**1584073.841**
	coProduct - n2o	**11.76**
	coProduct - ch4	**1444.71**
	coProduct - co2e tota	**1630541.76**
	coProduct - co2e per	**1630541.76**
	coProduct - co2e per	**20.64**
	coProduct - co2e per	

Co-products		Economic value % to r	Finished product in tons	proportion of finshed product value
Co-product 1	0	0		
Co-product 2	0	0		
Co-product 3	0	0		

Co-product 4	0	0

Unit (e.g. tonn	Application m	Emissions inh	Fertiliser production
kg/ha	Subsurface drip	None	Current tech
kg/ha	Subsurface drip	None	Current tech
kg/ha	Subsurface drip	None	Current tech
kg/ha	Subsurface drip	None	Current tech
kg/ha	Incorporate	None	Current tech
kg/ha	Incorporate	None	Current tech

CH4	**Totals (kg co2 eq)**

0.000000	485.298330
0.000000	###########
0.000000	410.000000
	0.000000
1444.709356	39434.624409
1444.709356	###########
0.000000	0.000000

this year	last year	units	change in tree numbers
0.00	0.00	cm	0.000

0.00	0.00 cm	0.000
0.00	0.00 cm	0.000
0.00	0.00 cm	0.000
0.00	0.00 cm	0.000
0.00	0.00 cm	0.000
0.00	0.00 cm	0.000
0.00	0.00 cm	0.000
0.00	0.00 cm	0.000
0.00	0.00 cm	0.000

ɔr chemical (COD) oxygen demand

mode	add vehicle weight?
Light Goods vel	yes - single journey
Light Goods vel	yes - single journey
Light Goods vel	yes - single journey
Light Goods vel	yes - single journey
Light Goods vel	yes - single journey
Light Goods vel	yes - single journey
Light Goods vel	yes - single journey
Light Goods vel	yes - single journey

type

type
Very Short Haul
Very Short Haul
Very Short Haul
Very Short Haul
Very Short Haul
Very Short Haul
Very Short Haul
Very Short Haul

type

type of grazing	Manure management system	Percentage of manure managed under this system	Number of days this system is used	Manure management system	Percentage of manure managed under this system	Number of days this system is used	Manure management system	Percentage of manure managed under this system	Number of days this system is used
[Select]	[Select]	0	0	[Select]	0	0	[Select]	0	0
[Select]	[Select]	0	0	[Select]	0	0	[Select]	0	0
[Select]	[Select]	0	0	[Select]	0	0	[Select]	0	0

0

0

0

0

0

0

0

0

0

0

0

0

0

0

0

0

0

0

0

0

Dry	0

kgs

0

0

0

0

0

0

0

0

0

0

Manure indirect	kg CO2 eq
0.000000	0.000000
0.000000	0.000000
0.000000	0.000000
0.000000	0.000000

/ .)

/ .)

add vehicle weight?
yes - single journey
yes - single journey
yes - single journey
yes - single journey
yes - single journey
yes - single journey
yes - returning empty
yes - returning empty
yes - returning empty
yes - returning empty
yes - returning empty
yes - returning empty
yes - returning empty
yes - returning empty
yes - returning empty
yes - returning empty
yes - returning empty
yes - returning empty
yes - returning empty
yes - returning empty

Inputs - Crop Management

Label	Index	Value
Location	1.a	
Year	1.b	
Country*/L	1.c	
Default Unit system		
Product	1.d	
Production	1.e	
Fresh proc	1.f	
Finished p	1.g	

Production Area Units
Fresh product units
Finish product units

Climate*	1.h	[Select]

Average annual temperature (if known)

Average annual temperature Unit

Crop type*	1.i
Soil texture	1.j
Soil Organ	1.k
Soil moisture*	
Soil draina	1.l
Soil pH*	1.m

See additions for Rice Data at B355

		Fertiliser	Nutrient or	Applicatior	Unit (e.g. t	Applicatior	Emissions	Fertiliser p
Fertiliser 1	1.q(1-5)		0	0		0	None	Current tec
Fertiliser 2	1.r(1-5)		0	0		0	None	Current tec
Fertiliser 3	1.s(1-5)		0	0		0	None	Current tec
Fertiliser 4	1.t(1-5)		0	0		0	None	Current tec
Fertiliser 5	1.u(1-5)		0	0		0	None	Current tec
Fertiliser 6	1.v(1-5)		0	0		0	None	Current tec

Pesticide

Number of	1.w		0

			Unit	C fraction if known
Amount of residue				
Method				
Rice Only (if applicab	Rice			

Outputs - Crop Management		C02	N20	Other	CH4	Totals (kg co2 eq)
	Fertiliser induced N2O					
	Fertiliser production					
	Agrochemicals					
	Sequestration					
	Crop residue management					
	Totals (kg CO2 eq)					
	Methane from Paddy Rice					

Inputs - Sequestration			
	Land Use Changes	No	
	How long ago (years)		0
	Percent of land chang		0
	If conversion from for	[select]	
	Age when converted t		0
	If conversion to forest	[select]	
	Current age of woodla		0

Management Changes		Change Ty	How long a	percent
	Tillage Changes?	No	0	0
	Organic input changes?			
	See additions for management changes			

	Species	density	this year	last year	units	change in t
Tree species 1	[select]	0	0		cm	0
Tree species 2	[select]	0	0		cm	0
Tree species 3	[select]	0	0		cm	0
Tree species 4	[select]	0	0		cm	0
Tree species 5	[select]	0	0		cm	0
Tree species 6	[select]	0	0		cm	0
Tree species 7	[select]	0	0		cm	0
Tree species 8	[select]	0	0		cm	0
Tree species 9	[select]	0	0		cm	0
Tree species 10	[select]	0	0		cm	0

Outputs - Sequestration		
	Annual tota	kg CO2 eq
	Above gro	0
	Below grou	0
	Soil C	0
	Total Annu	0
	Cumulative	kg CO2 eq
	Above gro	0
	Below grou	0
	Soil C sinc	0
	Total Cum	0

Input -Field Energy Use

		Quantity	Units
Electricity	3.a.(1,2)	0	kWh
Electricity	3.b.(1,2)	0	kWh
Electricity	3.c.(1,2)	0	kWh
Electricity	3.d.(1,2)	0	kWh

		Quantity	Units
Diesel Fiel	3.e.(1,2)	0	
Diesel Oth	3.f.(1,2)		
Petrol Fiel	3.g.(1,2)	0	
Petrol Oth	3.h.(1,2)		
Biodiesel F	3.i.(1,2)	0	
Biodiesel (	3.j.(1,2)		
Bioethanol	3.k.(1,2)	0	
Bioethanol	3.l.(1,2)		

Fuel type	3.m	Diesel	0

		Number of	US Gallons fuel used
Tillage	3.n.1	0	0
Tillage	3.n.2	0	0
Tillage	3.n.3	0	0
Tillage	3.n.4	0	0
Tillage	3.n.5	0	0
Tillage	3.n.6	0	0
Tillage	3.n.7	0	0
Tillage	3.n.8	0	0
Tillage	3.n.9	0	0
Tillage	3.n.10	0	0
Tillage	3.n.11	0	0
Tillage	3.n.12	0	0
Tillage	3.n.13	0	0
Tillage	3.n.14	0	0
Tillage	3.n.15	0	0
Tillage	3.n.16	0	0
Tillage	3.n.17	0	0
Tillage	3.n.18	0	0
Tillage	3.n.19	0	0
Tillage	3.n.20	0	0
Tillage	3.n.21	0	0
Tillage	3.n.22	0	0
Spraying/s	3.o.1	0	0

Spraying/s	3.o.2	0	0
Spraying/s	3.o.3	0	0

Harvesting	3.p.1	0	0
Harvesting	3.p.2	0	0
Harvesting	3.p.3	0	0
Harvesting	3.p.4	0	0
Harvesting	3.p.5	0	0
Harvesting	3.p.6	0	0
Harvesting	3.p.7	0	0
Harvesting	3.p.8	0	0
Harvesting	3.p.9	0	0
Harvesting	3.p.10	0	0
Harvesting	3.p.11	0	0
Harvesting	3.p.12	0	0
Harvesting	3.p.13	0	0
Harvesting	3.p.14	0	0
Harvesting	3.p.15	0	0
Harvesting		0	0
Total Energy		0	
CO2 equivalent		0	0

Outputs - Field Energy Use		Energy Us	kg CO2 eq
	Grid electr	0	0
	Local wind	0	0
	Diesel	0	0
	Petrol	0	0
	Biodiesel	0	0
	Bioethanol	0	0
	Total (kg C	0	0
	Total /hect	#DIV/0!	0
	Other	0	0

Inputs - Primary Processing		
Electricity	4.a.(1,2)	0
Electricity	4.b.(1,2)	0
Electricity	4.c.(1,2)	0
Electricity	4.d.(1,2)	0

		Quantity	Units
Diesel Use	4.e.(1,2)	0	

		Quantity	Units
High densi	4.f.(1,2)	0	
Fuel wood	4.g.(1,2)	0	
Coal	4.h.(1,2)	0	
Gas	4.i.(1,2)	0	
Oil	4.j.(1,2)	0	
Other (use	4.l.(1,2)	0	
Liquid propane	4.k.(1,2)	0	

		Unit	Biochemical (BOD) or chemical (COD) oxygen demand
Quantity o	0		
Oxygen de	0	mg/litre	
Treatment	None - river/lake/sea		

Outputs - Primary Processing		Energy Us	emissions kg CO2 eq
	Grid electr	0	0
	Local wind	0	0
	Biomass	0	0
	Fossil Fue	0	0
	Other	0	0
	Waste wat	0	0
	Totals	0	0
	Totals/hec	#DIV/0!	#DIV/0!

Inputs - Transport

	quantity	unit	distance	unit	mode	add vehicle weight?
Road	0		0			yes - returning empty
Road	0		0			yes - returning empty
Road	0		0			yes - returning empty
Road	0		0			yes - returning empty
Road	0		0			yes - returning empty
Road	0		0			yes - returning empty
Road	0		0			yes - returning empty
Road	0		0			yes - returning empty

	quantity	unit	distance	unit	type
Rail	0		0		
Rail	0		0		
Rail	0		0		
Rail	0		0		
Rail	0		0		
Rail	0		0		
Rail	0		0		
Rail	0		0		

	quantity	unit	distance	unit	type
Air	0		0		Very Short Haul
Air	0		0		Very Short Haul
Air	0		0		Very Short Haul

Air	0		0		Very Short Haul
Air	0		0		Very Short Haul
Air	0		0		Very Short Haul
Air	0		0		Very Short Haul
Air	0		0		Very Short Haul

	quantity	unit	distance	unit	type
Ship	0		0		
Ship	0		0		
Ship	0		0		
Ship	0		0		
Ship	0		0		
Ship	0		0		
Ship	0		0		
Ship	0		0		

Units	kg CO2 eq
Road	0
Rail	0
Air	0
Shipping	0
Total	0

New Content for v 1.0253

Rice Data

days under cultivatior	Rice
water management b	Rice
water management d	Rice

Management Change	Change Ty	How long a	percent
Cover cropping	no change	0	0
Compost	no change	0	0
Manure additions	no change	0	0
Residue incorporatior	no change	0	0

Inputs - Livestock

Life Cycle	Lifecycle c	Snapshot						
	Animal typ	[Select]						
	Animal Breed (if hens)							
	Animal number per pl		% of diet fi	quality of g	type of gra	Manure ma	Percentage	Number of
	Juvenile P	0	0	[Select]	[Select]	[Select]	0	0
	Adult Prod	0	0	[Select]	[Select]	[Select]	0	0
	Adult non-l	0	0	[Select]	[Select]	[Select]	0	0

Optional Ir	Juvenile P	Dry matter intake per head			
		Feed com	Select	% of feed	0
		Feed com	Select	% of feed	0
		Feed com	Select	% of feed	0

			Feed com	Select	% of feed	0	
			Feed com	Select	% of feed	0	
			Feed com	Select	% of feed	0	
			Feed com	Select	% of feed	0	
			Feed com	Select	% of feed	0	
			Feed com	Select	% of feed	0	
			Feed com	Select	% of feed	0	
		Adult Prod	Dry matter intake per head				
			Feed com	Select	% of feed	0	
			Feed com	Select	% of feed	0	
			Feed com	Select	% of feed	0	
			Feed com	Select	% of feed	0	
			Feed com	Select	% of feed	0	
			Feed com	Select	% of feed	0	
			Feed com	Select	% of feed	0	
			Feed com	Select	% of feed	0	
			Feed com	Select	% of feed	0	
			Feed com	Select	% of feed	0	
			Production	Productive	0	Dry	0
			Fat conten	0			
			Protein co	0			
			Production	0	Units		
			Dry matter intake per head				
			Feed com	Select	% of feed	0	
			Feed com	Select	% of feed	0	
			Feed com	Select	% of feed	0	
			Feed com	Select	% of feed	0	
			Feed com	Select	% of feed	0	
			Feed com	Select	% of feed	0	
			Feed com	Select	% of feed	0	
			Feed com	Select	% of feed	0	
			Feed com	Select	% of feed	0	
			Feed com	Select	% of feed	0	

Output - Livestock		Total in fe	Enteric	Manure Ch	Manure di	Manure in	kg CO2 eq
	Growing pl	0	0	0	0	0	0
	Productive	0	0	0	0	0	0
	Non-produ	0	0	0	0	0	0
	Totals	0	0	0	0	0	0

Version ba	1.0328	
Version	1.1	
Results	Comments	(Type over this message to enter which materials you have included in this section.)
	co2	
	n2o	
	ch4	
	co2e total area	
	co2e per unit area	

	co2e per unit volume						
	co2e per tree						
Transport	Truck trans	This transp	(Type over this message to enter which materials you have included in this s				
	Rail transp	This transp	(Type over this message to enter which materials you have included in this s				
	Air transpo	This transp	(Type over this message to enter which materials you have included in this s				
	Ship trans	This transp	(Type over this message to enter which materials you have included in this s				
Livestock	Juvenile m	(Type over this cell to enter any comments about your manure management strategy .)					
	Adult non-	(Type over this cell to enter any comments about your manure management strategy .)					
	Adult prod	(Type over this cell to enter any comments about your manure management strategy .)					
		phase length	units				
Juvenile p	0	0					
Adult prod	0	0					
Adult non-	0	0					

Input -Field	Energy Use		Units		
	High densi	0			
	Fuel wood	0			
	Coal	0			
	Gas	0			
	Oil	0			
	Liquid Pro	0			
	N applicati	Pesticide a	Assumed y	CO2 equiv/tonne	
User defin	0	0	0	#DIV/0!	
User defin	0	0	0	#DIV/0!	
User defin	0	0	0	#DIV/0!	
User defin	0	0	0	#DIV/0!	
User defin	0	0	0	#DIV/0!	
User defin	0	0	0	#DIV/0!	

Fertiliser n	Base	N	P (P205)	K (K2O)	
		0	0	0	
		0	0	0	
		0	0	0	
		0	0	0	

Summary comments

Transport	quantity	unit	distance	distance u	mode	add vehicle weight?
Road	0	[Select]	0	[Select]	0	yes - returning empty
	0	[Select]	0	[Select]	0	yes - returning empty

0	[Select]	0	[Select]	0	yes - returning empty
0	[Select]	0	[Select]	0	yes - returning empty
0	[Select]	0	[Select]	0	yes - returning empty
0	[Select]	0	[Select]	0	yes - returning empty
0	[Select]	0	[Select]	0	yes - returning empty
0	[Select]	0	[Select]	0	yes - returning empty
0	[Select]	0	[Select]	0	yes - returning empty
0	[Select]	0	[Select]	0	yes - returning empty
0	[Select]	0	[Select]	0	yes - returning empty
0	[Select]	0	[Select]	0	yes - returning empty
0	[Select]	0	[Select]	0	yes - returning empty
0	[Select]	0	[Select]	0	yes - returning empty
0	[Select]	0	[Select]	0	yes - returning empty
0	[Select]	0	[Select]	0	yes - returning empty
0	[Select]	0	[Select]	0	yes - returning empty
0	[Select]	0	[Select]	0	yes - returning empty
0	[Select]	0	[Select]	0	yes - returning empty
0	[Select]	0	[Select]	0	yes - returning empty

RAIL	quantity	unit	distance	unit
	0	[Select]	0	[Select]
	0	[Select]	0	[Select]
	0	[Select]	0	[Select]
	0	[Select]	0	[Select]
	0	[Select]	0	[Select]
	0	[Select]	0	[Select]
	0	[Select]	0	[Select]
	0	[Select]	0	[Select]
	0	[Select]	0	[Select]
	0	[Select]	0	[Select]
	0	[Select]	0	[Select]
	0	[Select]	0	[Select]
	0	[Select]	0	[Select]
	0	[Select]	0	[Select]
	0	[Select]	0	[Select]
	0	[Select]	0	[Select]
	0	[Select]	0	[Select]
	0	[Select]	0	[Select]
	0	[Select]	0	[Select]
	0	[Select]	0	[Select]

AIR	quantity	unit	distance	unit	type
	0	[Select]	0	[Select]	
	0	[Select]	0	[Select]	
	0	[Select]	0	[Select]	
	0	[Select]	0	[Select]	
	0	[Select]	0	[Select]	
	0	[Select]	0	[Select]	
	0	[Select]	0	[Select]	
	0	[Select]	0	[Select]	
	0	[Select]	0	[Select]	

0	[Select]	0	[Select]
0	[Select]	0	[Select]
0	[Select]	0	[Select]
0	[Select]	0	[Select]
0	[Select]	0	[Select]
0	[Select]	0	[Select]
0	[Select]	0	[Select]
0	[Select]	0	[Select]
0	[Select]	0	[Select]
0	[Select]	0	[Select]
0	[Select]	0	[Select]

SHIP	quantity	unit	distance	unit	type	
	0	[Select]	0	[Select]		0
	0	[Select]	0	[Select]		0
	0	[Select]	0	[Select]		0
	0	[Select]	0	[Select]		0
	0	[Select]	0	[Select]		0
	0	[Select]	0	[Select]		0
	0	[Select]	0	[Select]		0
	0	[Select]	0	[Select]		0
	0	[Select]	0	[Select]		0
	0	[Select]	0	[Select]		0
	0	[Select]	0	[Select]		0
	0	[Select]	0	[Select]		0
	0	[Select]	0	[Select]		0
	0	[Select]	0	[Select]		0
	0	[Select]	0	[Select]		0
	0	[Select]	0	[Select]		0
	0	[Select]	0	[Select]		0
	0	[Select]	0	[Select]		0
	0	[Select]	0	[Select]		0
	0	[Select]	0	[Select]		0

Co-products		Economic	Finished product in tons	proportion of finshed product value
o-product	0	0		
o-product	0	0		
o-product	0	0		

o-product	0	0

roduction
:h
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tree numbers

d

Manure ma	Percentag	Number of	Manure ma	Percentag	Number of days this system is used
[Select]	0	0	[Select]	0	0
[Select]	0	0	[Select]	0	0
[Select]	0	0	[Select]	0	0

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