

## Supplementary Materials for "Prospective Life Cycle Assessment of Microbial Sophorolipid Fermentation"

Table S 1. Inventory data for winter rapeseed production and rapeseed oil production adapted from study of Fridrihsone in 2020 [24]

Data	Unit	Value
<b>RAPESEED PRODUCTION (1 ton)</b>		
<b>INPUT</b>		
Occupation, agriculture	ha a	3.5
<b>Materials/fuels</b>		
Rape seed, for sowing {RoW}  market for rape seed, for sowing   Cut-off, S	kg	1.4
off, S	kg	17.4
Potassium chloride {RoW}  market for potassium chloride   Cut-off, S	kg	36.9
Ammonium sulfate {RoW}  market for ammonium sulfate   Cut-off, S	kg	4.3
Ammonium nitrate {RoW}  market for ammonium nitrate   Cut-off, S	kg	29.5
Ammonium sulfate {RoW}  market for ammonium sulfate   Cut-off, S	kg	10.8
Cut-off, S	kg	14.5
Acetamide-anillide-compound, unspecified {RoW}  production   Cut-off, S	kg	0.24
Diphenylether-compound {RoW}  production   Cut-off, S	kg	0.029
Cyclic N-compound {RoW}  production   Cut-off, S	kg	0.032
Diesel {Europe without Switzerland}  market for   Cut-off, S	kg	14.5
transport, freight, lorry 7.5-16 metric ton, EURO4   Cut-off, S	tkm	0.1
freight, lorry 16-32 metric ton, EURO4   Cut-off, S	tkm	146.7
transport, freight, lorry 3.5-7.5 metric ton, EURO4   Cut-off, S	tkm	0.1
Cut-off, S	tkm	1.1
tractor and trailer, agricultural   Cut-off, S	tkm	4.8
<b>Electricity/heat</b>		
Heat, district or industrial, natural gas {RER}  market group for   Cut-off, S	MJ	189.2
Rape seeds (winter)	ton	1
<b>Emissions to air</b>		
Nitrogen oxides, LV	kg	1.73
Metazachlor	kg	0.012
Quinmerac	kg	0.00059
Epoxiconazole	kg	0.00018
Lambda-cyhalothrin	kg	0.000029
Cyproconazole	kg	0.00069
Azoxystrobin	kg	0.00034
Deltamethrin	kg	0.000014
Propaquizafop	kg	0.00029
Diquat dibromide	kg	0
Carbon dioxide, fossil	kg	7.97
Ammonia, LV	kg	2.69
Water	kg	45.45
<b>Emissions to water</b>		
Phosphorous acid	kg	0.04
Nitrate	kg	83.97

Metazachlor	kg	0.0012
Quinmerac	kg	0.0003
Epoxiconazole	kg	0.00009
Lambda-cyhalothrin	kg	0.000014
Cyproconazole	kg	0.000069
Azoxystrobin	kg	0.00017
Deltamethrin	kg	0.0000071
Propaquizafop	kg	0.00014
Diquat dibromide	kg	0

#### **Emissions to soil**

Metazachlor	kg	0.012
Quinmerac	kg	0.03
Metconazole	kg	0.009
Lambda-cyhalothrin	kg	0.0014
Cyproconazole	kg	0.0069
Azoxystrobin	kg	0.017
Deltamethrin	kg	0.00071
Propaquizafop	kg	0.014
Diquat dibromide	kg	0

#### **RAPESEED OIL PRODUCTION (1 ton)**

##### **INPUT**

Rape seeds	kg	2778
Electricity, medium voltage {LV}  market for   Cut-off, S	kWh	125
Electricity, medium voltage {LV}  market for   Cut-off, S	kWh	0.65
Transport, tractor and trailer, agricultural {RoW}  processing   Cut-off, S	tkm	97.2

##### **OUTPUT**

Rapeseed oil	kg	1000
Rapeseed cake	kg	1722
Loss	kg	56