

Life Cycle Inventory for Maize Production System in Australia

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Tim Grant

Life Cycle Strategies Pty Ltd

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1 Introduction

This report outlines the inventory development for maize production systems in Australia. Four different production systems have been included through which are four irrigated maize and one which is for dryland maize production. The entries are for maize grain rather than silage production. The inventories do not represent a weighted average of national production but are for typical production systems in Australia.

2 System boundary

The system boundary for the inventories begins with the preparation of land for planting including any management during the fallow period. This includes the collection of methane gas and its flaring and combustion for power generation. And lime of the AusLCI guidelines a credit is provided for electricity exported from the waste of process equal to the average electricity grid in the location where the landfill operates. Importantly it should be noted that any processing of the waste prior to arrival at the landfill and transport to the landfill is not included in the inventory

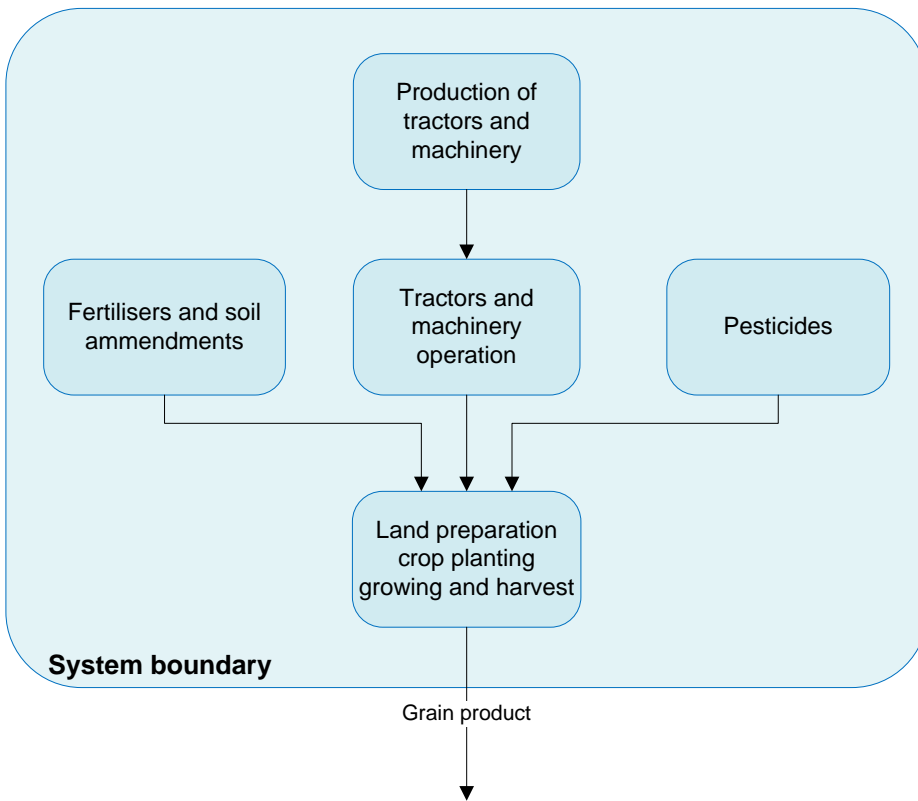


Figure 1 system boundary for landfill from organic waste inventories

3 Data Sources

Table 1 provides the details for the four maize inventories developed in this project. Three of these irrigated and one is dryland.

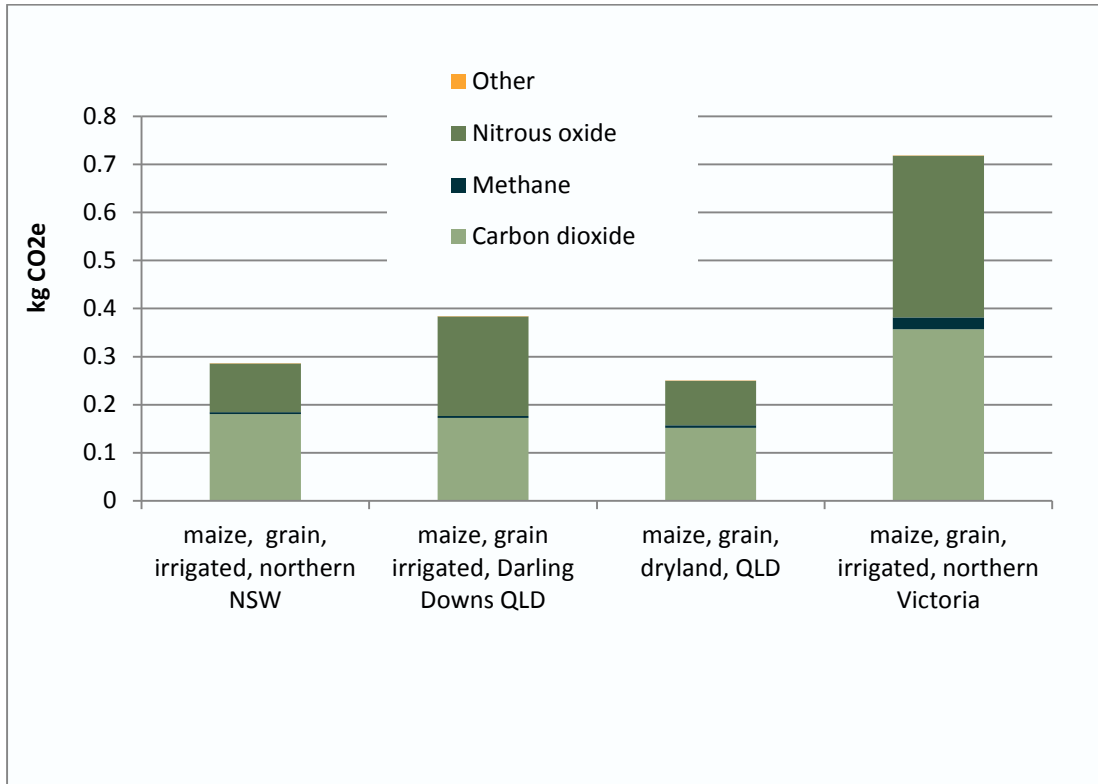
Table 1: data sources for different and assumptions for maize inventories.

Inventory	Region	Data source
Irrigated maize, QLD	Darling Downs Queensland	(Herden 2006)
Dryland maize, Queensland	Queensland	(Herden 2006)
Irrigated maize, NSW	Northern NSW	(NSW Department of Primary Industries 2012)
Irrigated maize, Victoria	Northern Victoria	(Department of Sustainability and Environment and Department of Primary Industries 2009)

4 Results

Greenhouse gas emission results are provided here as a check for consistency with other data and are not intended to be used for comparative analysis. The results in Figure 2 show that gas emissions are dominated by nitrous oxide which is due to direct emissions from fertiliser application and carbon dioxide which is due to machinery operation aims in the case of irrigated crops, the impacts of pumping water. The high value from Victorian maize is due to the high amount of nitrogen applied in the first that irrigated crops have higher emission factors per unit of nitrogen and dryland crops.

Figure 2 GHG emissions by gas type from different organic fractions in landfill. Kg CO₂e per kg waste



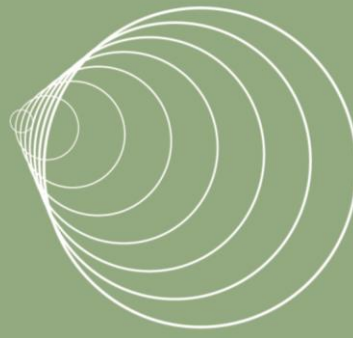
5 Inventories

In spreadsheet “Maize Inventories V1.xlsx”

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1														
2		Processes listing												
3														
4			maize, grain, irrigated, northern Victoria, at farm/AU U											
5			maize, grain, dryland, QLD, on farm/AU U											
6			maize, grain irrigated, Darling Downs QLD, on farm/AU U											
7			maize, grain, irrigated, northern NSW, on farm/AU U											
8														
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13														
14														

6 References

- Department of Sustainability and Environment and V. Department of Primary Industries (2009). Northern Victoria Irrigated Cropping Gross Margins 2009-10. Echuca, Victoria, Farm Services Victoria, Department of Primary Industries (DPI).
- Herden, R. (2006). Irrigated Maize Silage - Cost and Returns, Queensland Department of Agriculture, Fisheries and Forestry.
- Herden, R. (2006). Maize - Dryland - Cost and Returns, Queensland Department of Agriculture, Fisheries and Forestry.
- NSW Department of Primary Industries (2012). Surface Irrigated Maize (diesel pump from bore). Farm Enterprise Budget Series - Northern Zone Summer 2012-2013, NSW Department of Primary Industries,.



**Life
Cycle
Strategies**
www.lifecycles.com.au

CONTACT US t +61 (0)3 9417 1190 e
info@lifecycles.com.au w www.lifecycles.com.au
LCA
<http://lifecyclescientist.wordpress.com/>

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