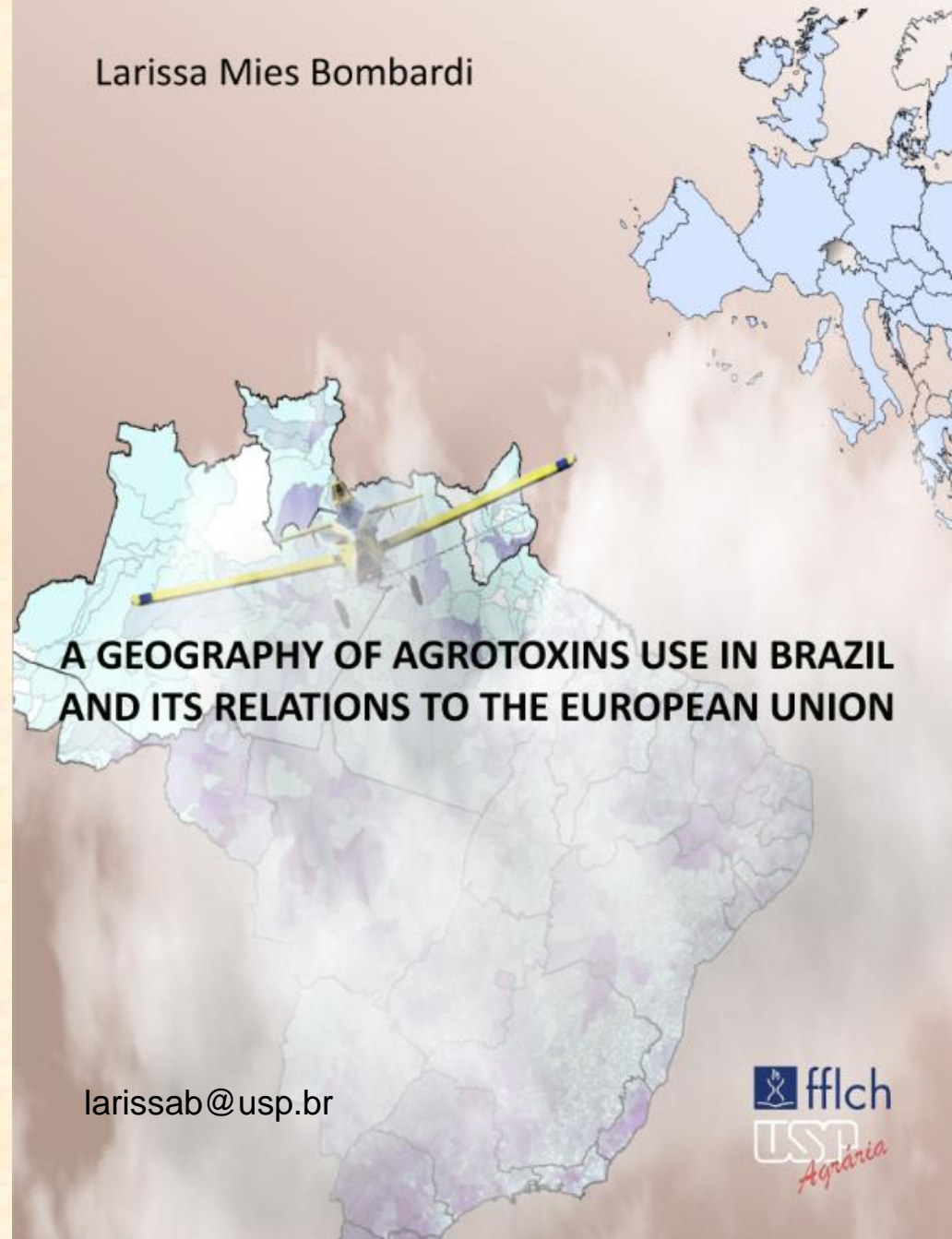


# The use of pesticides in Brazil: environment and childhood under attack.

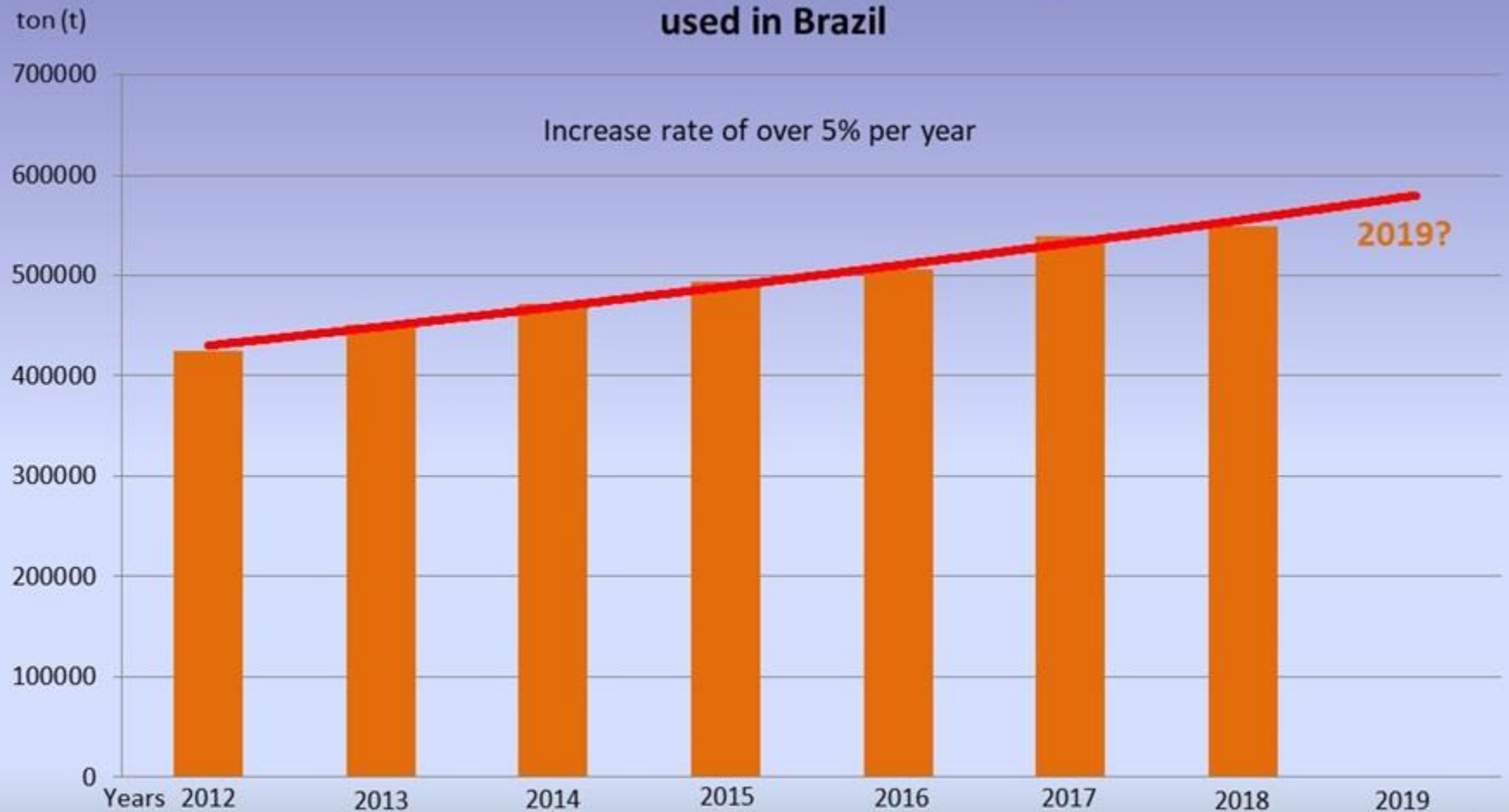
Larissa Mies Bombardi



**A GEOGRAPHY OF AGROTOXINS USE IN BRAZIL  
AND ITS RELATIONS TO THE EUROPEAN UNION**

larissab@usp.br

## Annual amount of active ingredients of agrottoxins used in Brazil



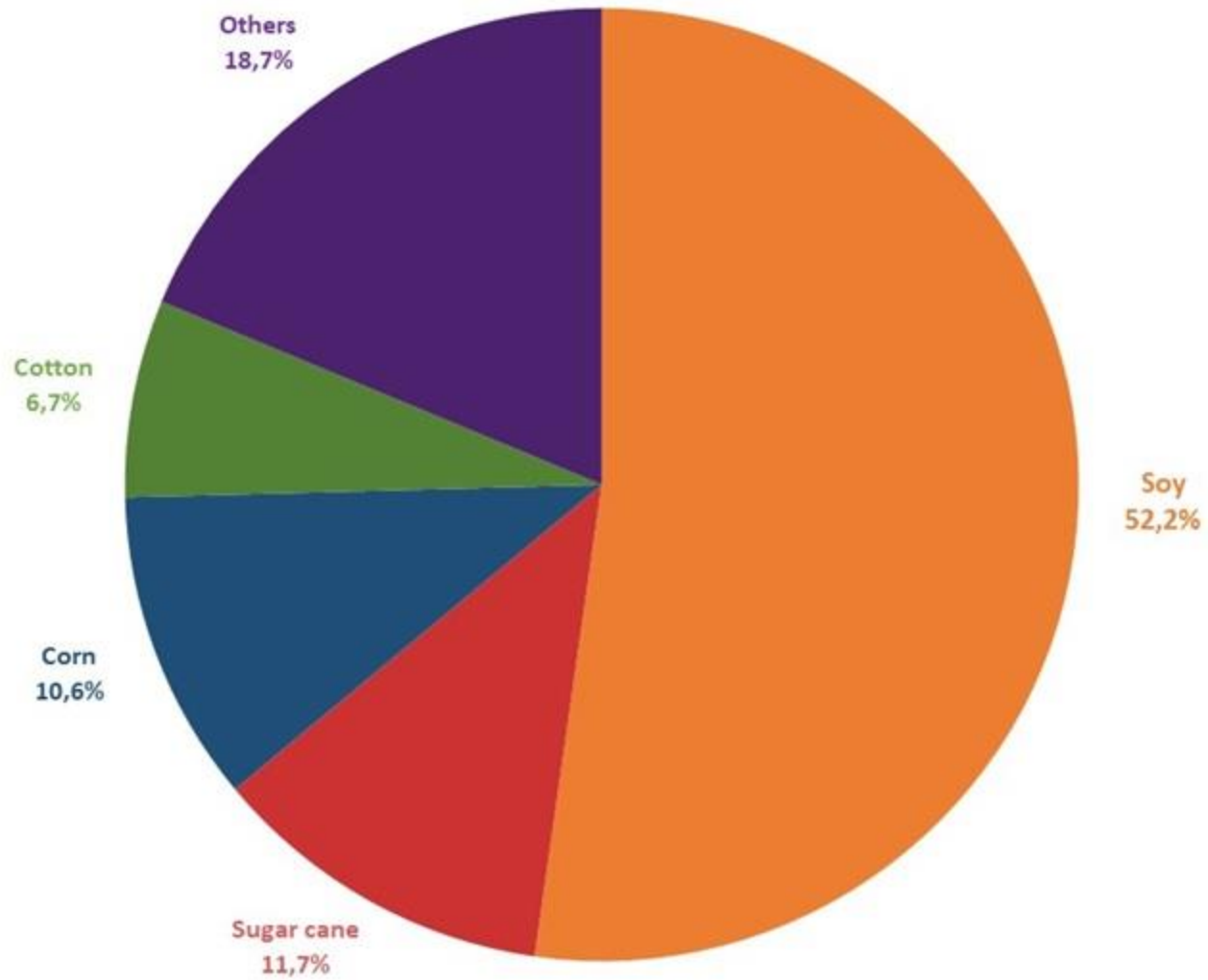
Elaboration: Larissa Mies Bombardi and Pablo Luiz Maia Nepomuceno

Data source: IBAMA, 2020

# **Brazil – One of the main worldwide exporters of:**

- Soy**
- Sugar**
- Ethanol (cane)**
- Coffee**
- Orange Juice**
- Tobacco**
- Maize**
- Beef**
- Chicken**

### Use of agrottoxins in Brazil by type of crop

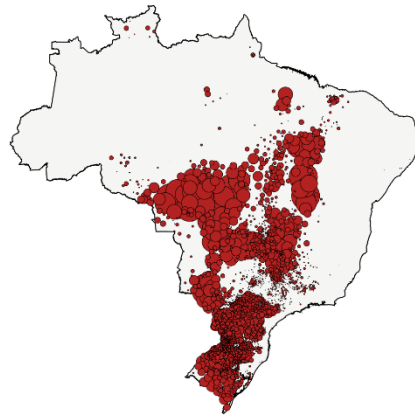


Elaboration: Larissa Mies Bombardi and Pablo Luiz Maia Nepomuceno

Data source: SINDIVEG, 2018

BRAZIL **AREA OCCUPIED WITH SOYBEAN**  
COMPARED WITH THE AREA OF COUNTRIES OF THE EUROPEAN UNION  
(hectares)

Plantation area for  
soybean in Brazil:



**33,245,190 ha**

**10.9x Belgium**



Land area of Belgium:  
**3,053,000 ha**

**3.6x Portugal**



Land area of Portugal:  
**9,209,000 ha**

**4.2x Scotland**



Land area of Scotland:  
**7,877,200 ha**

- The representation of the European union countries are proportional among themselves;

- The representation of Brazil relation to the countries of the European Union was 6.8 times reduced in order to enable its illustration in parallel to the others.

**Postgraduate Program in Human Geography - USP**

Laboratory of Agrarian Geography

Preparation: **Professor Larissa Mies Bombardi**

Data source: IBGE

Mapping software: Philcarto I Mapping base: IBGE

Mapping: Eduardo Penha

Support: CAPES / FAPESP



# CROPS IN BRAZIL AND GERMANY'S TERRITORY

Eucalyptus in Brazil - planted areas = 78.400 km<sup>2</sup>



=



Approximately 22% of Germany's area

Sugar cane in Brazil - planted areas = 87.655 km<sup>2</sup>



=



Approximately 25% of Germany's area

Soybean in Brazil - planted areas = 358.192 km<sup>2</sup>



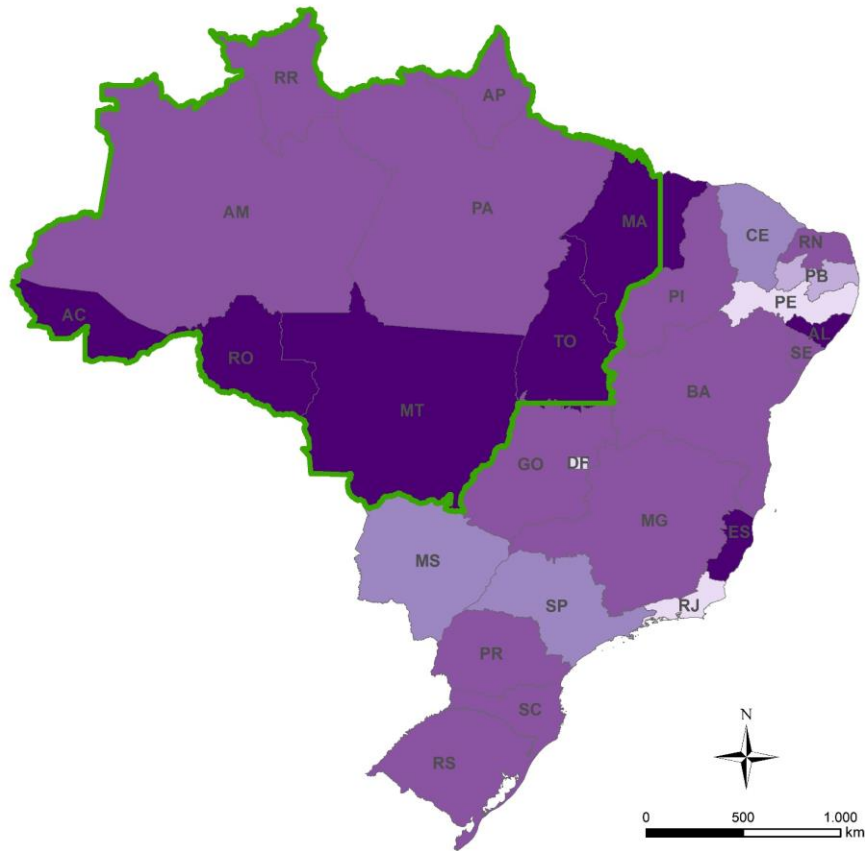
=



Slightly bigger than Germany's territory  
(102 %)



**BRAZIL USE OF AGROTOXINS**  
**INCREASE IN THE QUANTITY OF AGRICULTURAL ESTABLISHMENTS**  
**THAT USE AGROTOXINS (2006 - 2017)**  
 Federation Units (FU)



Increase number of establishments who use agrottoxins (2006-2017) as a percentage by FU (%)

- > 10,00
- 5,01 - 10,00
- 2,51 - 5,00
- 0,01 - 2,50
- < 0,00

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 Elaboration: **Profª Drª Larissa Mies Bombardi**  
**and Dr Pablo Luiz Maia Nepomuceno**



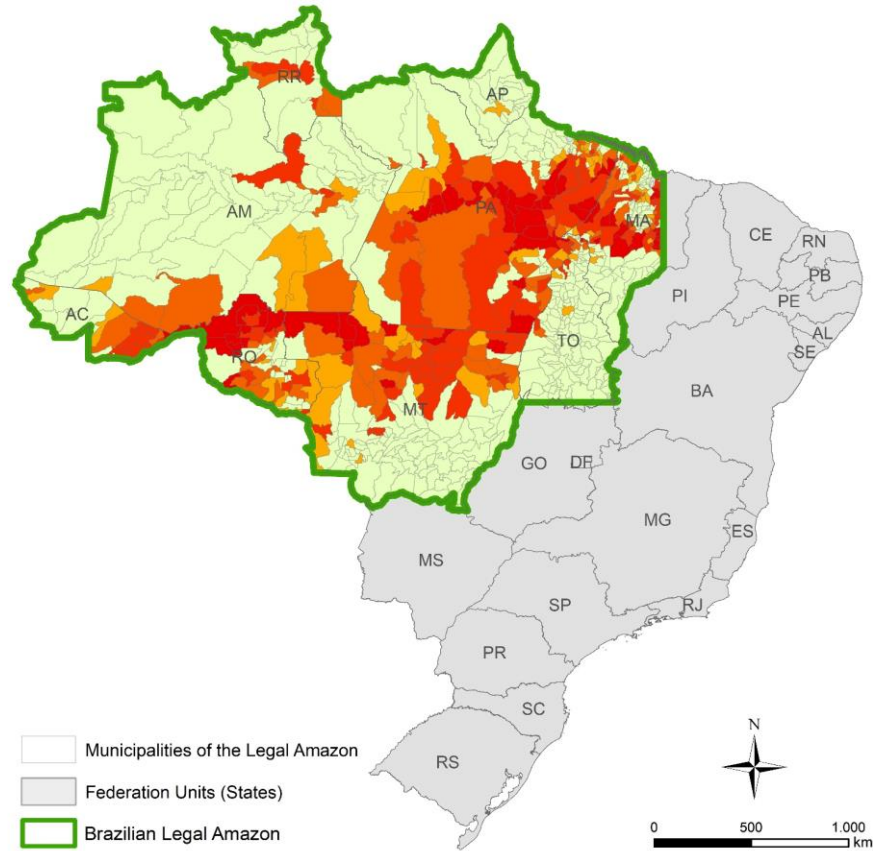
Source: IBGE, 2018  
 Prepared in 2020



# BRAZILIAN LEGAL AMAZON

## DEFORESTATION

Municipalities



Percentage of deforested area in period from 2006 to 2017 in relation to the total area of the municipality (%)



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and **Dr Pablo Luiz Maia Nepomuceno**

Source: PRODES (INPE), 2019

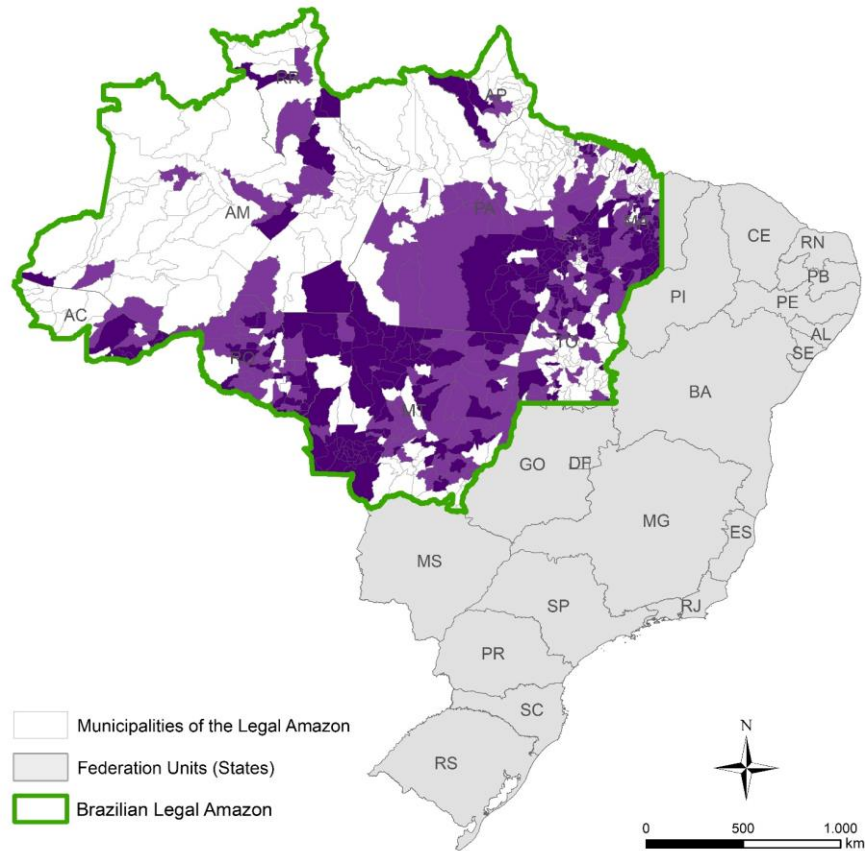
Prepared in 2020



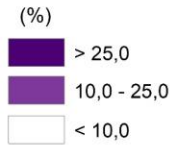


BRAZIL AGROTOXINS  
AGRICULTURAL ESTABLISHMENTS

Municipalities

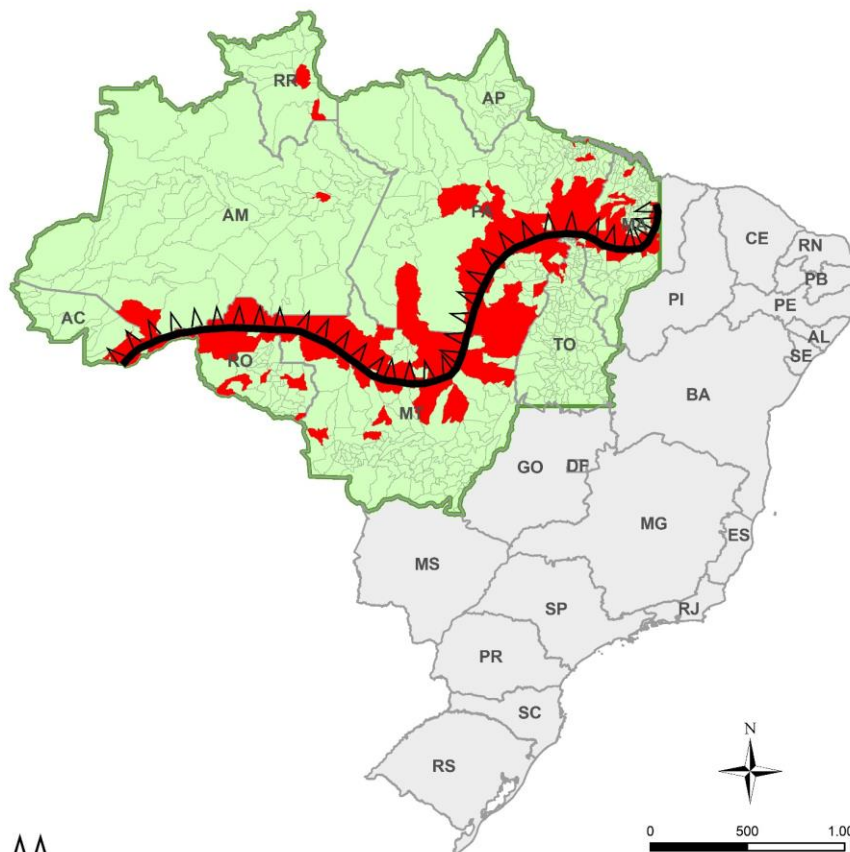


Municipalities of Legal Amazon where the increase in number of establishments using agrottoxins was over 10% in the period 2006 - 2017




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and **Dr Pablo Luiz Maia Nepomuceno**  
Source: IBGE, 2018  
Prepared in 2019


BRAZILIAN LEGAL AMAZON  
**AGROTOXINS AND DEFORESTATION**  
Municipalities



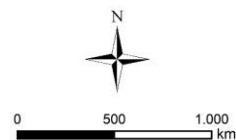
 Arc of the "Agro-Desforestation"

 Most deforested municipalities and also increased the proportion of agricultural establishments using agrototoxins (2006 - 2017)

 Brazilian Legal Amazon

 Municipalities of the Legal Amazon

 Federation Units (States)



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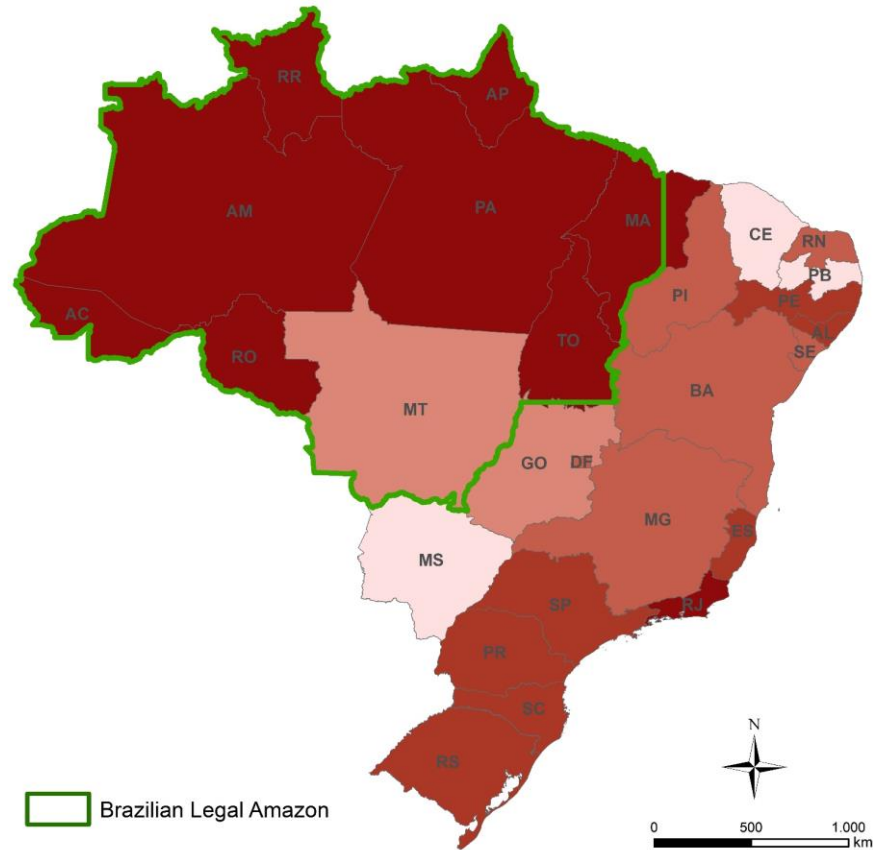


Source: PRODES 2018, IBAMA 2018

Prepared in 2019

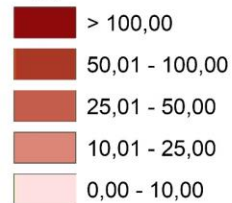


**BRAZIL AGROTOXINS**  
**INCREASE IN ANNUAL AMOUNT USED (2016 - 2018)**  
 Federation Units (FU)



 Brazilian Legal Amazon

Increased average amount of agrottoxins used in the period 2016 - 2018 in relation to the period 2013 - 2015, in percentage by FU (%)



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**and Dr Pablo Luiz Maia Nepomuceno**



Source: IBAMA 2019

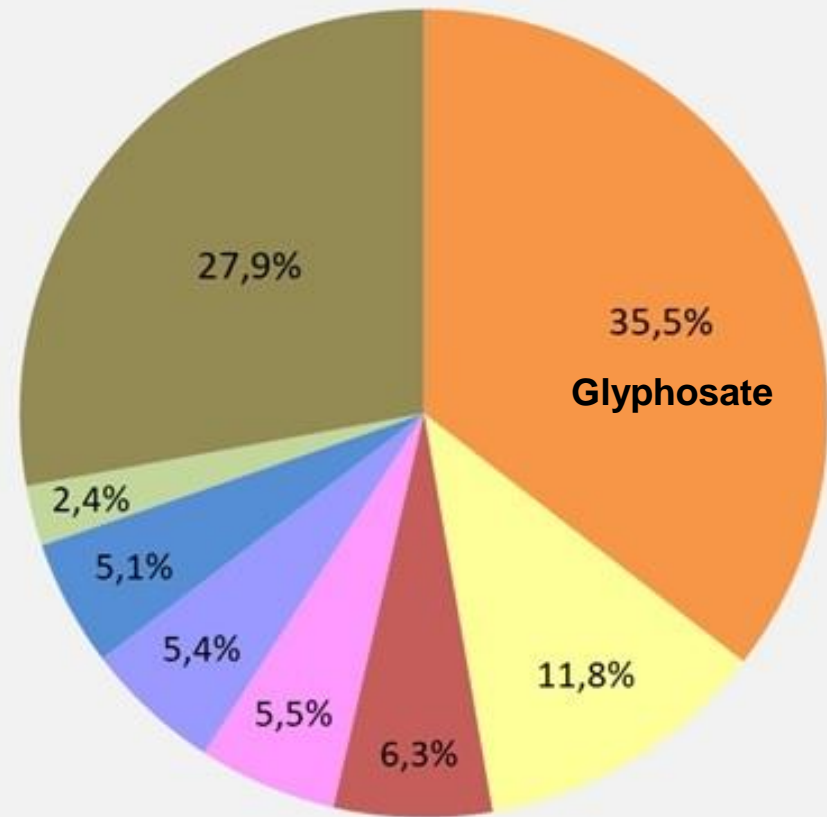
Prepared in 2020



## CONSUMPTION OF AGROTOXINS IN BRAZIL BY ACTIVE INGREDIENT

Types of Active Ingredients,  
values in tonnes (t)

- Glyphosate - 173.150
- 2,4-d - 57.389
- Mancozeb - 30.815
- Acephate - 27.058
- Mineral oil - 26.777
- Atrazine - 24.731
- Paraquat Dichloride - 11.756
- Others (less than 2% ) - 135.913



Authors: Profª Drª Larissa Mies Bombardi and Pablo Luiz Maia Nepomuceno

Source: IBAMA, 2019



BRAZIL and EUROPEAN UNION **MALATHION (insecticide / acaricide)**

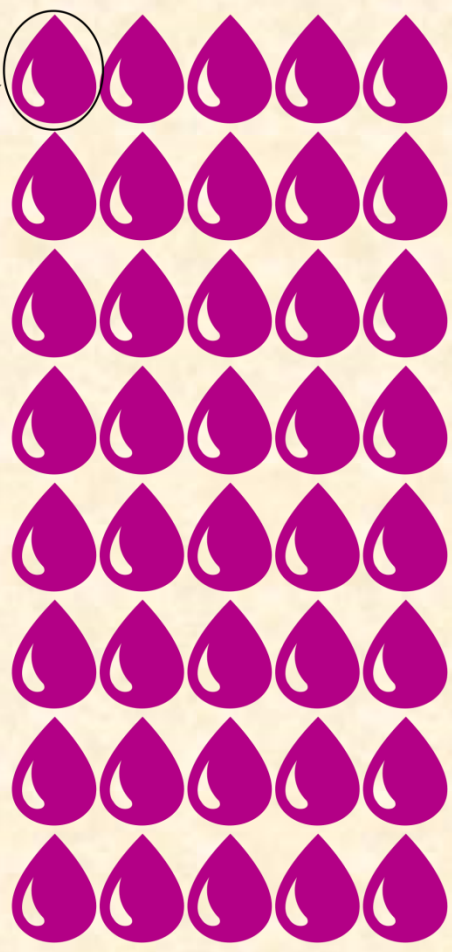
**MAXIMUM RESIDUE LIMIT - MRL**

(mg/kg)

Bean



European Union  
(0.02 mg/kg)



**Brazil**  
(8 mg/kg)  
**400x higher**

- Malathion is the 16<sup>th</sup> best-selling pesticide in Brazil. In 2013, sales reached 4,987 tons.

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Laboratory of Agrarian Geography

Preparation: **Professor Larissa Mies Bombardi**

Data source: Anvisa (2017); European Commission (2017)

Mapping software: Philcarto I Mapping base: IBGE

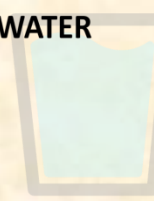
Mapping: Eduardo Penha

Support: CAPES / FAPESP

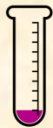


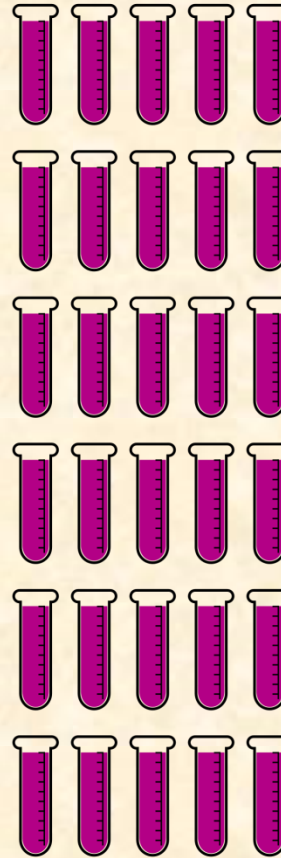


BRAZIL and EUROPEAN UNION **DRINKING WATER**  
**MAXIMUM RESIDUE LIMIT - MRL**  
( $\mu\text{g/L}$ )



**2.4-D**  
(herbicide)

  
**European Union**  
(0.1  $\mu\text{g/L}$ )



**Brazil**  
(30  $\mu\text{g/L}$ )  
**300x higher**

- 2.4-D is the second best-selling pesticide in Brazil. In 2014, sales reached 36,514 tons.

**Postgraduate Program in Human Geography - USP**

Laboratory of Agrarian Geography

Preparation: **Professor Larissa Mies Bombardi**

Data source: Anvisa (2017); European Commission (2017)

Mapping software: Philcarto | Mapping base: IBGE

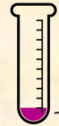
Mapping: Eduardo Penha

Support: CAPES / FAPESP



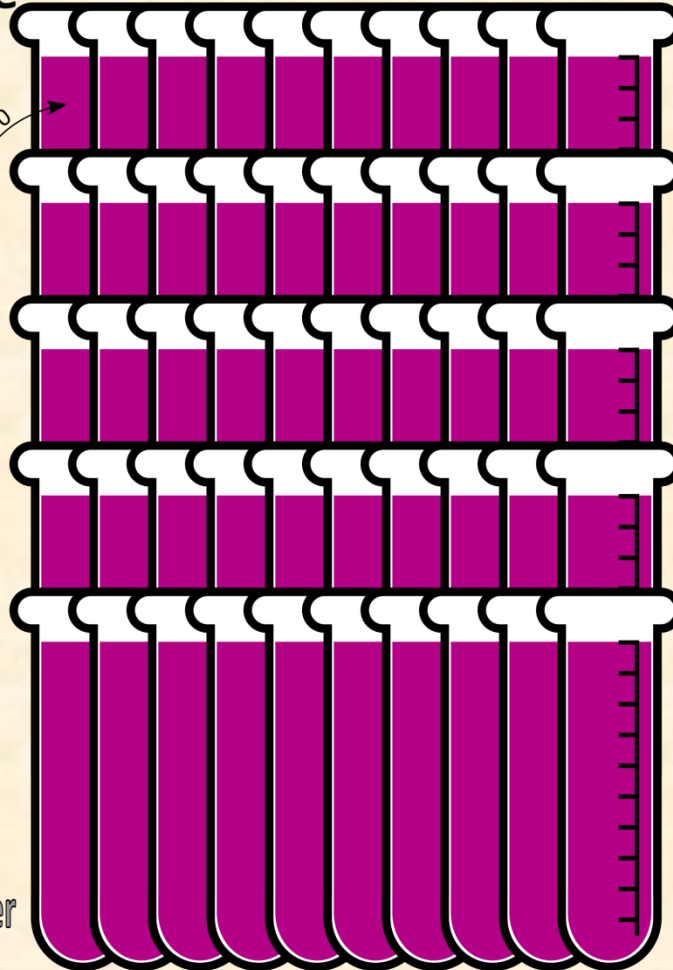
BRAZIL and EUROPEAN UNION **DRINKING WATER**  
MAXIMUM RESIDUE LIMIT - MRL  
( $\mu\text{g/L}$ )

**Glyphosate**  
(herbicide)



European Union  
(0.1  $\mu\text{g/L}$ )

x 100



Brazil  
(500  $\mu\text{g/L}$ )

5000x higher

- Glyphosate is the best-selling pesticide in Brazil. In 2014, sales reached 193.948 tons.

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Laboratory of Agrarian Geography

Preparation: **Professor Larissa Mies Bombardi**  
Data source: Anvisa (2017); European Commission (2017)  
Mapping software: Philcarto I Mapping base: IBGE



Mapping: Eduardo Penha  
Support: CAPES / FAPESP



# **BRAZIL**

## **2009 - 2019**

**48,150 Intoxicated People**  
**4,377 per year**  
**= 12 per day**

Obs: Estimated subnotification: 1 for 50  
Possibly: 2.4 million people



# Brazil - Children and Teenagers Intoxicated by Pesticides

**2009 - 2019**

**48,150 Intoxicated People (Total)**



**8,514 - 0 and 19 Years Old**

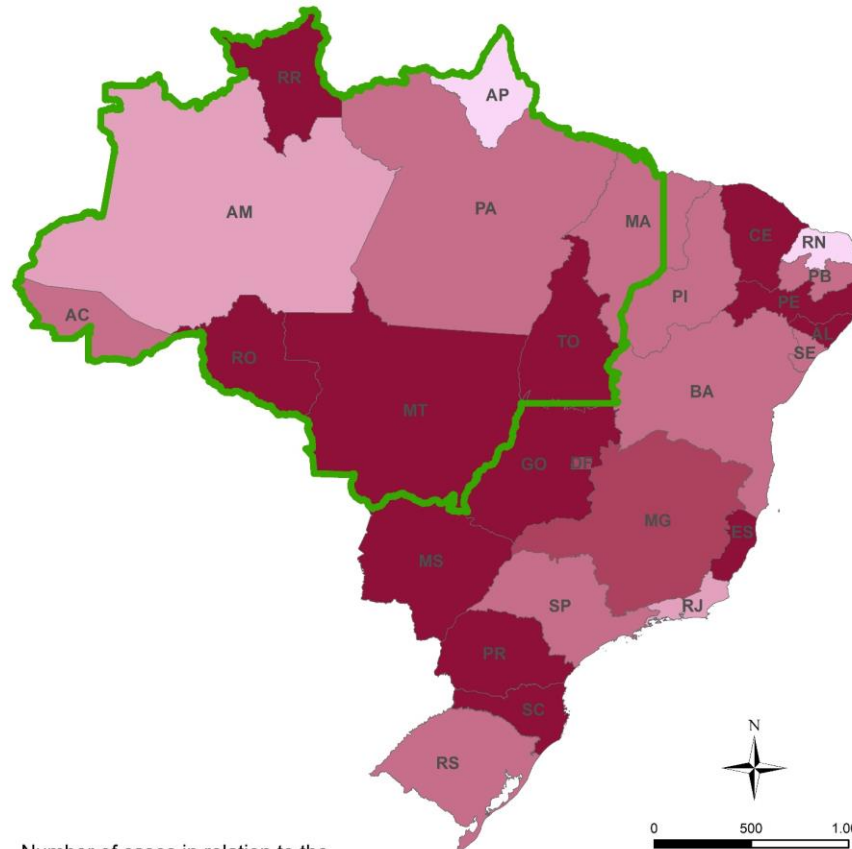
 **= 17.6%**  


Obs: Estimated subnotification: 1 for 50

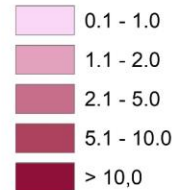
Source: BRAZIL – Health Ministry, 2020

# BRAZIL CHILDREN INTOXICATED BY AGROTOXINS (1- 14 YEARS OLD)

Federation Units - FU (2007 - 2019)



Number of cases in relation to the population of the FU (1: 500,000)



Number of intoxicated children (total of 4,078 in the period)

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and **Dr Pablo Luiz Maia Nepomuceno**

Source: DATASUS - 2020

Prepared in 2020





## **BRAZIL – Children and Teenagers Suicide Attempts (Using Agrotoxins) – 2009-2019**

- **5 – 9 years old – 12 reported cases**
- **10 – 14 years old – 500 reported cases**
- **15 – 19 years old – 2354 reported cases**

**= 2866 (total reported cases)**

# BRAZIL BABIES INTOXICATED BY AGROTOXINS (0 - 12 months)

Federation Units - FU (2007 - 2017)



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Elaboration: **Prof<sup>a</sup> Dr<sup>a</sup> Larissa Mies Bombardi**  
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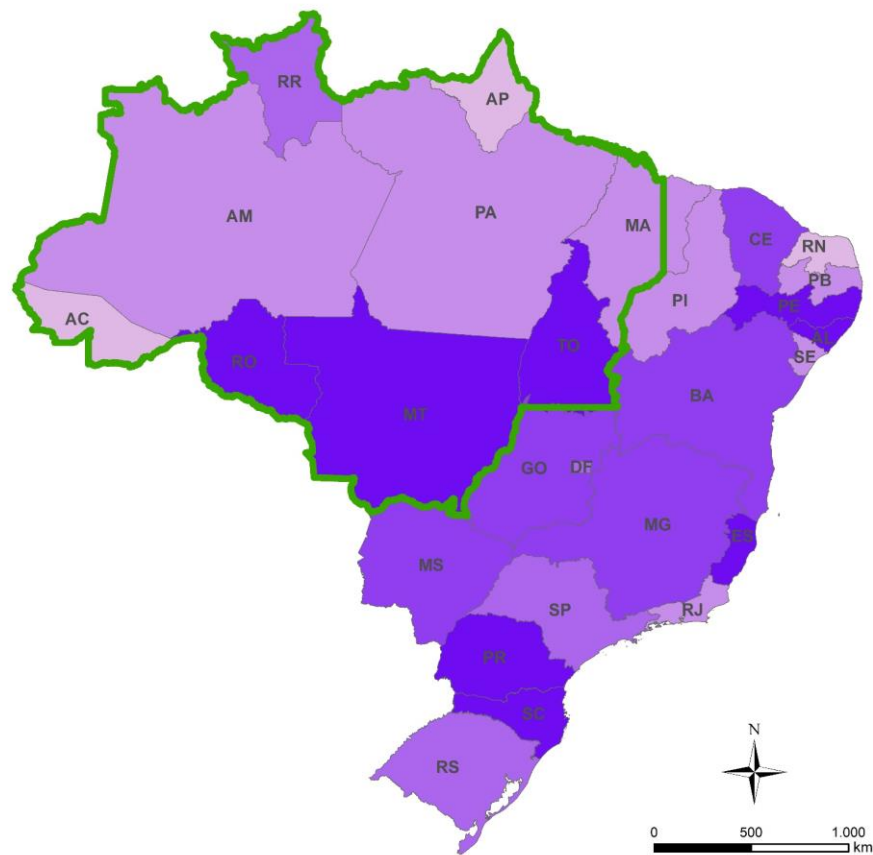
Source: DATASUS - 2019

Prepared in 2019

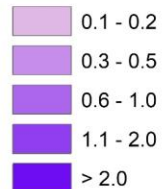


# BRAZIL BABIES INTOXICATED BY AGROTOXINS (0 - 12 months)

Federation Units - FU (2007 - 2019)



Number of cases in relation to the population of the FU (1: 500,000)



Number of intoxicated babies (total of 625 in the period)

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Elaboration: **Prof<sup>a</sup> Dr<sup>a</sup> Larissa Mies Bombardi**  
and **Dr Pablo Luiz Maia Nepomuceno**

Source: DATASUS - 2020

Prepared in 2020



# **BRAZIL**

- **625 babies (0 - 12 months old) intoxicated** by agrotoxins between 2007 and 2019 (*reported cases*).
- **Possibly: 31,250 babies (0 - 12 months old) intoxicated** between 2007 and 2014.

Source: Brazil Health Ministry /SINAN/2020

# **A Geography of Agrotoxins Use in Brazil and its Relations to the European Union**

**Available for download on:**

**[http://www.livrosabertos.sibi.usp.br/portal  
delivrosUSP/catalog/book/352](http://www.livrosabertos.sibi.usp.br/portal-delivrosUSP/catalog/book/352)**

**larissab@usp.br**