SWAT Soil & Water Assessment Tool

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SWAT Soil & Water Assessment Tool

1. Availability of crop residues and soil fertility in communities Pontal Project, Petrolina-PE, in the dry season

2. Chemical characterization of agricultural waste found in communities Lajedo, Amargosa and Vira beju in Petrolina-PE, during the drought period.

OBJECTIVES (1):

This study aim to identify the main waste generating activities and soil fertility in communities in Pontal Project, in the dry season, between August and November 2013.

OBJECTIVES (2):

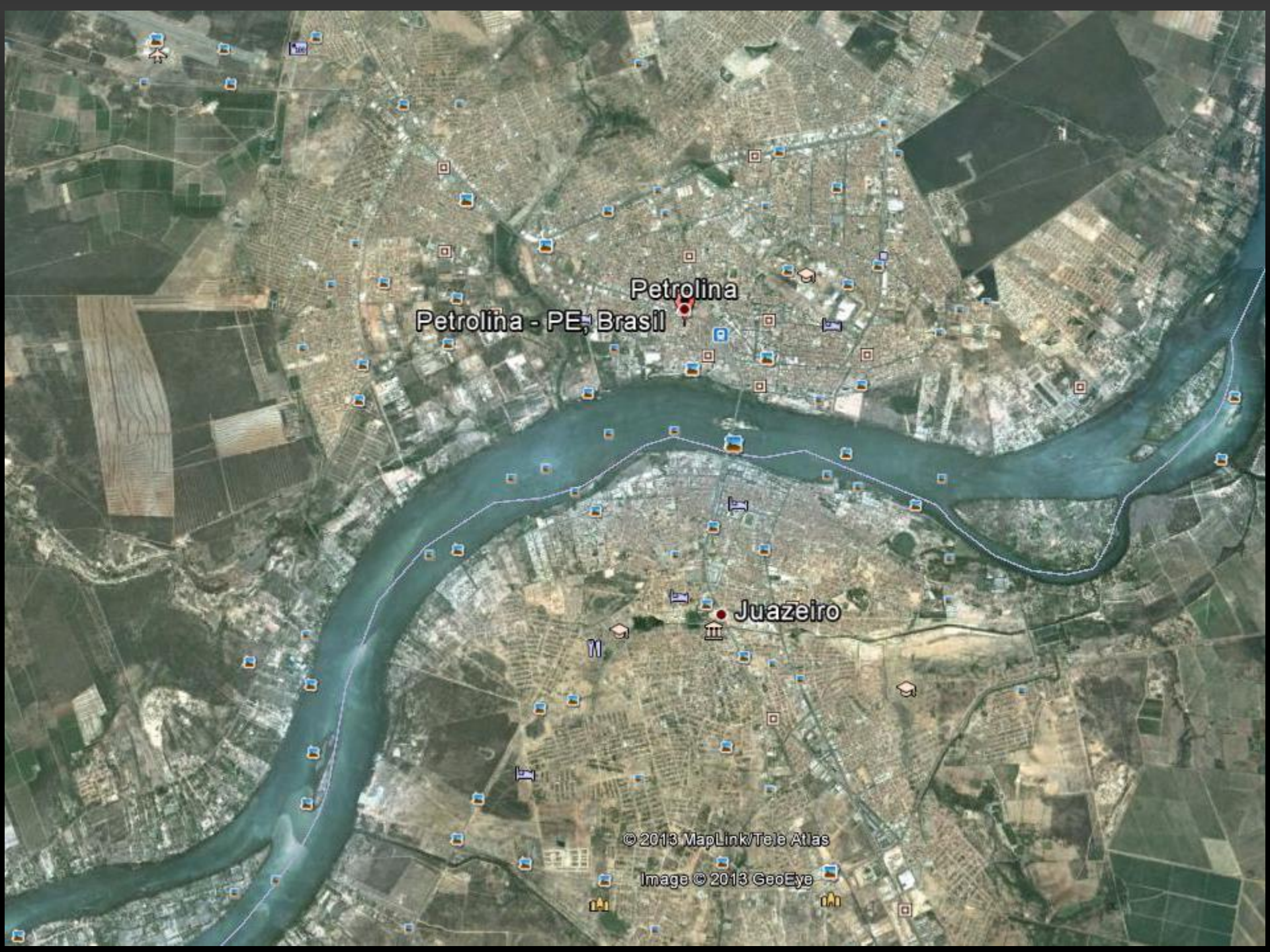
To characterize chemically the agricultural waste generated in three communities in Projeto Pontal in water deficit period, between August and November 2013.

Availability of crop residues and soil fertility in communities Pontal Project, Petrolina-PE, in the dry season

Availability of crop residues and soil fertility in communities Pontal Project, Petrolina-PE, in the dry season

Petrolina – PE
293,962 hab.

Pernambuco


Petrolina
Petrolina - PE, Brasil
Juazeiro
© 2013 MapLink/Tele Atlas
Image © 2013 GeoEye


Lagoa Grande
Projeto Pontal Sequeiro
(Rainfed Pontal Project)
© 2013 MapLink/Tele Atlas
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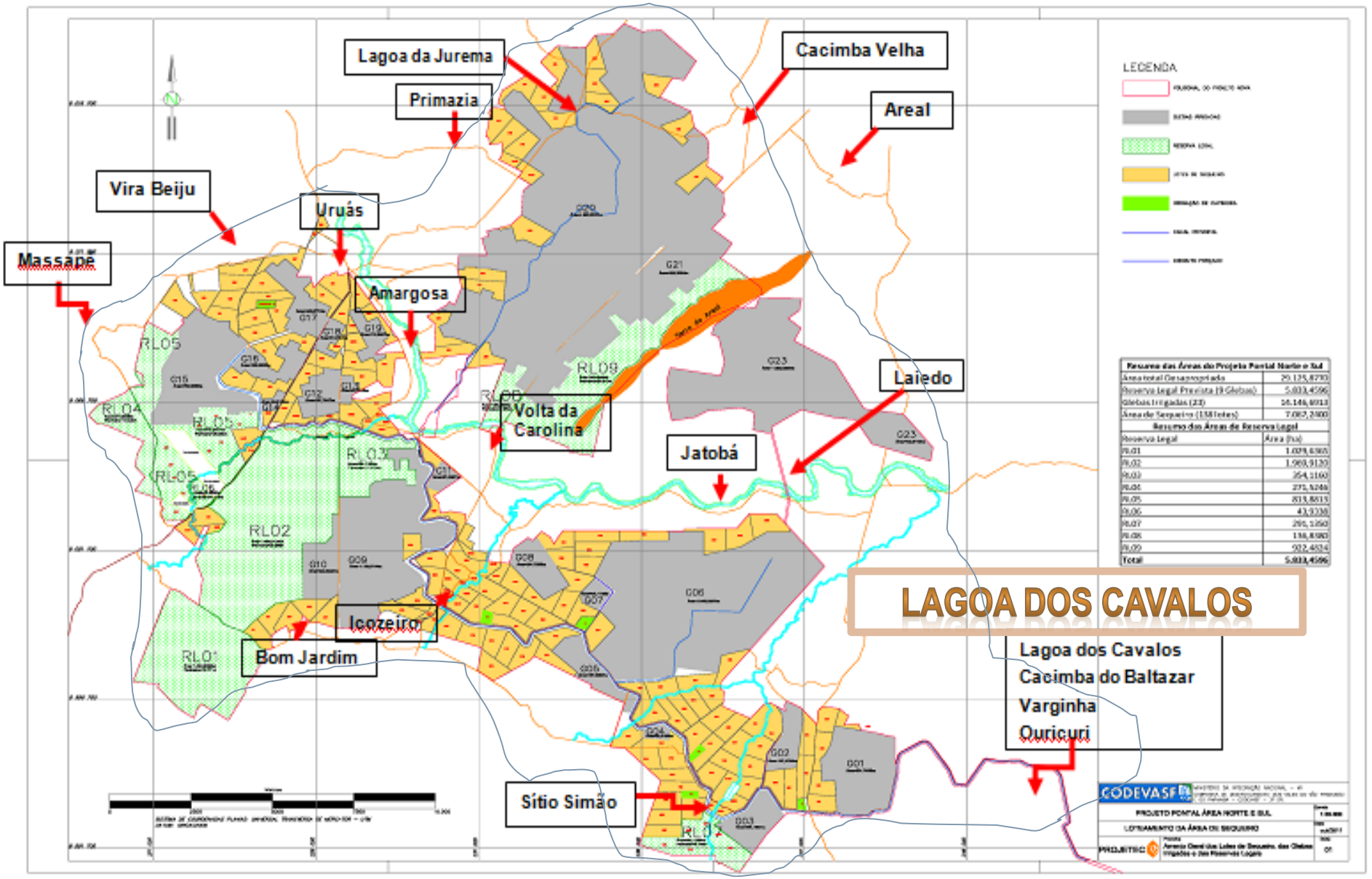
PETROLINA - PE

- Localization - Petrolina-PE 09°09'S, 40°22'W
- Precipitation (2013) – 347mm
- Anutal Average Temperature – 27.1°C
- Evaporation/year – 2,971mm

Projeto Pontal Sequeiro (Rainfed Pontal Project)

- Projeto Pontal total area: 33.526 hectares.
- Irrigated land area: 7.717,0 hectares
- Rainfed area: 19.231 hectares
- Projeto Pontal Rainfed area: 8.061 hectares;
- Legal reserve: 6.571,0 hectares;
- Green “lungs” – green little points
- Farmers Projeto Pontal: 176 seated (average 3,15 person/family)

MATERIAL AND METHODS


Lagoa da Jurema
Primazia
Cacimba Velha
Areal
Vira Beiju
Uruás
Massapê
Amargosa
Volta da Carolina
Laiedo
Jatobá
Icozeiro
Bom Jardim
Sítio Simão
LAGOA DOS CAVALOS
Lagoa dos Cavalos
Cacimba do Baltazar
Varginha
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LEGENDA
RL01
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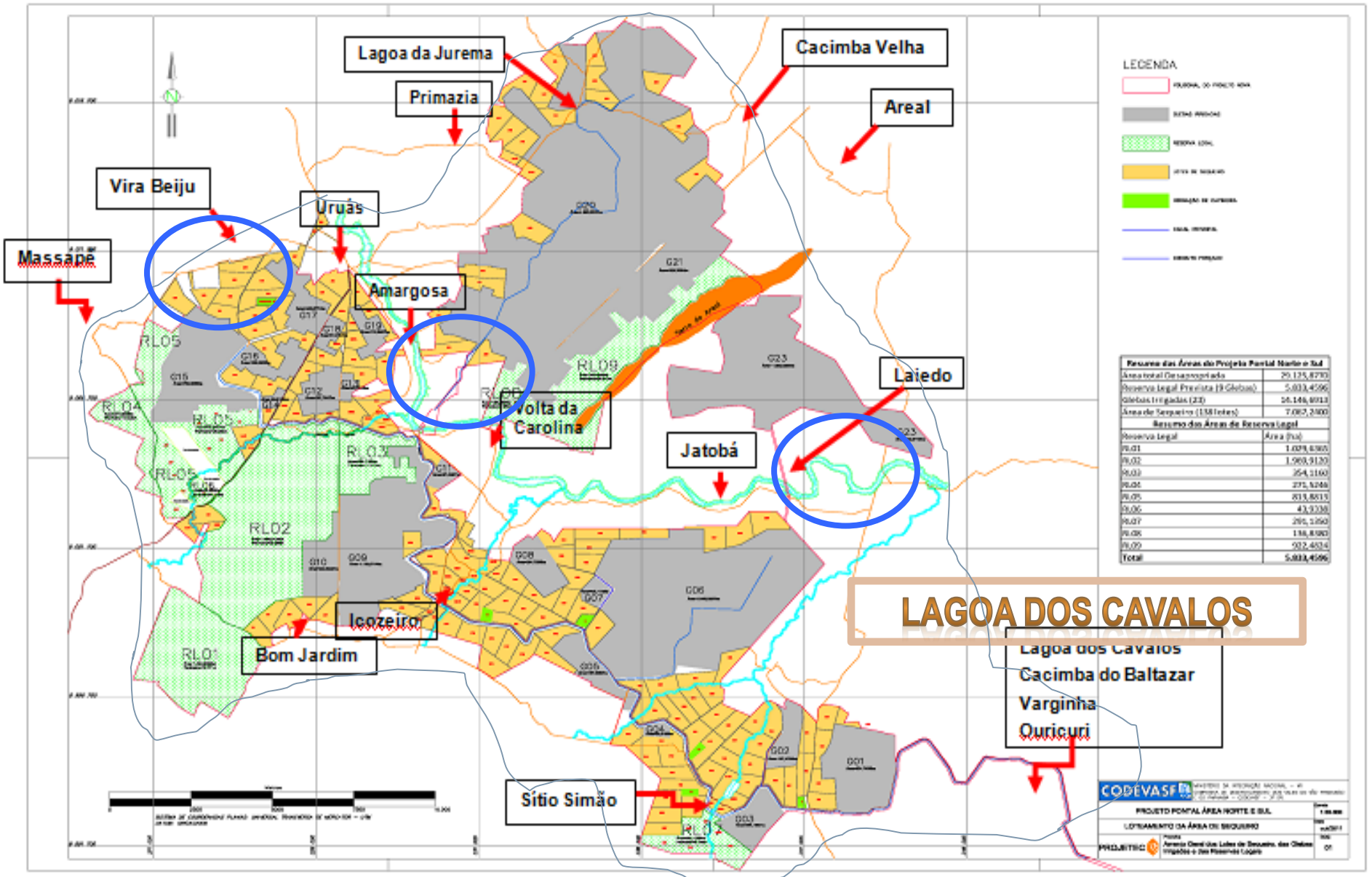
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RL07
RL08
RL09

- Communities: Vira Beiju, Amargosa and Lagedo;
- Engaged Actors:
  - Communities farmers,
  - Technical Assistance,
  - Trainees;
- Some criteria for choosing farmers:
  - tradition in cassava culture/crop,
  - responsiveness,
  - access,
  - engagement;

MATERIAL AND METHODS

- Semistructured interviews and collection of soil were held in the communities Vira Beiju, Lajedo and Amargosa;
- Soil analyzes were carried out at Embrapa Semiarid;
- Were colect soil and residues of nine comunities to see soil fertility.

MATERIAL AND METHODS

EXAMPLE OF QUESTIONARY:

FILL OUT THE FORM THE FULLEST POSSIBLE. USE BACK IF NECESSARY.
partners involved: CODEVASF, Embrapa, FACEPE, Banco do Nordeste, Pllena, UNIIVASF e Associações de Produtores.

RESIDUES GENERATED IN PROPERTIES PROJECT PONTAL

Date: ____ /_____ /_____ Form Nº _____ Interviewer: _____
Name of farmer: _____
Name of Comunnity:_____ Phone number: ( ) _____
Altitude:_____ Latitude:_____ Longitude:_____ GPS: _____

1. FARMER PROFILE

_ Ressetled in dry lot of the Project Pontal - Codevasf. Observations:
_ Ressetled in dry lot of the Project Pontal that also has unit of exploration outside the area of the Codevasf
_ Producer who owns unit of production outside the area of the Codevasf but that is also assisted by the Plena.
_ Active participant of the green lung

2. Potentially generator residues activities in the comunity:

Activity	Código	Descrição
Livestock	1	Manure (A), urine (B), others (C);
Flour mill	2	Waste water, (A), casssava chips (B), Cassava branch (C)
Crop	3	Beans (I), corn (J), cassava (K), Pumpkin (L)

3. Places of generation of residues:

Cultivation area Fold or stable Internal area residence
External area residence Processing area PV
Observations: _____

4. Residue detais _____ Actkivity: _____

Generating Resídue: Origem:
Time for residue generating (hour, days, month)
Actual Use Volume generating (kg, m3, ton, ha, etc.)

Collected Sample (fast description) Sample Nº
Transport Packing residue _____ Observations:
_____

ACTIVITIES IN PROGRESS

Photo 1. Vira Beiju interview – With ADRs, trainee, farmers and family.

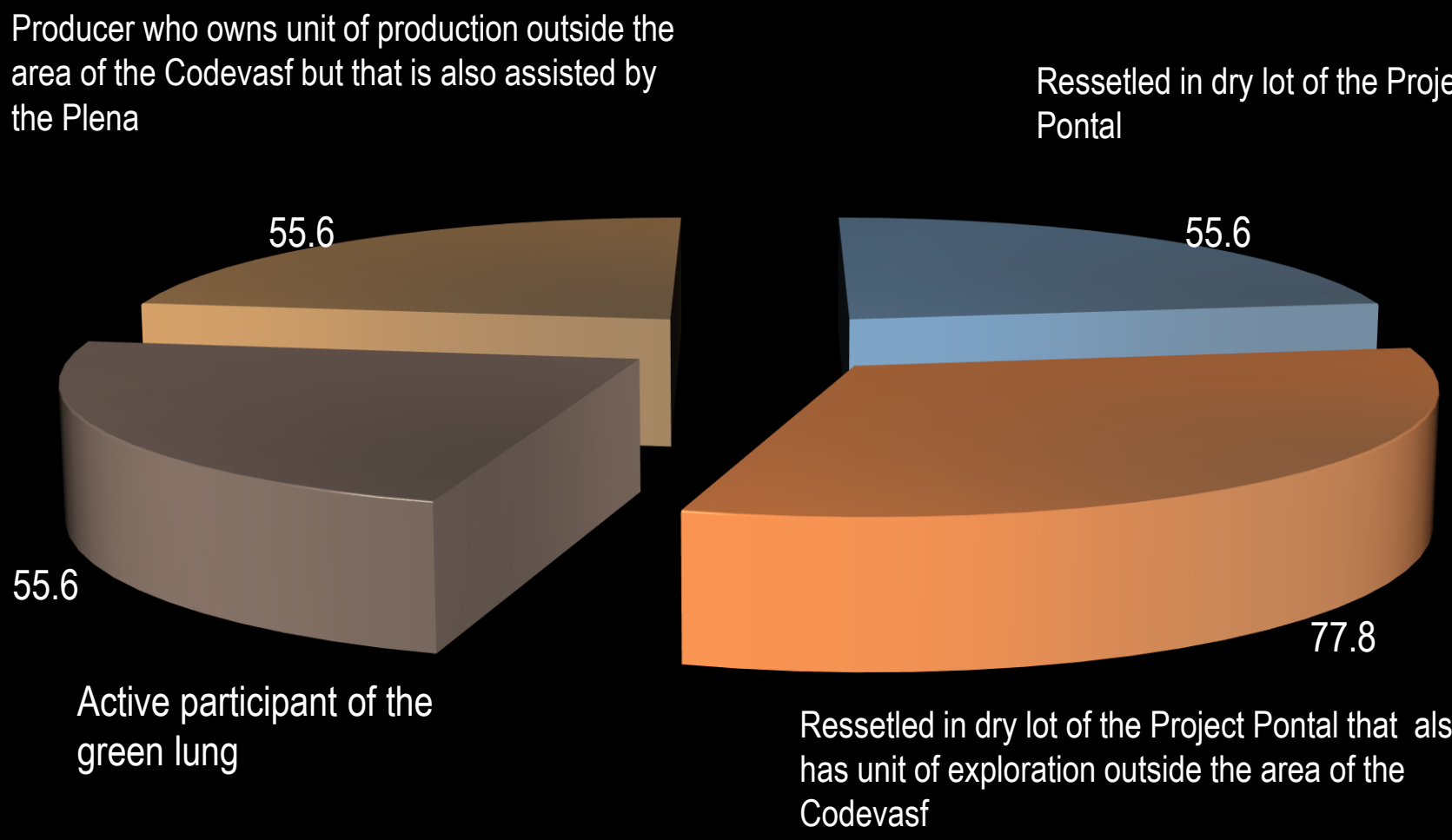
ACTIVITIES IN PROGRESS

Photo 2. Residues collect in Vira Beiju, with ADRs, Trainee and farmer

ACTIVITIES IN PROGRESS

Phosphorus (P- total) was determined by colorimetry with metavanadate. The determination of sulfur (S) was made by turbidimetry, wherein the turbidity, is measured spectrophotometrically. Sodium and potassium were made from the flame emission spectrometry. Nutrients: Ca, Mg, Cu, Fe, Mn and Zn were determined by atomic absorption spectrometry (AAS).

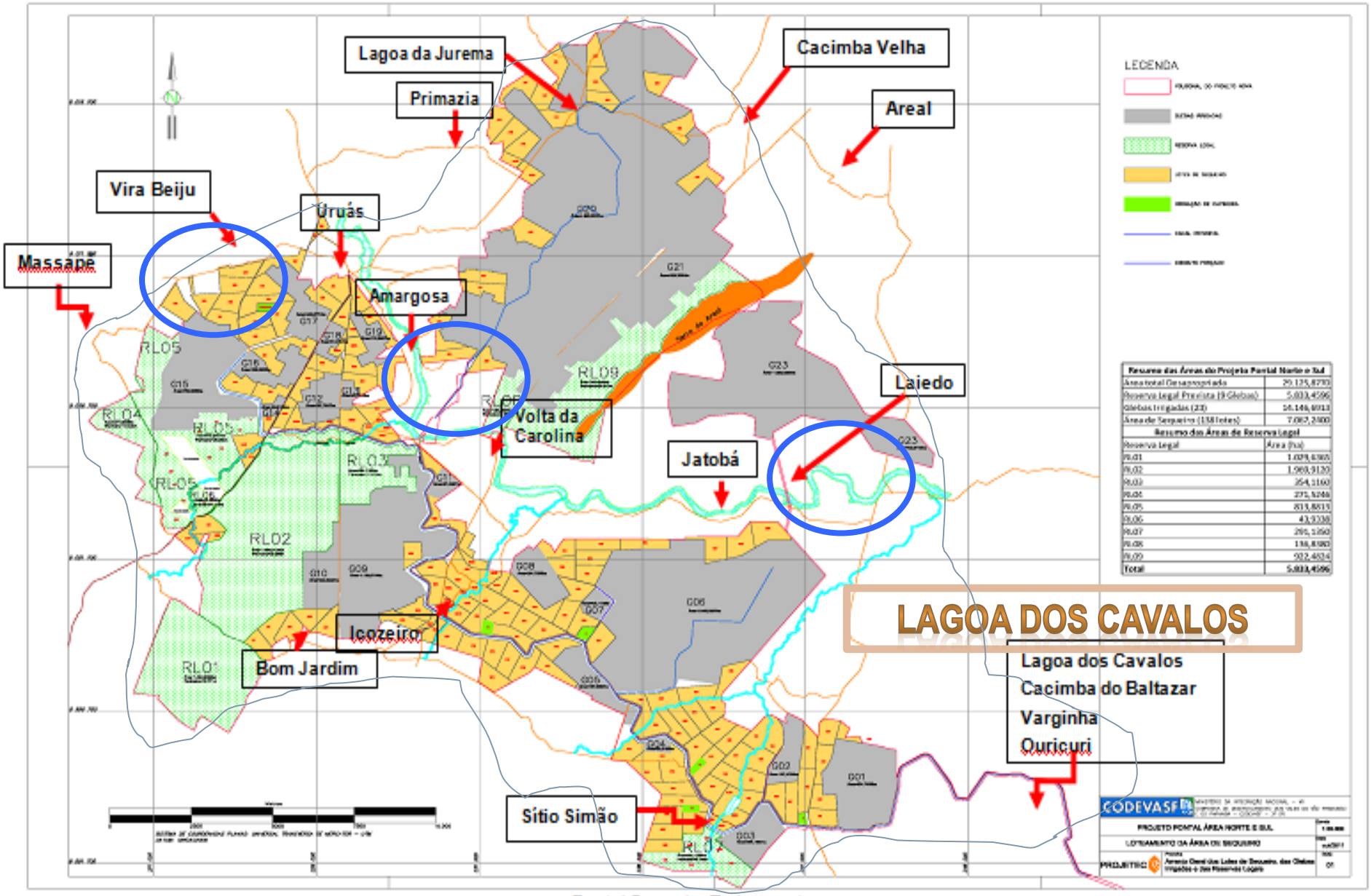
RESULTS



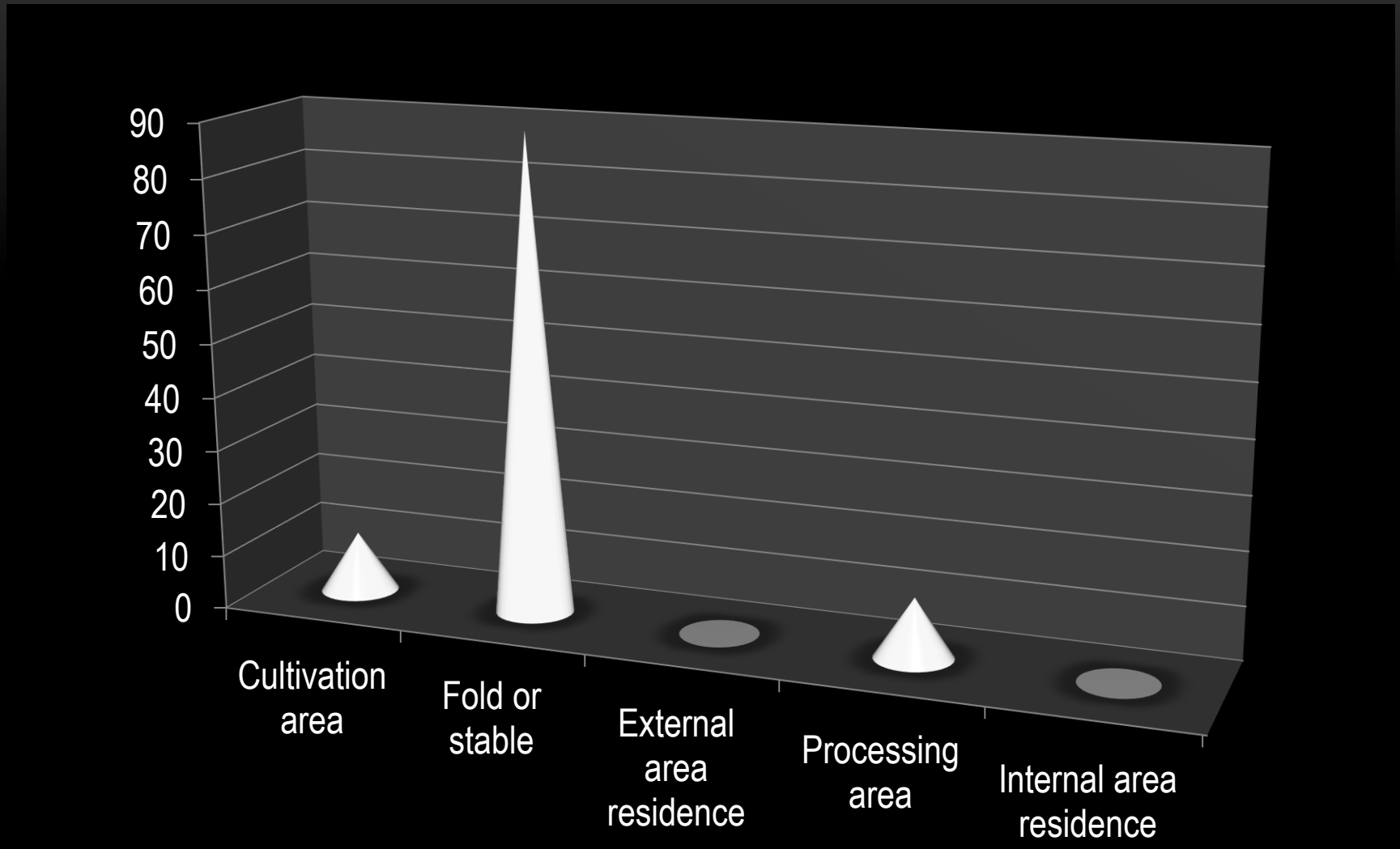
Graphic 1. Profile of the producer interviewed in the Project Pontal in the three communities Lagedo, Vira Beiju and Amargosa. Petrolina-PE, July, 2014.

CODEVASF

PROJETEC

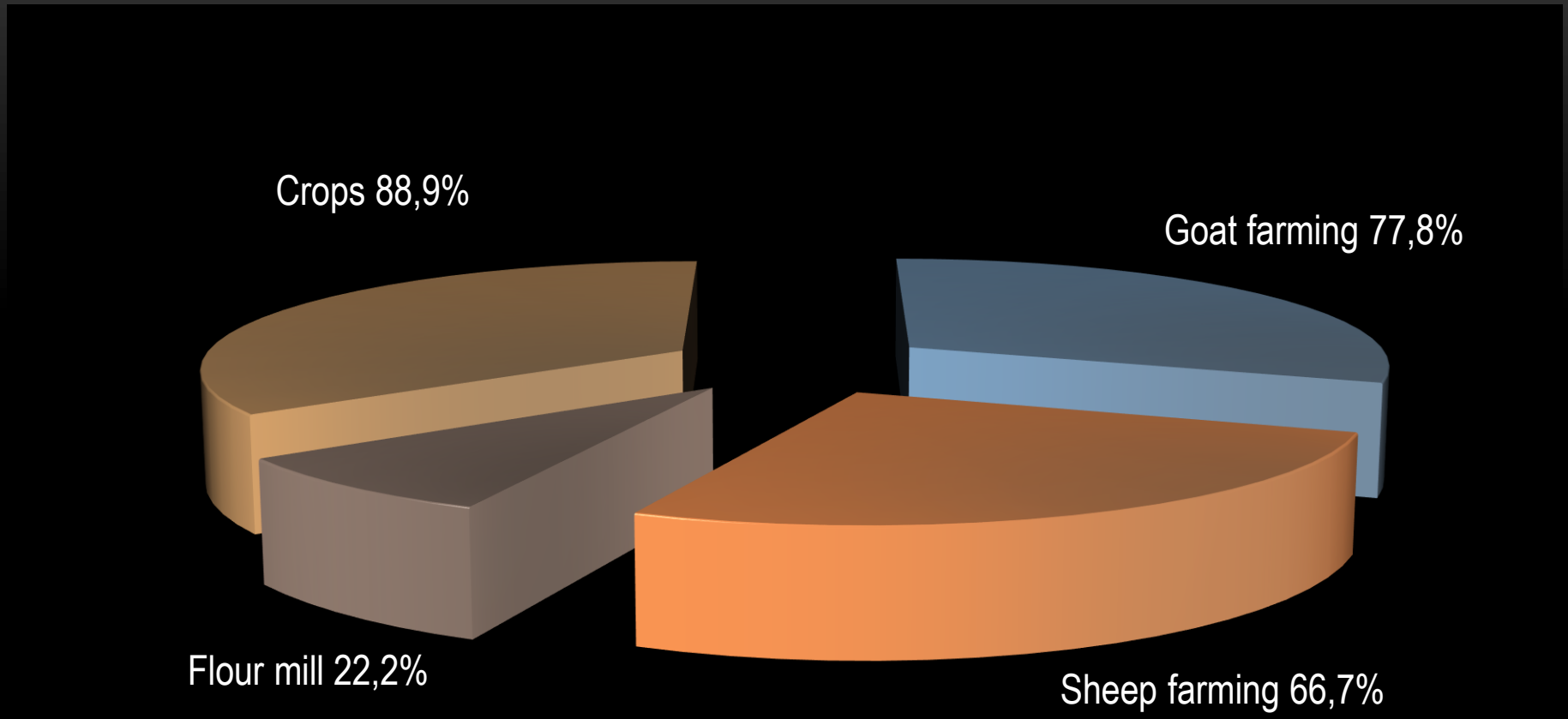


Availability of crop residues and soil fertility in communities Pontal Project, Petrolina-PE, in the dry season



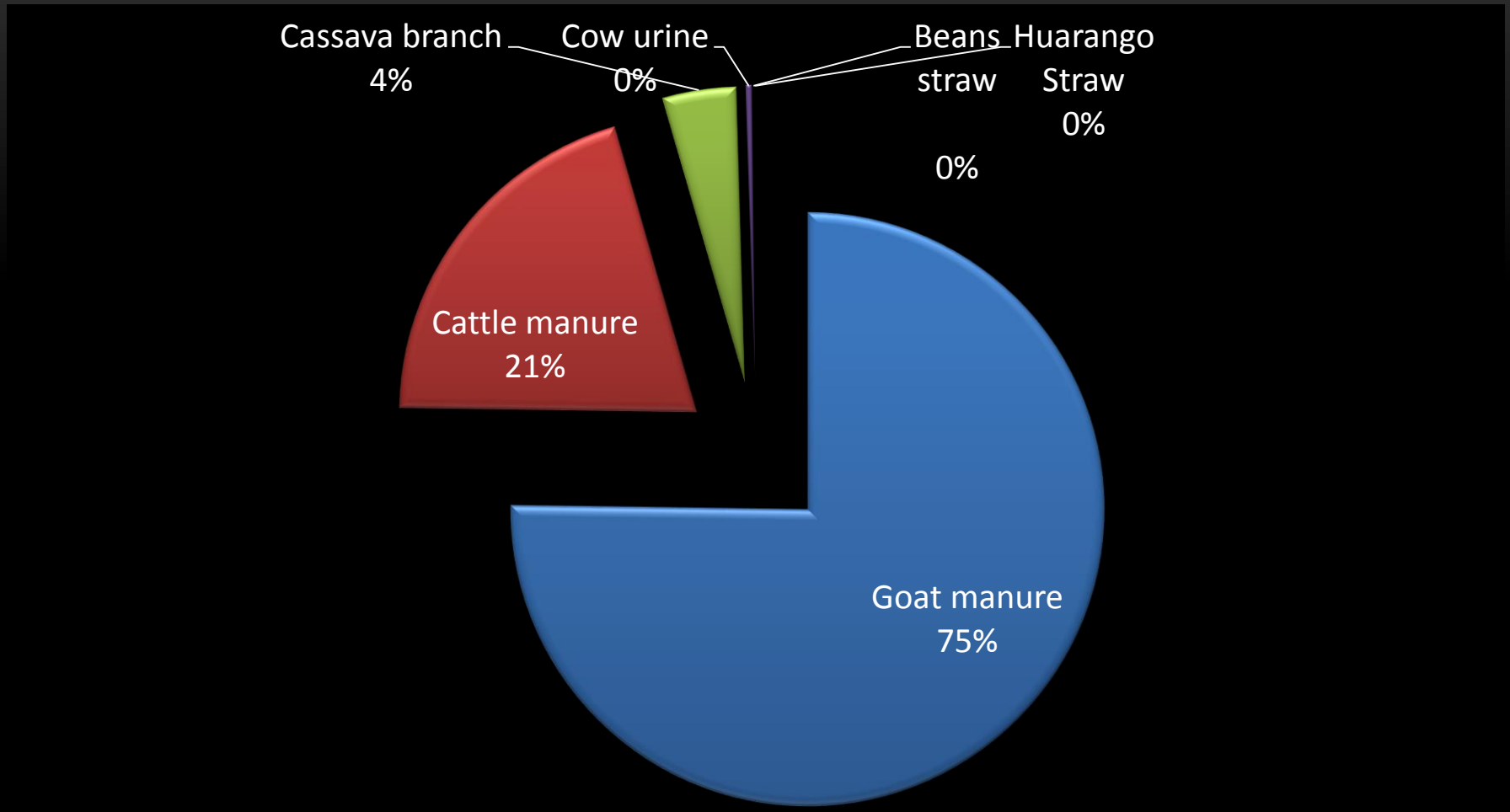
Graphic 2. Places of generation of residues in the dry period of the year. Average of the three communities. Petrolina- PE, July, 2014.

Availability of crop residues and soil fertility in communities Pontal Project, Petrolina-PE, in the dry season



Graphic 3. Potentially generator of residues activities in the three comunities studied from the Project Pontal. Petrolina-PE, July, 2014

Availability of crop residues and soil fertility in communities Pontal Project, Petrolina-PE, in the dry season



Graphic 4. Residues generated in the dry period by the several activities in the communities evaluated in the Project Pontal. Petrolina-PE, July, 2014.

CHART 1. Characteristics of the soil analyzed in the communities

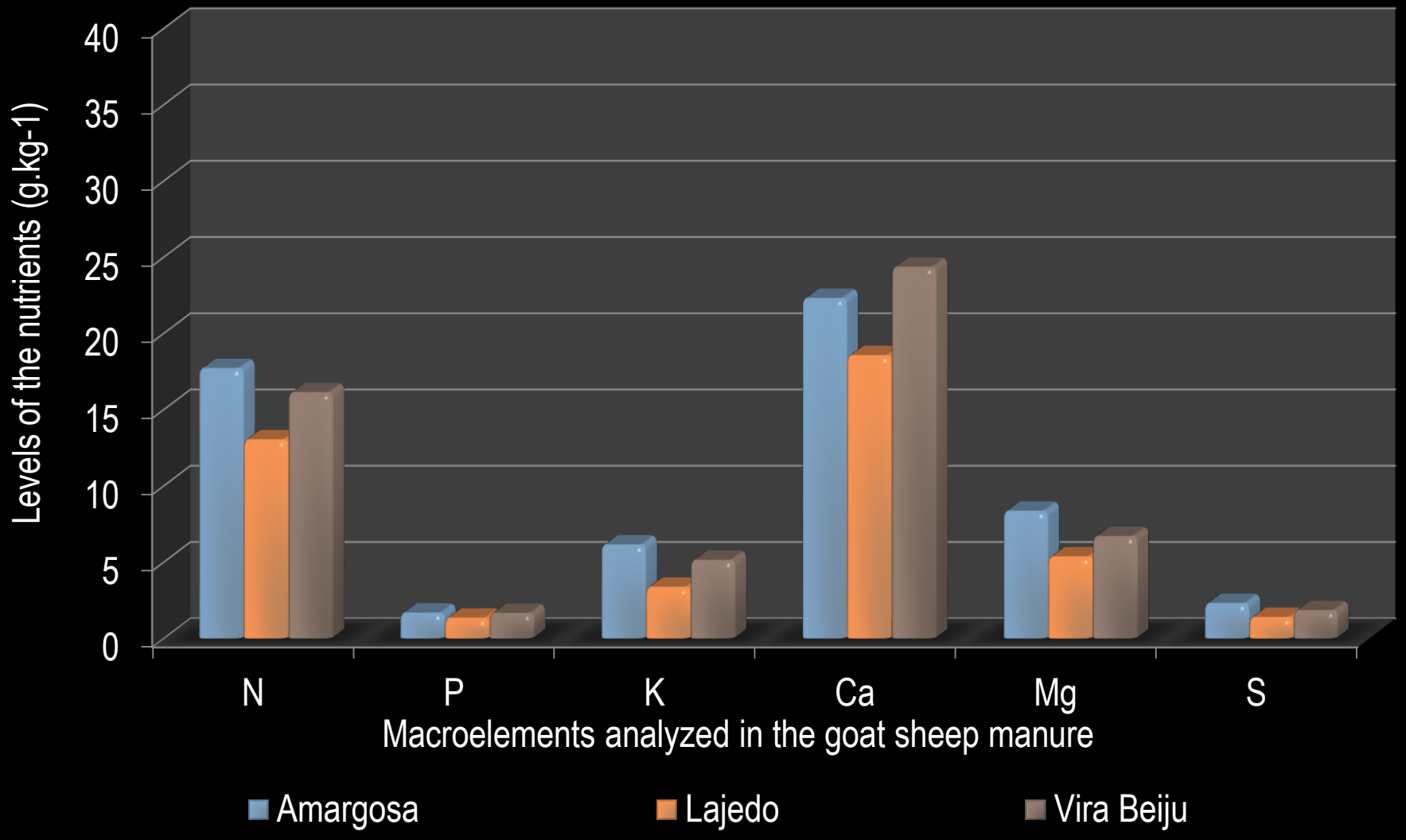
Comunnity	min / max	CE $mS.cm^{-1}$	pH --	MO $g.kg^{-1}$	P $mg.dm^{-3}$	K ----------	Na	Ca $cm_c.dm^{-3}$	Mg ----------	Al
Amargosa	min	0,31	5	1	4,59	0,22	0,03	1	0,5	0
Amargosa	max	0,94	7,4	5,5	42,23	0,41	0,3	2,8	1,3	0,1
Lajedo	min	0,16	6,1	0,5	3,65	0,2	0,03	2	0,8	0
Lajedo	max	0,47	6,3	2,6	14,57	0,47	0,07	3	1,1	0
Vira beiju	min	0,23	4,2	2,2	0,75	0,14	0,02	0,6	0,35	0
Vira beiju	max	2,09	5,4	5,5	6,28	0,23	0,03	1	0,5	0

Chart 1. Characteristics of the soil analyzed in the communities. Continuation.

Comunity	min max	CTC	V %	Cu ----------	Fe $mg.dm^{-3}$	Mn ----------	Zn ----------
Amargosa	min	4	50,9	1,05	48,9	10,5	1,95
Amargosa	max	5,4	100	2,42	143,6	167,7	6,95
Lajedo	min	4,5	65,5	2,02	115,8	34,8	1,82
Lajedo	max	4,9	77,6	2,7	156,9	68,5	6,79
Vira beiju	min	2,3	32,3	1,01	17,1	5,4	0,2
Vira beiju	max	4	51,9	1,99	65,1	32,5	1,41

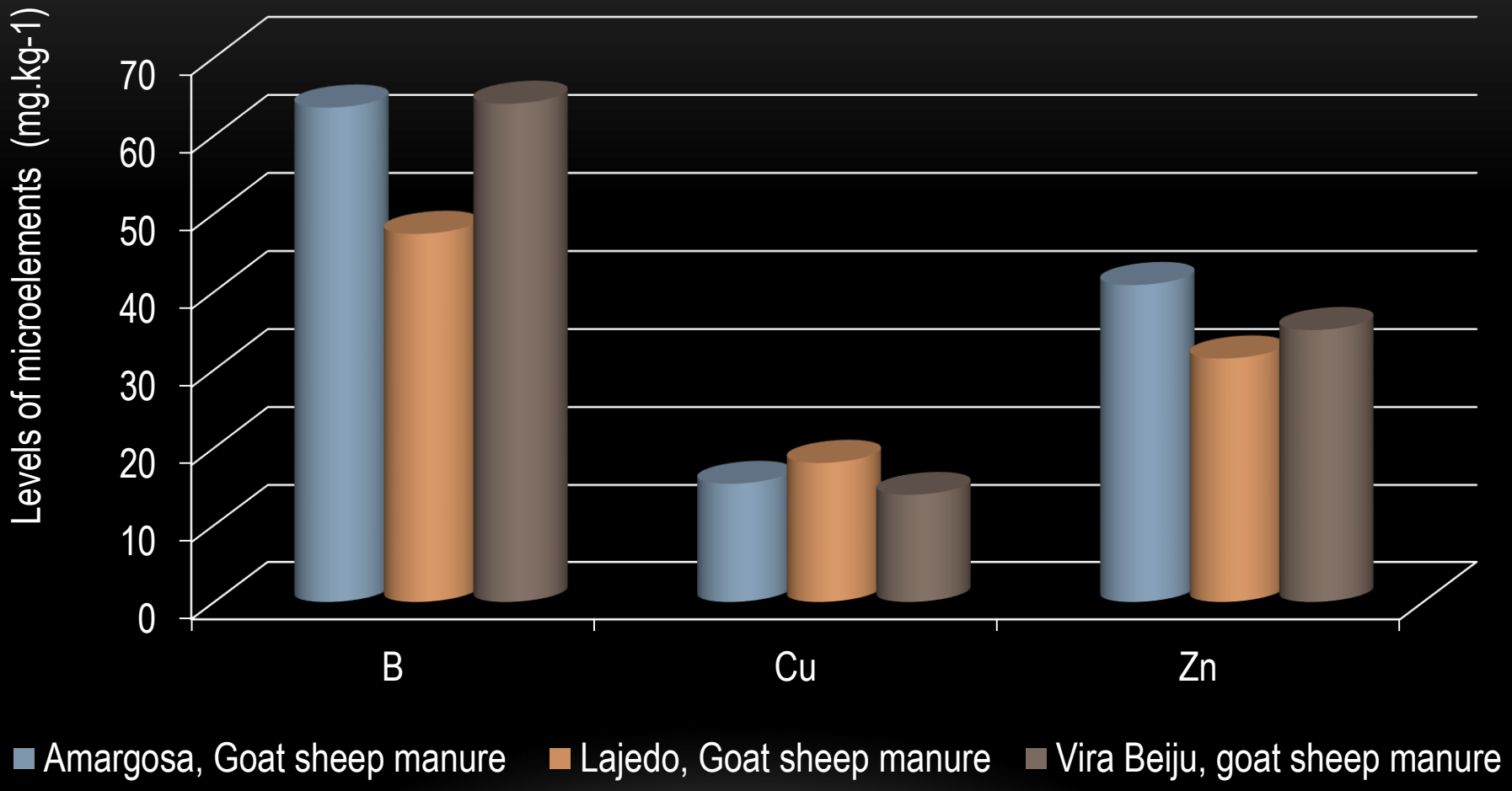
Vira Beiju Comunnity soil

Chemical characterization of agricultural waste found in communities Lajedo, Amargosa and Vira Beju in Petrolina-PE, during the drought period.



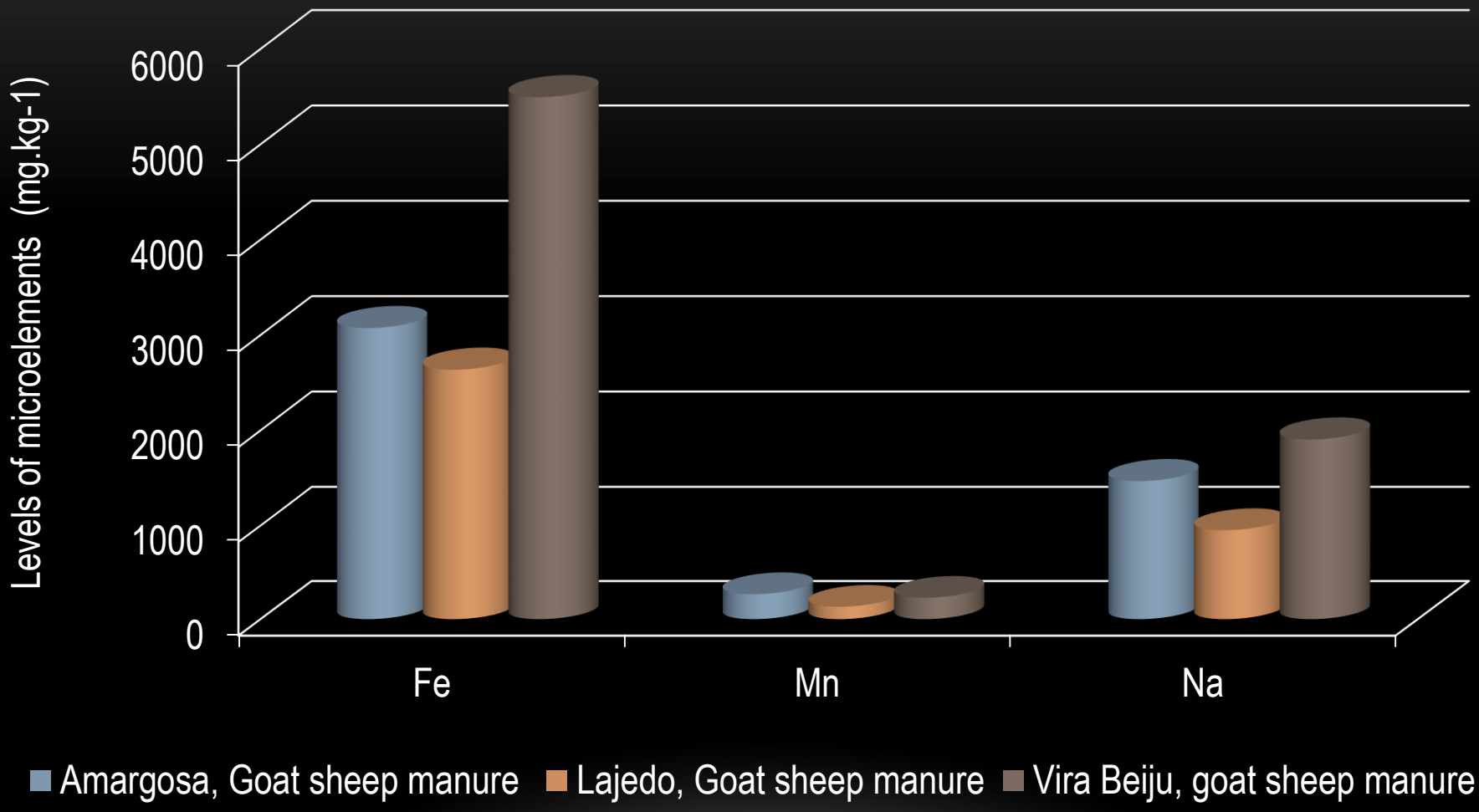
Graphic 5. Levels of the chemical elements in the goat sheep manure analyzed in the communities Amargosa, Lagedo and Vira Beiju. Petrolina-PE, July, 2014.

Chemical characterization of agricultural waste found in communities Lajedo, Amargosa and Vira Beju in Petrolina-PE, during the drought period.



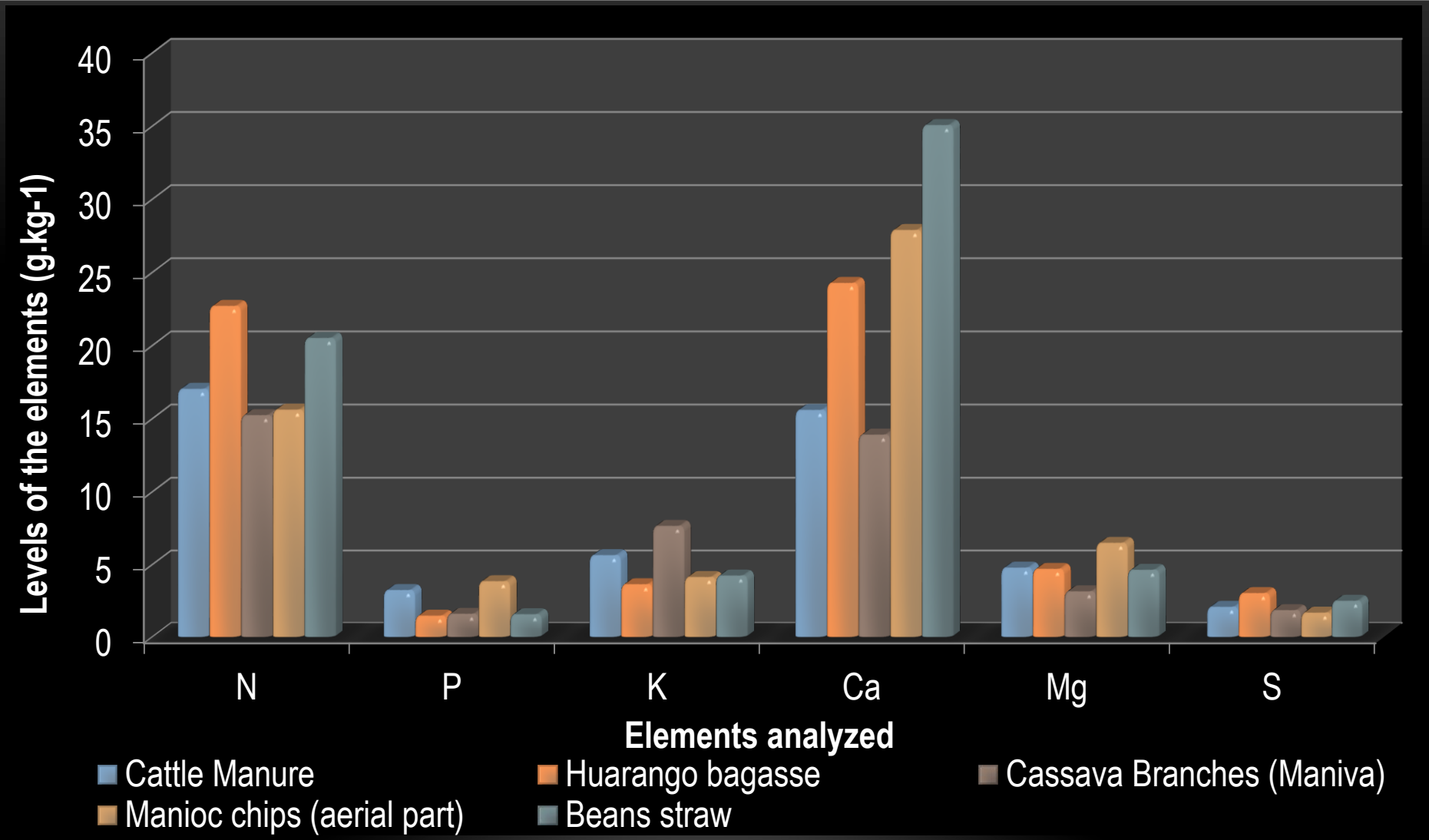
Graphic 7. Levels of microelements Boron, Copper and Zinc in goat sheep manure in the communities Amargosa, Lajedo and Vira Beiju. Petrolina-PE, July, 2014.

Chemical characterization of agricultural waste found in communities Lajedo, Amargosa and Vira beju in Petrolina-PE, during the drought period.



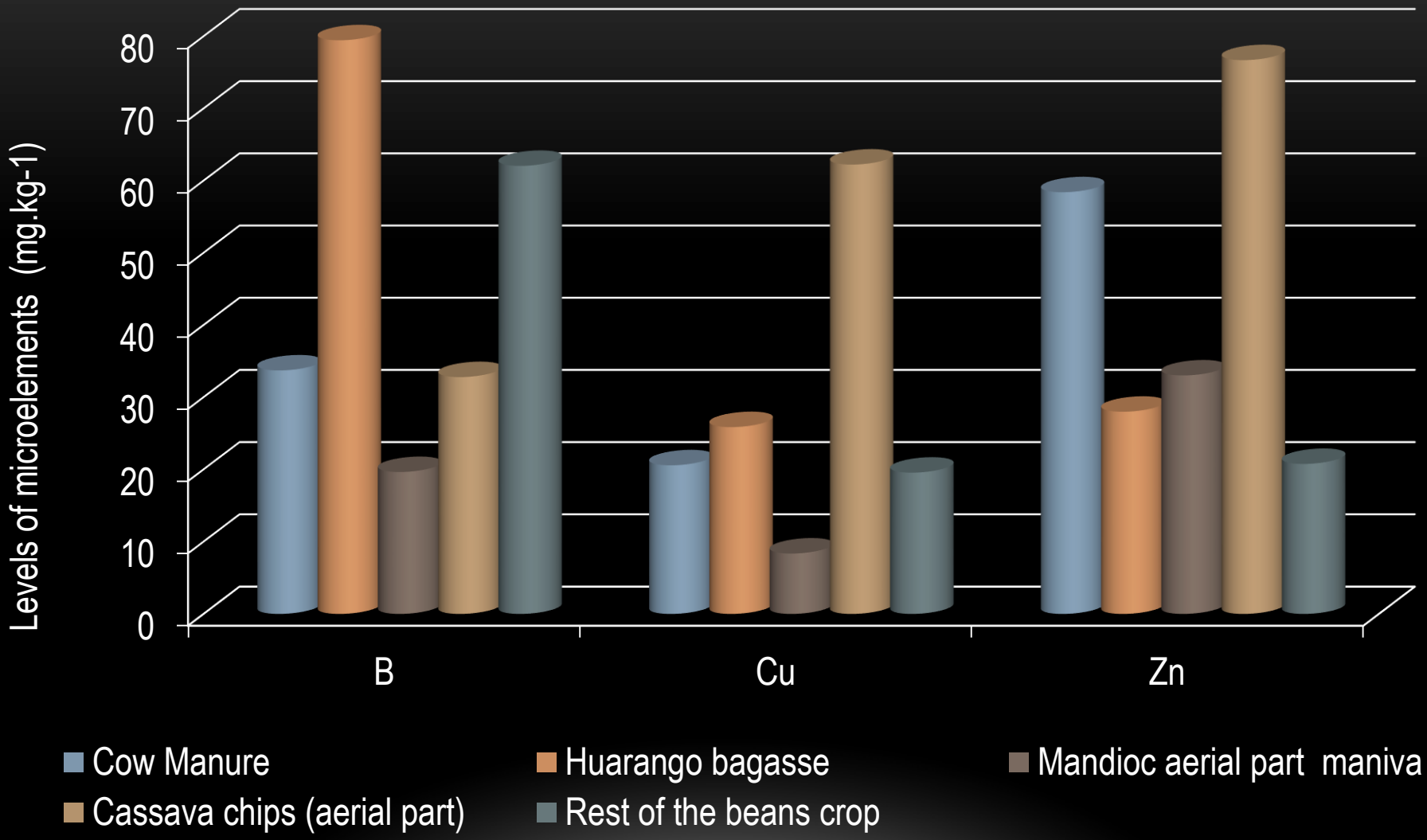
Graphic 8. Teores of microelements Iron, Manganese, and Sodium in the goat sheep manure in the communities Amargosa, Lajedo and Vira Beiju. Petrolina-PE, July,

Chemical characterization of agricultural waste found in communities Lajedo, Amargosa and Vira beju in Petrolina-PE, during the drought period.



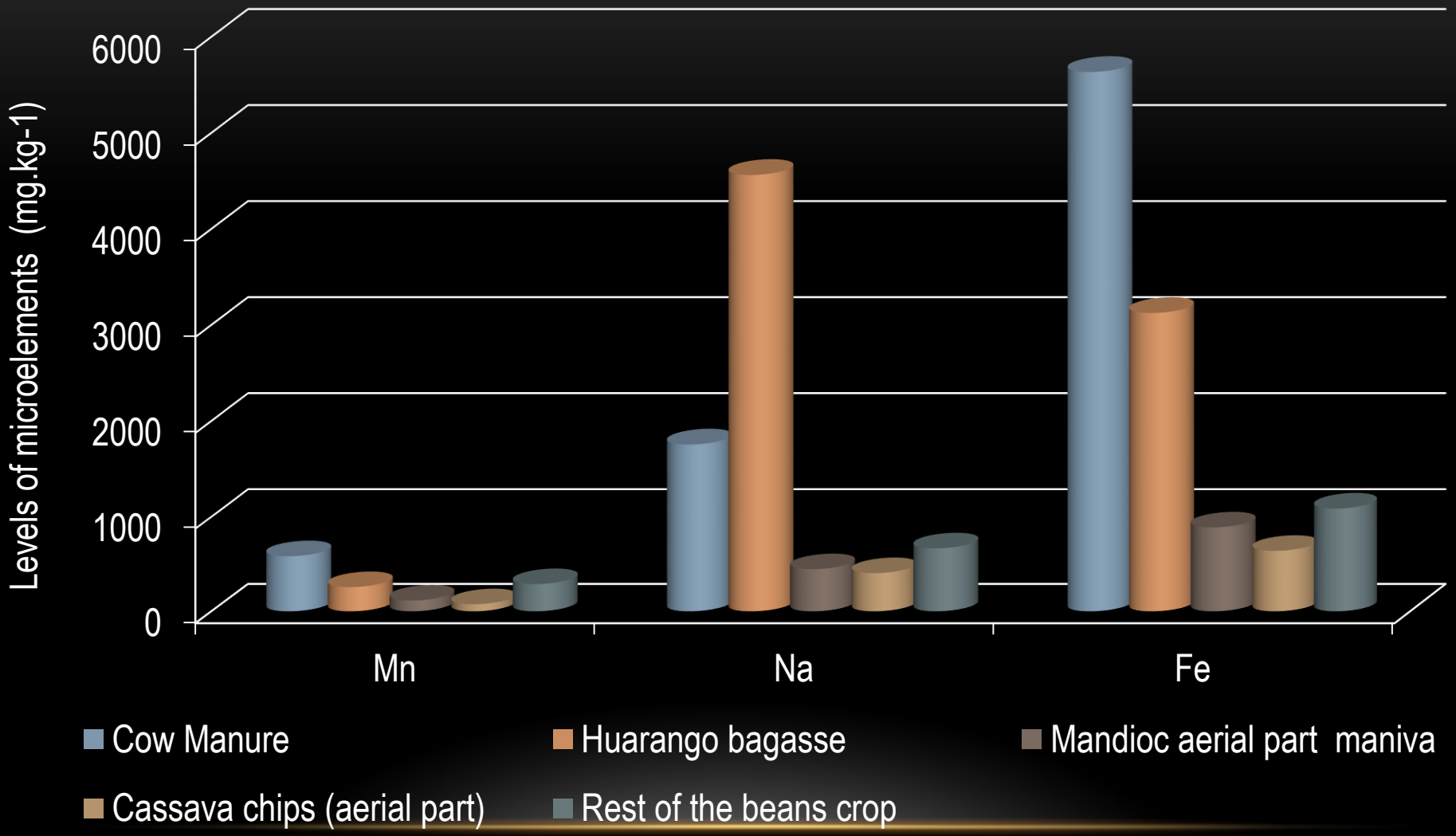
Graphic 6. Levels of the chemical elements in other residues found in the community Amargosa. Petrolina-PE, July, 2014.

Chemical characterization of agricultural waste found in communities Lajedo, Amargosa and Vira beju in Petrolina-PE, during the drought period.



Graphic 9. Levels of Boron, Copper and Zinc in other residues in Amargosa. Petrolina-PE, 2014.

Chemical characterization of agricultural waste found in communities Lajedo, Amargosa and Vira beju in Petrolina-PE, during the drought period.



Graphic 10. Levels of Manganese, Iron and Sodium in other residues in Amargosa. Petrolina-PE, July, 2014.

CONCLUSIONS

- More than 80% of the farmers consider the areas of cultivation as strong generators of residues, although the use of the rests of the crop for feeding animals are turned into goat sheep manure in the property;

- Beside the manure becomes a viable option for use of fertilization in the soil, all the manure is comercialized for the generation of income for the family;

- It is necessary to evaluate the generation of residues in the rainy period and possibly to suggest the storage of the same aiming to use the fertilization of the soil of these areas;

- It becomes unfeasible the continuous use of the aerial part of the mandioc or other vegetables collected in the dry period because the same are in smaller volumes and are used by the local agricultors for feeding the animals;

- Calcium and Nitrogenium are the chemical elements found in bigger quantities in the manure of the three communities;

- Representative Levels of Iron and Boron in the goat sheep manure caprinovino were found, as well as in the other residues found.

I would like to thank this parteners for allowing this work to be done.

SWAT Soil & Water Assessment Tool

Thank you!

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