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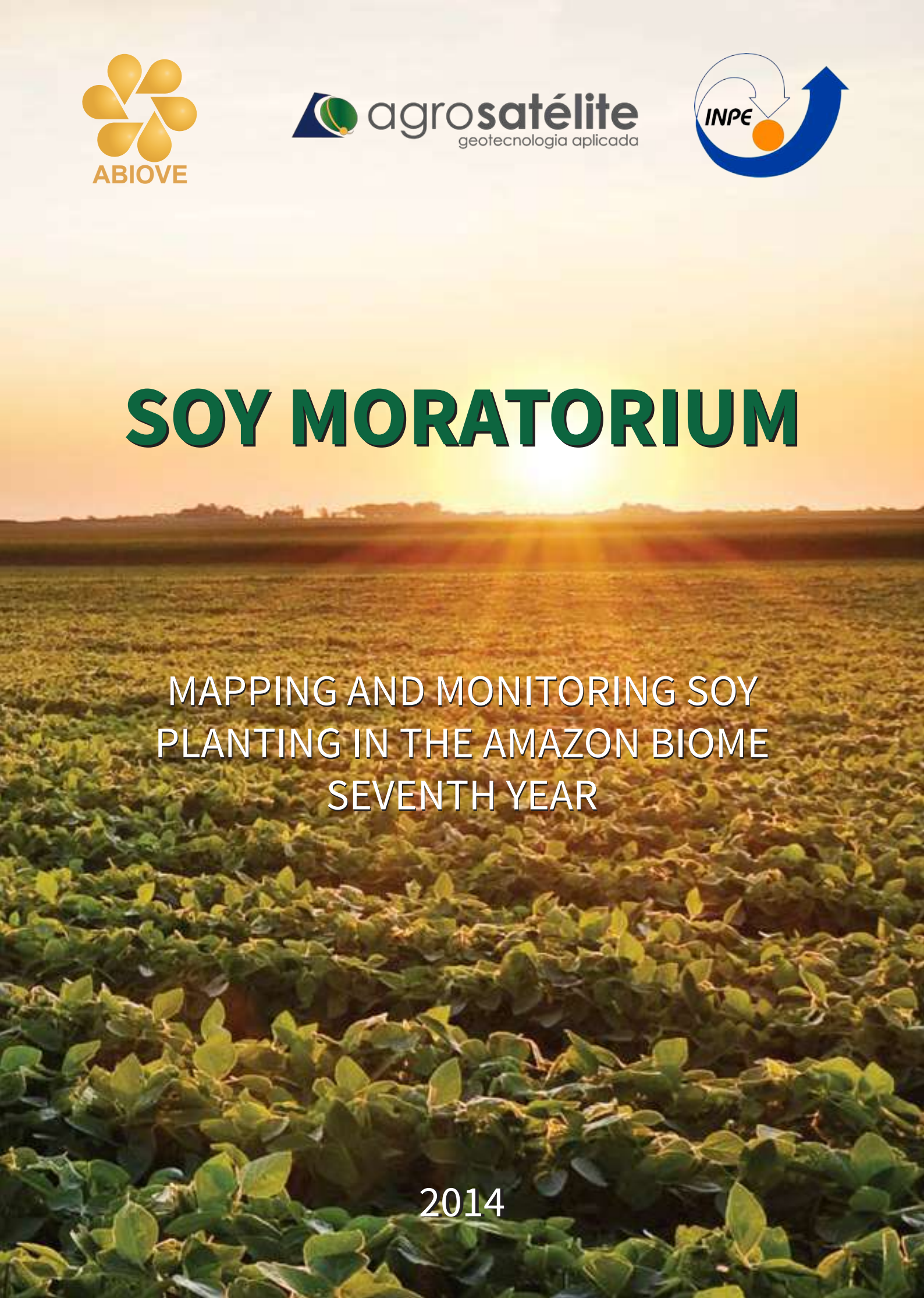
INPE

SOY MORATORIUM

MAPPING AND MONITORING SOY PLANTING IN THE AMAZON BIOME SEVENTH YEAR



2014

EXECUTIVE SUMMARY

The Soy Moratorium is a pact whose objective is to inhibit the planting of soybeans in the Amazon Biome in areas that have been deforested over the last seven years. In this pact, the member industries and exporters of ABIOVE (Brazilian Vegetable Oil Industries Association) and ANEC (National Grain Exporters Association) made a commitment not to acquire soybeans from areas deforested after July 24, 2006. Originally signed for a two-year period, the Soy Moratorium has been renewed annually because of its proven efficacy. The last renewal was on January 31, 2014, expiring on December 31, 2014, when it should be replaced with a new sustainability agenda that will continue with the pact's original objectives (ABIOVE, 2014). This decision was taken by the GTS (Soy Task Force), formed by ABIOVE's and ANEC's member companies, by the Ministry of the Environment, by the Banco do Brasil and by the following civil society organizations: International Conservation, Greenpeace, IPAM (Institute of Environmental Research in the Amazon), IMAFLORA (Institute of Forestry & Agricultural Management & Certification), TNC and WWF-Brasil.

Soy plantings that contravene the Soy Moratorium are detected through satellite images obtained from sensors with complementary spatial and temporal resolutions, ensuring the correct identification and mapping of the 2013/14 soy crop in deforested areas, based on data from PRODES/INPE between August 2006 and July 2013 (PRODES 2007 to 2013). To evaluate the current participation of soy crops on private rural properties in the deforestation process of the Amazon Biome, the databases of the following entities were also used: FUNAI (National Native Indians Foundation), the Ministry of the Environment, IBGE (Brazilian Geographic & Statistical Institute), INCRA (National Colonization & Agraria Reform Institute) and INPE (National Institute for Space Research).

In this seventh year of the Soy Moratorium, corresponding to the 2013/14 crop season, 47,028 hectares (181.6 sq. miles) of soybeans were identified in the deforested areas of the Amazon Biome that have been mapped by PRODES/INPE since the beginning of the Moratorium.

In this same period, 5.21 million hectares (20,116 sq. miles) throughout the Amazon Biome were deforested, of which 4.23 million hectares (16,332 sq. miles) – or 81.2% – are in the three monitored states (Mato Grosso, Rondônia and Pará). In these states, where nearly all the soy production in this Biome is concentrated, 73 monitored municipalities are responsible for 98% of the soy plantings in the Amazon Biome. Deforestation in these municipalities was 1.02 million hectares (3,938 sq. miles), or 19.6% of the total Amazon Biome deforested during the Soy Moratorium.

Soy production in deforested areas of the Amazon Biome, over the seven years of the Soy Moratorium, represents 1.11% of the deforestation in the three monitored soy-producing states (Mato Grosso where it lies within the Amazon Biome, Pará and Rondônia) and occupies 4.6% of the deforestation in the 73 monitored municipalities in the 2013/14 crop year.

In that crop year, Brazil planted soybeans on 30.1 million hectares (116,217 sq. miles) (CONAB, 2014[1]), of which 3.0 million hectares (11,583 sq. miles) were grown in the Amazon Biome (10%[2]). According to the monitored data, the 47,028 hectares (181.6 sq. miles) of soybeans in contravention with the Soy Moratorium represents 1.6% of the soy acreage in the Amazon Biome.

This report describes the methodology used and presents the results reached in the Soy Moratorium's seventh monitoring cycle of the Amazon Biome. The attachment provides detailed information on the deforested polygons with soy plantings in the 2013/14 crop year.

I - INTRODUCTION

The Soy Moratorium was declared on July 24, 2006 by the industries and exporters of ABIOVE (Brazilian Vegetable Oil Industries Association) and ANEC (National Grain Exporters Association), for the purpose of inhibiting the advance of soy acreage into the Amazon Biome's tropical forest. The Moratorium was renewed for the seventh time on January 31, 2014, with the continuing commitment of these companies not to acquire soybeans from areas in the Amazon Biome deforested after July 24, 2006, based on the deforestation mapping done by PRODES (Program to Calculate Deforestation in the Brazilian Amazon[3]).

In the first two years, soy monitoring was accomplished by sampling. In the first year (2007/08), no soy production was found in areas deforested after the Soy Moratorium was signed and, in the second year (2008/09), 1,384 hectares (5.3 sq. miles) were found to be planted with soybeans. This methodology was changed in the third year. All the polygons mapped by PRODES in the main soy-producing municipalities of the Amazon Biome were monitored. The third to the sixth monitoring cycles had the following results for soy acreage in deforested areas mapped by PRODES from the date of the Soy Moratorium: 6,295 hectares (24.3 sq. miles) in 2009/10; 11,698 hectares (45.2 sq. miles) in 2010/11; 18,410 hectares (71.1 sq. miles) in 2011/12; and 29,295 (113.1 sq. miles) in 2012/13. In these cycles, all the deforested polygons were monitored, in the first instance, by satellite images at the start of the growth cycle to select the polygons with a probable soy presence. These polygons were then subjected to flyovers and photographed, and finally a soy presence was confirmed in loco, before harvesting, identifying the producer through individual visits to the farms or the regional registry offices to obtain the rural property's registration.

Based on the experience accumulated through the soy monitoring program over the previous years, the combined use of images by sensors with different temporal and spatial resolutions, taken throughout the entire growth cycle, makes it possible to identify and map soy acreage with a high degree of certainty. This improved methodology allowed the GTS to eliminate flyovers in this seventh soy monitoring cycle.

To develop the monitoring work in the context of the Soy Moratorium, the databases of the following institutions were used: FUNAI (National Native Indians Foundation), IBAMA (Brazilian Environmental & Renewable Natural Resources Institute), IBGE (Brazilian Geographic & Statistical Institute), INCRA (National Colonization & Agrarian Reform Institute) and INPE (National Institute for Space Research).

II - SCOPE OF WORK

The scope of this study is to identify the occurrence of soy plantings in the 2013/14 crop year in areas of the Amazon Biome deforested after July 24, 2006, in accordance with the criteria established and adopted by the GTS (Soy Task Force).

The specific objective is to use satellite images to identify and map soy crops in the 2013/14 crop year planted in the deforested polygons mapped by PRODES between 2007 and 2013, on private rural properties outside the settlements in the Amazon Biome.

III – METHODOLOGY

For the first stage of this study, the soy-producing municipalities in the Amazon Biome were selected. Next, all the deforested polygons mapped by PRODES (2007-2013) within the Amazon Biome were selected. Finally, the soy crops within these deforested areas were identified and mapped through remote sensing satellite images. The detailed methodology is described below.

1-CONAB. Following the 2013/14 Brazilian Grain crop year. N 11, 2014.
2-Estimated soy acreage in the Amazon Biome (Agrosatélite, 2014).
3-Available on the website www.obt.inpe.br/prodes/ (Shimabukuro et al., 1998).

3.1. Definition of the study area

Selection of the deforested polygons for monitoring via satellite images is based on the following criteria:

1. Wholly or partially located in the Amazon Biome (Source: IBGE);
2. Located in the states of Mato Grosso (within the Amazon Biome), Pará and Rondônia, which are the main soy-producing states in the Amazon Biome (Source: IBGE);
3. Located in municipalities with a soy acreage of over 5,000 hectares (19.3 sq. miles) (Source: IBGE);
4. Aggregated deforested polygons (see Item 3.3) with an area over 25 hectares (62 acres), identified by PRODES in the years 2007 to 2013.

Figure 1 shows the Conservation Units, Indigenous Lands, Settlements and the 73 municipalities selected in accordance with the above criteria, defining the study area and the selection of deforested polygons during the period of the Soy Moratorium.

56 municipalities – Mato Grosso
10 municipalities – Pará
7 municipalities – Rondônia

Amazon Biome Boundaries
State Boundaries
Monitored area – Selected Municipalities
Boundaries of Selected Municipalities
Settlements
Indigenous Lands
Conservation Units

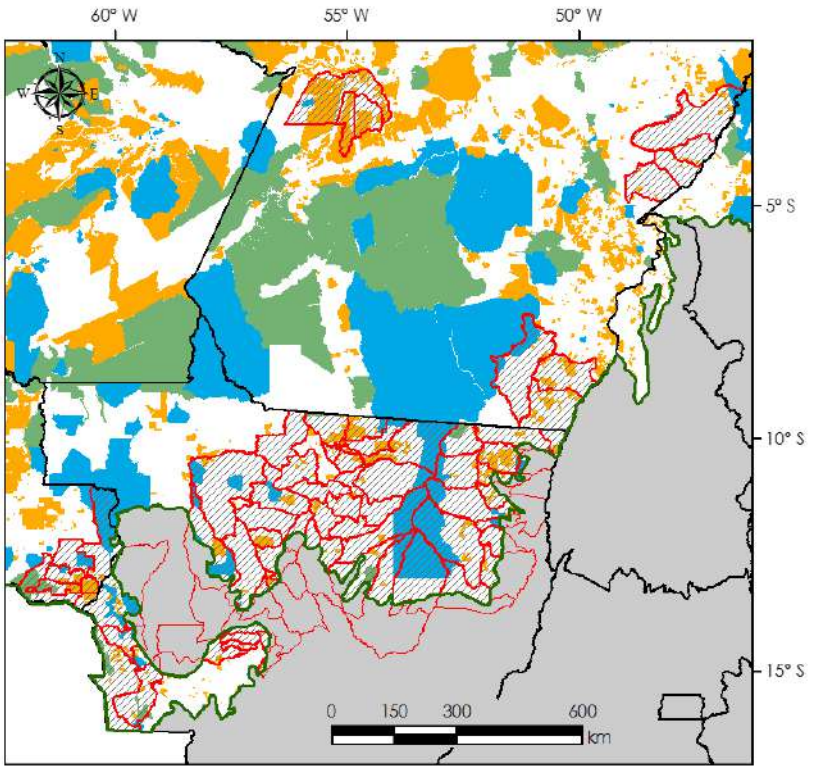


Figure 1 – Showing the Conservation Units, Indigenous Lands, Settlements and the 73 selected municipalities, in accordance with the criteria listed above.

3.2. Deforested polygons of the PRODES program

Since 1988, PRODES, a program developed and implemented by INPE, has mapped and calculated annual deforestation rates for all of Legal Amazon. The deforestation maps are included in a georreferenced database that is available on the Internet (http://www.obt.inpe.br/prodes/). Figure 2 shows the Legal Amazon deforestation rates calculated by PRODES, highlighting the years before and after the Soy Moratorium.

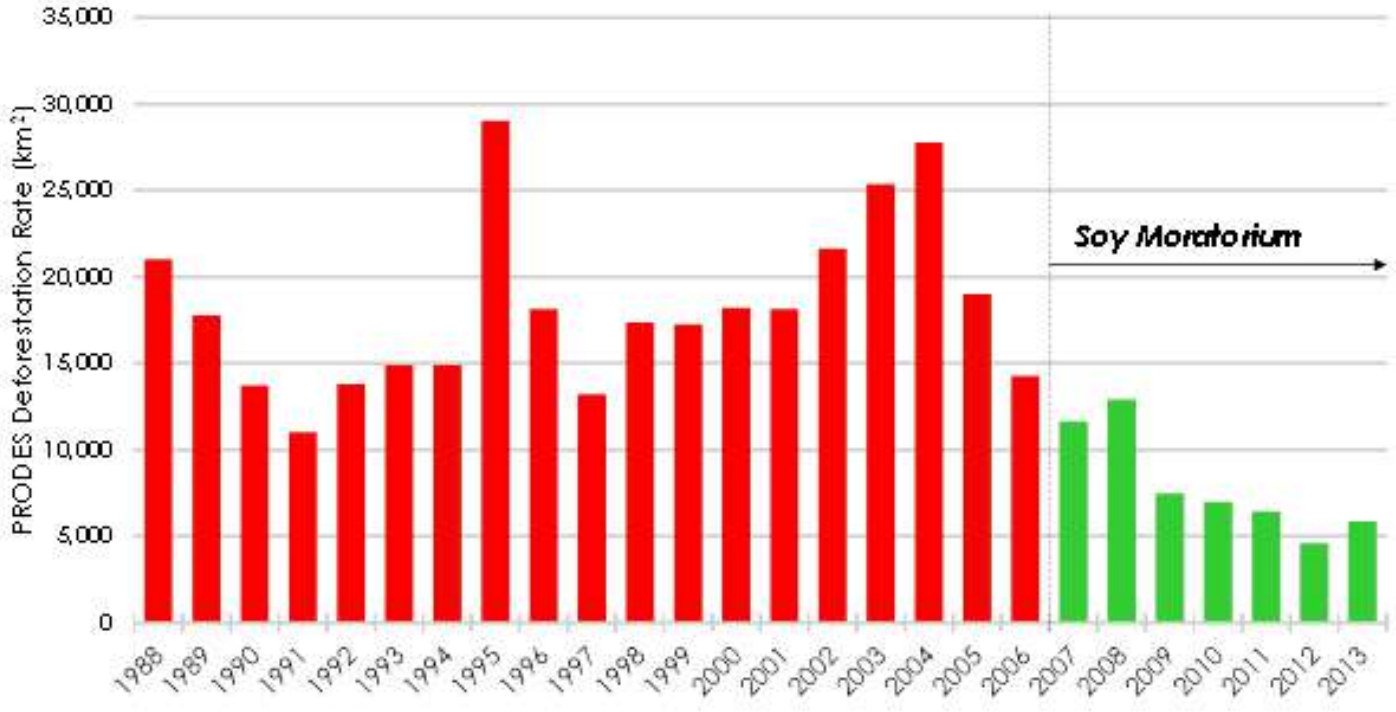


Figure 2 – PRODES deforestation rates for the entire Legal Amazon, highlighting the years before and after the Soy Moratorium (Source: Adapted from INPE, 2014).

Table 1 shows the data provided by PRODES for the states of Mato Grosso, Rondônia and Pará, related to the deforested polygons in the Amazon Biome since the beginning of the Soy Moratorium.

Table 1. Total annual deforested area (in hectares) in the Amazon Biome during the Soy Moratorium, in the states of Mato Grosso, Rondônia and Pará.

State	Year of PRODES mapping during the Soy Moratorium*							
	2007	2008	2009	2010	2011	2012	2013	Total
Mato Grosso**	237,142	317,123	68,438	65,757	110,800	67,950	104,498	971,708
Pará	552,600	560,700	428,100	377,000	300,800	174,100	237,900	2,631,200
Rondônia	161,100	113,600	48,200	43,500	86,500	77,300	93,300	623,500
Total	**950,842**	**991,423**	**544,738**	**486,257**	**498,100**	**319,350**	**435,698**	**4,226,408**

* The PRODES deforestation year runs from August of one year through July of the following year
** Deforested area in Mato Grosso state that lies within the Amazon Biome
Source: Adapted from INPE, 2014

All the deforested polygons in the Amazon Biome between 2007 and 2013, in the states of Mato Grosso, Rondônia and Pará, were selected based on PRODES data. These polygons intersect with the boundaries of the 73 municipalities that plant over 5,000 hectares (19.3 sq. miles) of soybeans within the Amazon Biome. In this way, the selected polygons are located within the boundaries of the Amazon Biome and within the boundaries of the 73 monitored municipalities that represent 98% of soy acreage in this Biome.

Figure 3 shows the deforestation rates calculated by PRODES for the period 2001-2013, for the 73 municipalities in the Amazon Biome with over 5,000 hectares of soy crops. The graph indicates a pronounced reduction in deforestation rates after the start of the Soy Moratorium. The average PRODES deforestation rate before the Moratorium (2001-2006) and after (2007-2013), in these 73 municipalities, was 7,521 km2 (2,904 sq. miles) and 1,469 km2 (567 sq. miles), respectively. In other words, a comparison of the six years before the Moratorium with the seven years during which the Moratorium was in effect shows that the average deforestation rate fell by a factor of 5.1.

During the Soy Moratorium, according to PRODES data, the highest deforestation rate occurred in 2008, followed by a drastic reduction in 2009 and gradual increases between 2010 and 2013. The year 2013 had the second largest deforestation rate during the Soy Moratorium period.

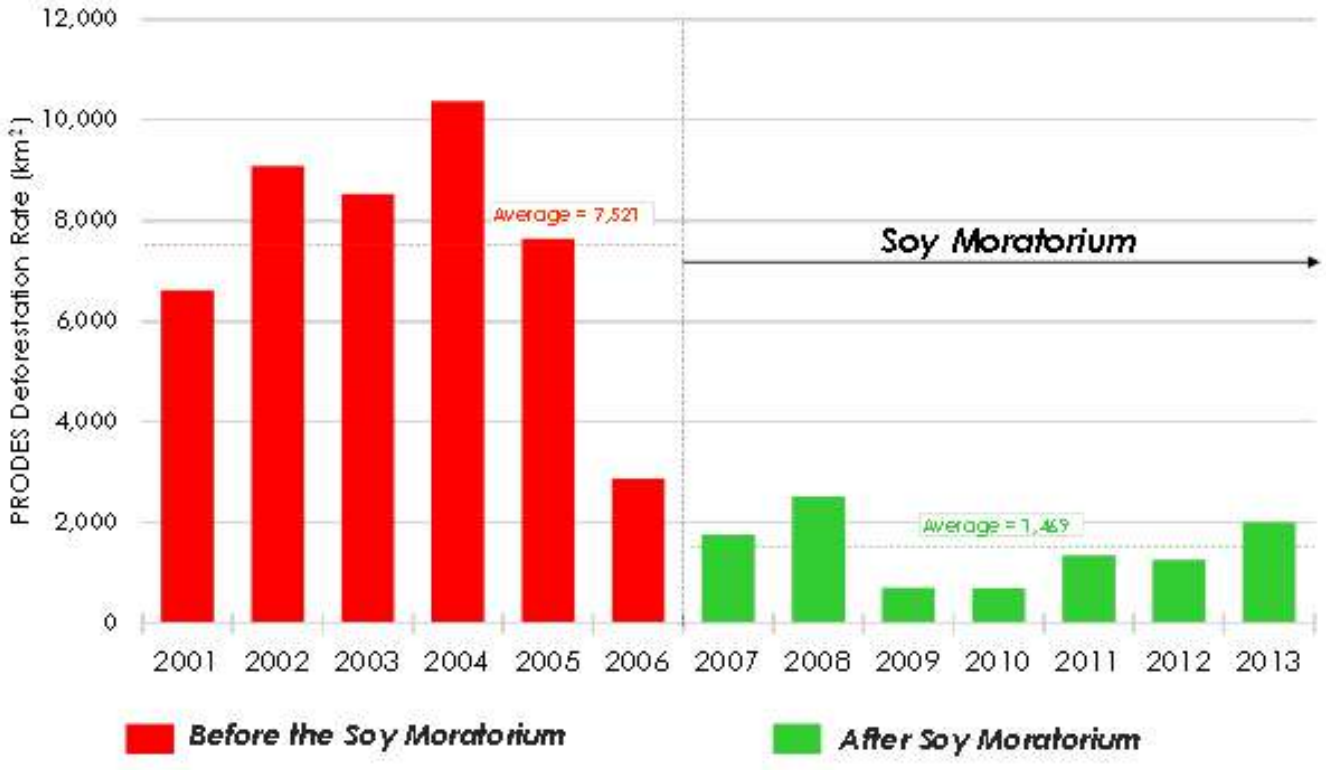


Figure 3 – PRODES deforestation rates for the 73 municipalities with over 5,000 hectares of soybeans in the Amazon Biome, highlighting the years before and after the Soy Moratorium.

3.3. Aggregation of adjacent polygons

The GTS established that the deforested areas mapped by PRODES with more than 25 hectares (62 acres) would be monitored to ensure identification of soy crops through images with moderate spatial resolution (250m x 250m) from the Moderate Resolution Imaging Spectroradiometer sensor (MODIS ,). Smaller deforested areas that increase over the years are aggregated annually and become eligible for monitoring when the sum of the annual and adjacent areas deforested during the Soy Moratorium is equal to or more than 25 hectares. Figure 4 shows an example of how three polygons become aggregated into a single polygon. Before aggregation, the individual polygons were smaller than 25 hectares but, after aggregation, their joint area surpasses this minimum and it is therefore monitored. This aggregation is done for all polygons so that polygons with over 25 hectares increase in size as adjacent, newly deforested areas appear.

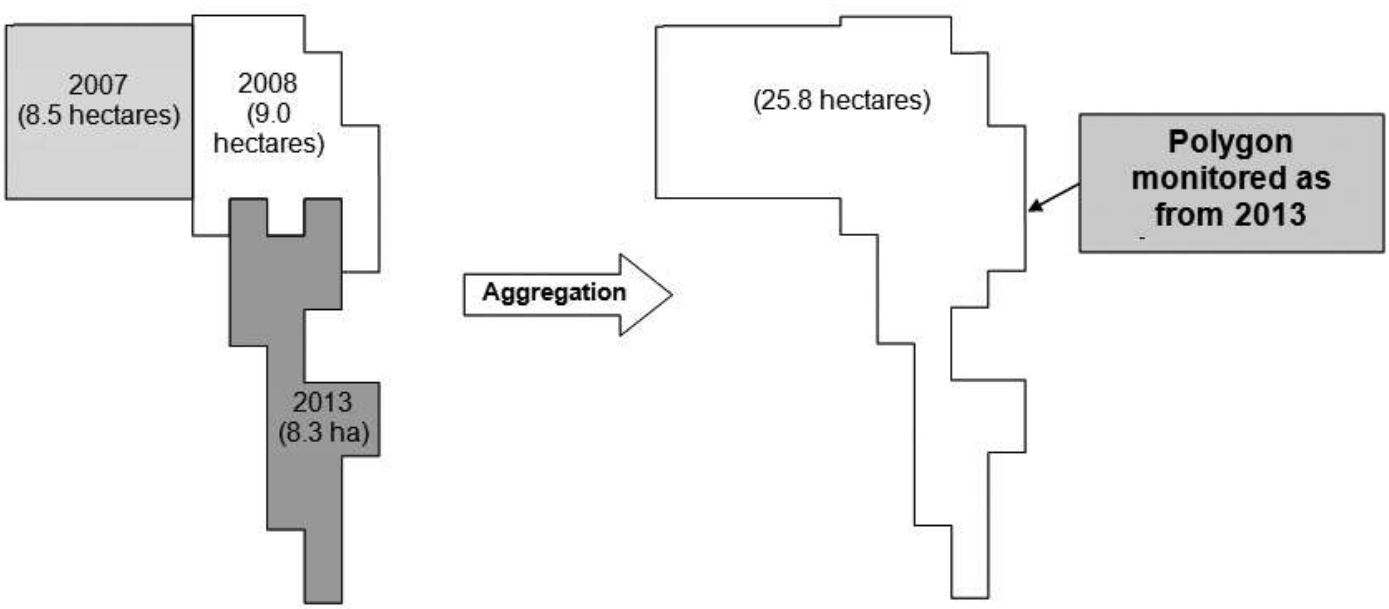


Figure 4 – Example of the aggregation of three adjacent polygons mapped by PRODES between 2007 and 2013, forming a single polygon over 25 hectares that began to be monitored in 2013.

3.4. Identification of polygons with soybeans through satellite images

In this seventh cycle of the Soy Moratorium, the methodology for identifying and mapping soy crops was changed. From the third to the sixth year of the Moratorium[6], satellite images were the first stage in identifying polygons with annual agricultural crops in their initial growth cycle. After that, flyovers were made of these polygons to detect those that had soybeans. However, the experience acquired over recent years from this analysis, combined with MODIS and Landsat images, showed that the flyover was not essential to ensure complete success in the precise identification of soy crops. Thus, the flyover stage was eliminated in the seventh cycle of the Soy Moratorium, and the analysis of satellite images was intensified, using about 100 images from the MODIS sensor aboard the Terra satellite and 150 images from the Landsat-7 and -8 satellites covering the full crop cycle.

Considering the soy calendar for the states of Mato Grosso and Rondônia, the MODIS sensor images used to monitor this crop in these states were acquired between July 2013 and April 2014. Because the state of Pará has a different soy calendar, the monitoring images for this state were extended to June 2014.

The method used to detect the presence of soybeans in the deforested polygons is based on an index called Crop Enhancement Index (CEI[7]) that highlights the difference in the values of the vegetation index called Enhanced Vegetation Index (EVI[8]), at two specific moments in the soy calendar: (a) during the off-season, before the plants start growing, when the EVI soy values are relatively lower than those of a regenerating forest, the Cerrado or pastures (MinEVI, Figure 5 and 6a), and (b) when the soybeans are well developed and show higher EVI values than those of a regenerating forest, the Cerrado or pastures (MaxEVI, Figure 5 and 6b).

High CEI values indicate a soy presence or, perhaps, another agricultural crop with similar values during the same periods of planting and maximum development. A regenerating forest, the Cerrado or pastures show low CEI values as a result of the lower seasonal variation in EVI values when compared to soybeans (Figure 5). Thus, CEI makes it possible to differentiate soybeans from other uses and coverage, such as regenerating forest, Cerrado or pastures.

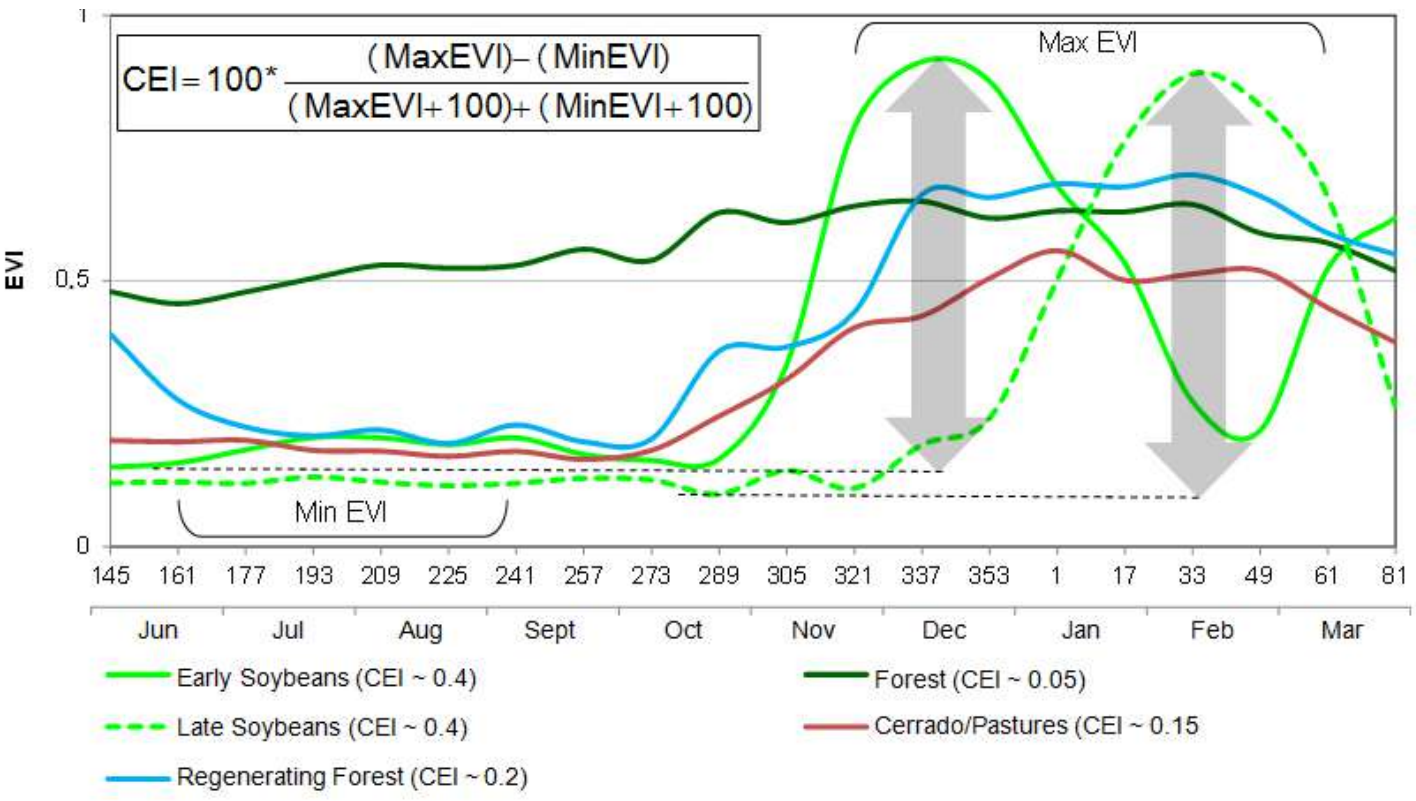


Figure 5 – Example of the temporal variation in EVI values: a) early and late soybeans according to the Mato Grosso state agricultural calendar; b) forest; c) regenerating forest; and d) Cerrado/pastures, with an indication of the periods used to obtain the minimum (MinEVI) and maximum (MaxEVI) values to calculate the CEI.

4- Rudorff et al., 2007.
5- Justice et al., 1998; Huete et al., 1999; Justice e Townshend, 2002.
6- Rudorff et al., 2011; Rudorff et al., 2012.
7- Rizzi et al., 2009
8- Huete et al, 2002

On the next page, Figure 6a shows a composite MODIS/EVI image for the period in which soy crops show the lowest EVI values (MinEVI), and Figure 6b shows the MODIS/EVI composite image for the period in which soy crops show the highest EVI values (MaxEVI). Using the minimum and maximum EVI values the result is the CEI image presented in Figure 6c. The higher and lower CEI values are associated with the presence and absence of soybeans, respectively. Figure 6c also has a false-color composite image, which shows soy crops in yellow, obtained from the OLI sensor aboard the Landsat-8 satellite, at maximum soy development, on January 8, 2014.

After the selection of polygons with soy crops, through CEI images, their classification was refined through a visual analysis of the images obtained from the Landsat-7 (sensor ETM+) and/or Landsat-8 (sensor OLI), free or partially free of clouds.

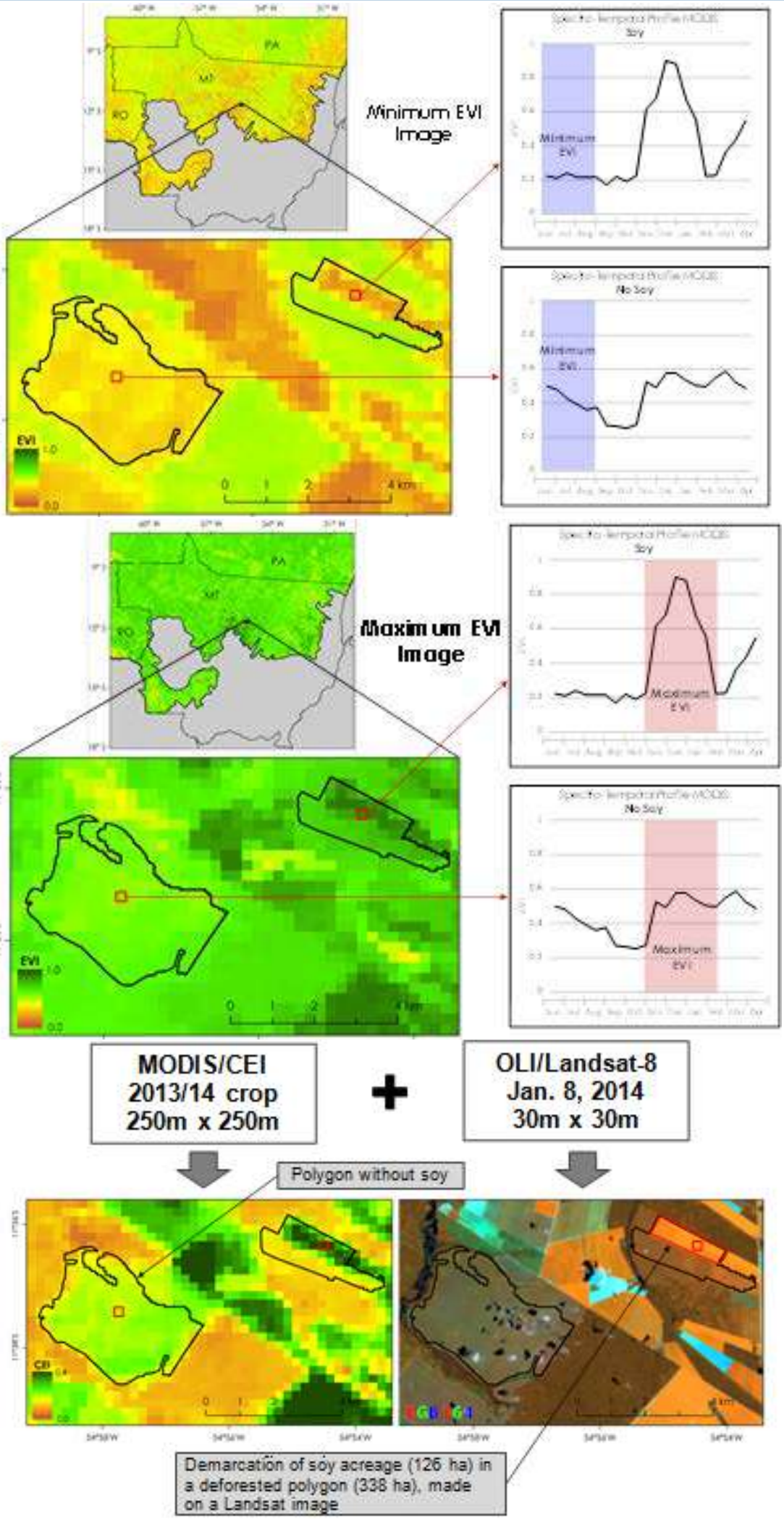


Figure 6. Example of two deforested polygons, with and without soy presence, classified under the CEI method: a) composite image with minimum MODIS/EVI values; b) composite image with maximum MODIS/EVI values; and c) CEI image showing that the highest and lowest values indicate the presence or absence of soybeans, respectively, as confirmed by the Landsat-8/ OLI image on January 8, 2014.

IV – RESULTS

4.1. Selection of PRODES polygons

In the area of the monitored study, PRODES mapped 53,037 polygons of deforestation considering the criteria of the Soy Moratorium, corresponding to a total area of 1,021,805 hectares (3,945 sq. miles) (Table 2). These polygons, as stated above, are distributed in 73 municipalities of the Amazon Biome – 56 in Mato Grosso state, 10 in Pará state and 7 in Rondônia state. With the aggregation of adjacent polygons, following the methodology described in Item 3.3 above, the total number of deforested polygons fell 53%, to 24,964 polygons, in the period from 2007 to 2013, as shown in Table 2.

Table 2 also shows that aggregation significantly reduced (by 60.6%) the number of polygons in the ≤25 hectare (62 acre) category, which is precisely the aggregation's main objective. The 25-50 hectare (62-124 acre) and the 50-100 hectare (124-247 acre) categories had reductions in the number of polygons, of 24.6% and 1.8%, respectively. However, in the ≥100 hectare (247 acre) category, the number of polygons increased by 34.1%. Before aggregation, polygons smaller than 25 hectares represented 85.0% of the total number of polygons, while those over 100 hectares represented 2.7% (Figure 7a). After aggregation, the proportion of polygons smaller than 25 hectares fell to 71.1%, while those over 100 hectares increased to 7.3% (Figure 7c).

This variation caused by aggregation also caused polygons with less than 25 hectares to be less representative in acreage, going from 37.0% (Figure 7b) to 19.4% (Figure 7d) of the total deforested area. On the other hand, polygons with over 100 hectares increased their representativity from 35% (Figure 7b) to 56% (Figure 7d) of the total deforested area. In addition, the total area of polygons ≥25 hectares increased 28%, from 643,850 hectares (2,486 sq. miles) before aggregation to 823,106 hectares (3,178 sq. miles) with aggregation. Thus, 80.6% of the deforested area in the municipalities that grow 98% of the soybeans in the Amazon Biome were monitored.

Table 2 – Number of polygons (No.) and area (in hectares) with and without the aggregation of deforested polygons between 2007 and 2013.

Category	PRODES		PRODES – Aggregated	
(hectares)	(No.)	(hectares)	(No.)	(hectares)
≤25 ha	45,106	377,955	17,752	198,213
25 to 50 ha	4,631	158,578	3,491	121,839
50 to 100 ha	1,959	134,153	1,923	133,182
≥100 ha	1,341	351,119	1,798	568,085
Total	53,037	1,021,805	24,964	1,021,319*

*Aggregation of polygons results in a residual variation (0.05%) in the total area, before and after aggregation.

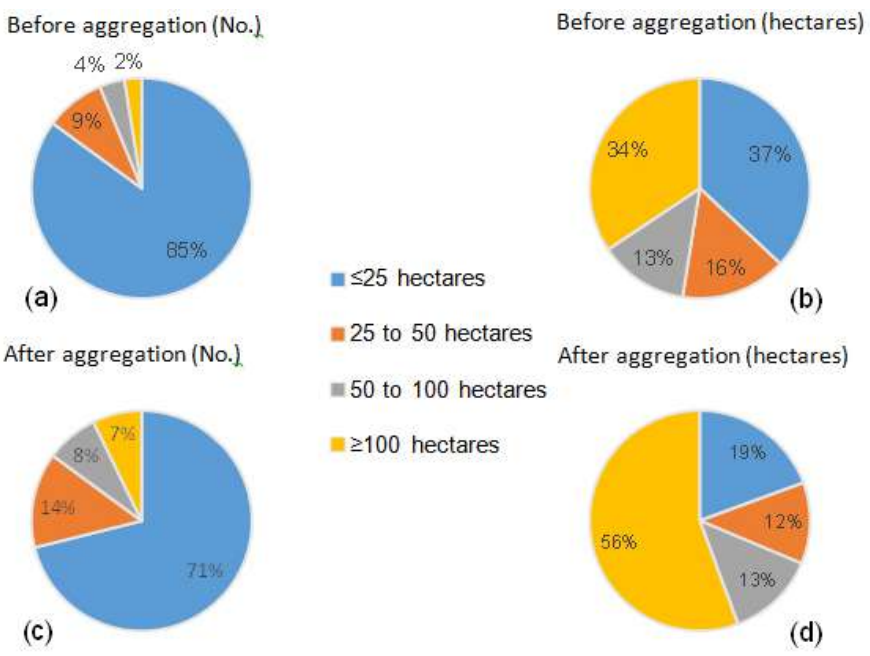


Figure 7 – Percentage variation in the number and area of the polygons, by category, before and after aggregation.

Based on the criteria for selecting aggregated polygons over 25 hectares (62 acres), 7,212 polygons were selected: 3,491 in the 25-50 hectare category, 1,923 in the 50-100 hectare category and 1,798 in the >100 hectare category (Table 3). These 7,212 polygons correspond to an area of 823,106 hectares (3,178 sq. miles), or 80.6% of the area of all deforested polygons mapped by PRODES during the Soy Moratorium in the 73 municipalities analyzed.

Most of the polygons in the Amazon Biome, in the soy-producing municipalities with over 5,000 hectares (19.3 sq. miles), are in Mato Grosso state (4,664), representing 64.7% of the total. This state also has 67.1% of the monitored area (551,992 hectares, or 2,131 sq. miles). Pará has 31.8% of the polygons (2,292) and 30.6% of the monitored area (251,671 hectares, or 972 sq. miles) and Rondônia has 3.5% of the polygons (256) and 2.3% of the monitored area (Table 3).

Table 3 – Number of polygons (No.) and area (hectares) by category, monitored in the states of Mato Grosso, Pará and Rondônia.

Category	Mato Grosso		Pará		Rondônia		Total	
(hectares)	(No.)	(hectares)	(No.)	(hectares)	(No.)	(hectares)	(No.)	(hectares)
25 to 50	2,169	75,926	1,167	40,819	155	5,095	3,491	121,840
50 to 100	1,249	87,233	608	41,166	66	4,783	1,923	133,182
>100	1,246	388,763	517	169,686	35	9,636	1,798	568,085
Subtotal	4,664	551,922	2,292	251,671	256	19,513	7,212	823,106

According to the criteria established by the GTS, the Soy Moratorium does not cover soy crops entirely located within Conservation Units (CU), Indigenous Lands (IL) and Settlements. Monitoring was restricted to crops on private rural properties (see Item 3.1). Table 4 shows the number of polygons and their corresponding areas that are entirely or partially outside the Conservation Units, Indigenous Lands and Settlements and are therefore the focus of the analysis based on monitoring via satellite images.

Table 4 – Selection of polygons in private rural properties deforested after the start of the Soy Moratorium.

Deforestation	Mato Grosso		Pará		Rondônia		Total	
	(No.)	(ha)	(No.)	(ha)	(No.)	(ha)	(No.)	(ha)
a)Outside CU, IL & Settlements	2,843	383,731	1,485	188,09	215	17,475	4,543	589,296
b)Partially in CU, IL, Settlements	173	32,969	140	20,284	7	383	320	53,636
c)Entierly in CU, IL & Settlements	1,648	135,222	667	43,297	34	1,655	2,349	180,174
Total monitored (a+b)	3,016	416,700	1,625	208,374	222	17,858	4,863	642,932

4.2. Identification of polygons with soy crops through satellite images

The 4,863 deforested polygons were monitored by CEI images (see Item 3.4 and Figure 6), supported by over 150 Landsat images. Each polygon was inspected individually, using visual interpretation techniques to identify and map soy crops in these polygons.

All told, 366 polygons were identified with soybeans, of which 169 were new (i.e., not recidivist from previous years). These new polygons needed to be reviewed to verify that they were in fact deforested during the Soy Moratorium. This revision of the deforestation date indicated by PRODES is necessary because the dates of the PRODES images were not selected thinking of the Moratorium, but on the identification of each year's deforestation. For example, if an area was deforested in June 2006 and PRODES used images from May 2006, that area would only be detected by PRODES in 2007, but it would not be subject to the Soy Moratorium.

After reviewing the deforestation date, using Landsat images acquired from the year 2000 to the nearest possible date of the start of the Soy Moratorium, this analysis revealed that 24 polygons did not contravene the Moratorium and that only part of a further 24 polygons were not in compliance. Furthermore, the analysis showed that 711 hectares (2.7 sq. miles) of soybeans in these polygons were planted on an area deforested before the Soy Moratorium and, therefore, they have not been included in this study.

Finally, we can conclude that 47,028 hectares (181.6 sq. miles) of forest were converted into soy crops during the period of the Soy Moratorium, as detailed in Table 5. This soy acreage corresponds to 0.9% of the deforestation in the Amazon Biome during the Soy Moratorium, to 4.6% of the deforested area in the 73 monitored municipalities within the Amazon Biome and to 1.6% of the soy acreage in the Amazon Biome for the 2013/14 crop season.

In Mato Grosso state, 253 polygons were identified as being in contravention with the rules of the Soy Moratorium. These polygons represent a soy acreage of 34,161 hectares (131.9 sq. miles) (Table 5), corresponding to 72.6% of the soybeans detected in this monitoring cycle and 3.5% of the total deforested area in that part of Mato Grosso that lies in the Amazon Biome during the period of the Moratorium (971,708 hectares, or 3,752 sq. miles) (Table 1). In the state of Pará, 106 polygons were identified with 11,620 hectares (44.9 sq. miles) of soybeans (Table 5), corresponding to 24.7% of the soybeans detected in this monitoring cycle, but only 0.44% of the deforested area in this state during the period of the Moratorium (2,631,200 hectares, or 10,159 sq. miles) (Table 1). In Rondônia state, seven polygons were identified with a total soy acreage of 1,246 hectares (4.8 sq. miles) (Table 5), corresponding to 2.7% of the soybeans detected in this monitoring cycle and 0.20% of the total deforested area in Rondônia during the Soy Moratorium (623,500 hectares, or 2,407 sq. miles) (Table 1).

It should be emphasized that the soy acreage in polygons of over 100 hectares (247 acres) was 40,407 hectares (156 sq. miles) (Table 5), corresponding to 86% of the total soy acreage on deforested land. On the other hand, of the 99 polygons with soybeans in the 25-50 hectare (62-124 acre) category in the state of Mato Grosso, 17 polygons had soybeans only on an area of less than 25 hectares, totalling just 259 hectares (640 acres). In Pará, seven deforested polygons in the 25-50 hectare category had a soy acreage of less than 25 hectares, in a total of 102 hectares (252 acres). Therefore, soy crops of less than 25 hectares growing in deforested polygons in the 25-50 hectare category represent a very small share (~1.2%, 361 hectares, or 892 acres) of the total soy acreage contravening the Soy Moratorium (47,028 hectares, or 181.6% sq. miles). This is a strong indication that the 19.4% of the unmonitored area (isolated polygons with less than 25 hectares – Item 3.3) within the 73 municipalities that grow 98% of the soy acreage in the Amazon Biome do not make an effective contribution to that acreage as soybeans are grown in large areas and in larger polygons.

Item VIII – Appendix – lists all the 366 polygons monitored in the 2013/14 crop year.

Table 5 – Number of polygons with soybeans and the soy acreage (in hectares) by category of polygons in the states of Mato Grosso, Pará and Rondônia.

Category	Mato Grosso		Pará		Rondônia		Total	
(ha)	No.	(ha)	No.	(ha)	No.	(ha)	No.	(ha)
25 to 50	74	2,064	25	638	-	-	99	2,702
50 to 100	52	2,812	30	1,057	2	49	84	3,919
>100	127 -50%	29,285 -86%	51 -48%	9,925 -85%	5 -71%	1,197 -96%	183 -50%	40,407 -86%
Total	253	34,161	106	11,620	7	1,246	366	47,028

Figure 8 shows the 73 monitored municipalities that grow over 5,000 hectares (19.3 sq. miles) of soybeans. Twenty-two of these municipalities are complying fully with the Soy Moratorium, i.e., no soy planting was found in areas deforested during the Moratorium. One municipality in Pará (Dom Eliseu) and four in Mato Grosso (Feliz Natal, Nova Ubiratã, Gaúcha do Norte and Itanhangá) have over 3,000 hectares (11,583 sq. miles) of soybeans, or 41% of soy plantings that do not comply with the Soy Moratorium.

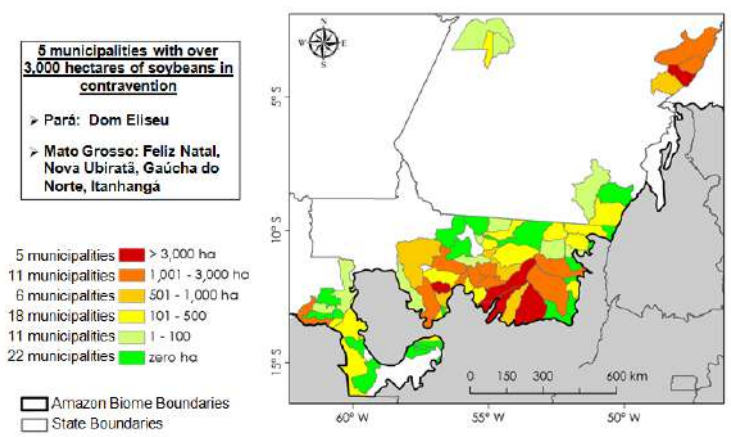


Figure 8 – Spatial distribution of the 73 monitored municipalities, classified in accordance with soy acreage contravening the Soy Moratorium.

Table 6 – List of the 51 municipalities with soybeans that do not comply with the Soy Moratorium.

Town	State	Polygons with Soybeans (No.)	Soy acreage (hectares)
Nova Ubiratã	MT	21	4,282
Feliz Natal	MT	26	4,106
Itanhangá	MT	15	3,026
Gaúcha do Norte	MT	26	3,023
Santa Carmem	MT	21	2,977
Nova Maringá	MT	17	2,421
Querência	MT	9	1,530
Sinop	MT	8	1,261
São Félix do Araguaia	MT	5	1,241
Ipiranga do Norte	MT	7	1,237
Cláudia	MT	13	1,073
Tabaporã	MT	6	1,005
União do Sul	MT	7	808
Nova Santa Helena	MT	5	630
Paranatinga	MT	5	623
Tapurah	MT	5	539
Juara	MT	1	505
Porto dos Gaúchos	MT	3	498
Matupá	MT	4	417
Vera	MT	6	380
Terra Nova do Norte	MT	3	373
Bom Jesus do Araguaia	MT	1	363
São José do Rio Claro	MT	2	333
Marcelândia	MT	9	302
Comodoro	MT	4	195
Santa Cruz do Xingu	MT	1	138
Sorriso	MT	1	135
Vila Rica	MT	4	132
Lucas do Rio Verde	MT	3	116
Confresa	MT	2	114
Diamantino	MT	2	110
Vila Bela da Santíssima Trindade	MT	4	106
São José do Xingu	MT	1	60
Itaúba	MT	2	58

Town	State	Polygons with Soybeans (No.)	Soy acreage (hectares)
Guarantã do Norte	MT	1	23
Nova Guarita	MT	1	14
Porto Alegre do Norte	MT	1	5
Brasnorte	MT	1	2
Total do MT		253	34,161
Dom Eliseu	PA	42	4,865
Ulianópolis	PA	20	2,952
Paragominas	PA	22	2,842
Rondon do Pará	PA	10	565
Santana do Araguaia	PA	3	153
Belterra	PA	5	149
Cumaru do Norte	PA	2	50
Santarém	PA	1	31
Mojuí dos Campos	PA	1	14
Total do PA		106	11,621
Pimenteiras do Oeste	RO	2	1,024
Cabixi	RO	2	107
Vilhena	RO	2	67
Corumbiara	RO	1	48
Total do RO		7	1,246

NB. The following 22 municipalities are in compliance with the Soy Moratorium for the 2013/14 crop year: Mato Grosso State: Alta Floresta, Alto Boa Vista, Alto Paraguai, Campo Novo do Parecis, Canabrava do Norte, Canarana, Nortelândia, Nova Lacerda, Nova Canaã do Norte, Nova Mutum, Novo Mundo, Peixoto de Azevedo, Pontes e Lacerda, Ribeirão Cascalheira, Santo Afonso, Santa Terezinha, Tangará da Serra, Nova Marilândia; Pará State: Santa Maria das Barreiras; Rondônia State: Cerejeiras, Colorado do Oeste, Chupinguaia.

4.3. Comparison of the sixth and seventh monitoring cycles

Following is a comparison of the data from the seventh cycle of the Soy Moratorium with those of prior years. The number of deforested polygons (aggregated, >25 hectares, or 62 acres) increased 37% from 2007 to 2013, going from 5,265 to 7,212) (Table 7). There was an increase of 34% in the number of polygons, entirely or partially outside Conservation Units, Indigenous Lands and Settlements, that were effectively monitored. As regards acreage, the area of all monitored polygons increased 44% in the same period, going from 572,279 hectares (2,210 sq. miles) to 823,106 hectares (3,178 sq. miles) (Table 7), while the area effectively monitored (polygons over 25 hectares outside Conservation Units, Indigenous Lands and Settlements), according to GTS criteria, increased 78%, going from 360,735 hectares (1,393 sq. miles) to 642,932 hectares (2,482 sq. miles) (Table 7). Inclusion of eleven new municipalities was the main factor responsible for this increase of 55% (154,202 hectares, or 595.4 sq. miles). Other factors were the increased area of new deforestation and the aggregation of deforested areas with less than 25 hectares made in prior years.

Table 7 – Comparison between the 6th year (2012/13) and the 7th year (2013/14) considering the levels of analysis for the monitored polygons.

Levels of the Analysis of the Polygons	6th Year 2012/13	7th Year 2013/14	Variation %
No. of polygons after aggregation (≥25 hectares)	5,265	7,212	37%
a. No. of polygons outside CU, IL & Settlements	3,398	4,543	34%
b. No. of polygons partially within CU, IL or Settlements	252	320	27%
c. No. of polygons wholly within CU, IL or Settlements	1,615	2,349	45%
Deforested area after aggregation (≥25 hectares)	572,279	823,106	44%
Number of polygons effectively monitored (a + b)	**3,650**	**4,863**	**33%**
Area effectively monitored (hectares)	**360,735**	**642,932**	**78%**
Number of polygons with soy crops	**239**	**366**	**53%**
Area with soy crops (hectares)	**29,295**	**47,028**	**61%**

The increase of 61% (17,733 hectares, or 68.5 sq. miles) in soy acreage that contravenes the Soy Moratorium, between the 2012/13 crop year (29,295 hectares, or 113.1 sq. miles) and the 2013/14 crop year (47,028 hectares, or 181.6 sq. miles) (Table 7), is mainly associated with the state of Mato Grosso, responsible for 70% (12,390 hectares, or 47.8 sq. miles) of this expansion, followed by Pará state with 28% (4,996 hectares, or 19.3 sq. miles). However, soy acreage in Pará that contravenes Soy Moratorium had a significant increase of 75%, going from 6,625 hectares (25.6 sq. miles) in 2012/13 to 11,621 hectares (44.9 sq. miles) in 2013/14 (Table 8), while Mato Grosso's increase in soy acreage that contravenes the Moratorium was 57%, going from 21,771 hectares (84.1 sq. miles) in 2012/13 to 34,161 hectares (131.9 sq. miles) in 2013/14 (Table 8).

Table 8 – Comparison of the number of polygons with soybeans and the soy acreage (in hectares), by category of polygons in the states of Mato Grosso, Pará and Rondônia, in crop years 2010/11, 2011/12, 2012/13 and 2013/14.

	State	Crop Year	25-50 ha	50-100 ha	>100 ha	Total
No. of Polygons	MT	2010/11	40	23	42	105
		2011/12	40	20	71	131
		2012/13	55	31	89	175
		2013/14	**74**	**52**	**127**	**253**
	PA	2010/11	17	10	13	40
		2011/12	8	7	16	31
		2012/13	13	17	32	62
		2013/14	**25**	**30**	**51**	**106**
	RO	2010/11	1	0	0	1
		2011/12	0	0	2	2
		2012/13	0	0	2	2
		2013/14	**0**	**2**	**5**	**7**

	State	Crop Year	25-50 ha	50-100 ha	>100 ha	Total
Area in Hectares	MT	2010/11	1,149	1,340	5,896	8,385
		2011/12	1,118	1,158	12,282	14,558
		2012/13	1,690	1,922	18,158	21,771
		2013/14	**2,064**	**2,812**	**29,285**	**34,161**
	PA	2010/11	418	445	2,421	3,284
		2011/12	227	321	2,317	2,865
		2012/13	397	682	5,545	6,625
		2013/14	**638**	**1,057**	**9,925**	**11,621**
	RO	2010/11	29	0	0	29
		2011/12	0	0	987	987
		2012/13	0	0	899	899
		2013/14	**0**	**49**	**1,197**	**1,246**

4.4. Likely causes for the increase in the incidence of soybeans in deforested polygons

Compared with the past crop season, there was an increase of 61% in the area occupied by soybeans, which went from 29,295 hectares (113.1 sq. miles) to 47,028 hectares (181.6 sq. miles) (Table 7). This increase can be attributed to the following factors:

a) Inclusion of 11 new municipalities in the Soy Moratorium's monitoring work (2.8% of the area not in compliance);
b) Soy market conditions continue to be favorable;
c) Greater time lapse between the deforestation and the planting of soy crops as it is common practice to plant rice for a year or two before planting soybeans in recently deforested areas.

Figure 9 shows the soy acreage for the 2013/14 crop year, subdivided in accordance with the year that deforestation was mapped by PRODES. It shows that 41% (19,737 hectares, or 76.2 sq. miles) of the soy acreage was planted in deforestations observed in the first two years of the Soy Moratorium (2007 and 2008). On the other hand, soy acreage on deforestations with less than two years (2012 and 2013) was a surprisingly high 27% (12,636 hectares, or 48.8 sq. miles), when compared to last year that registered soy crops on only 8% (2,426 hectares, or 9.4 sq. miles) of the deforestations with less than two years.

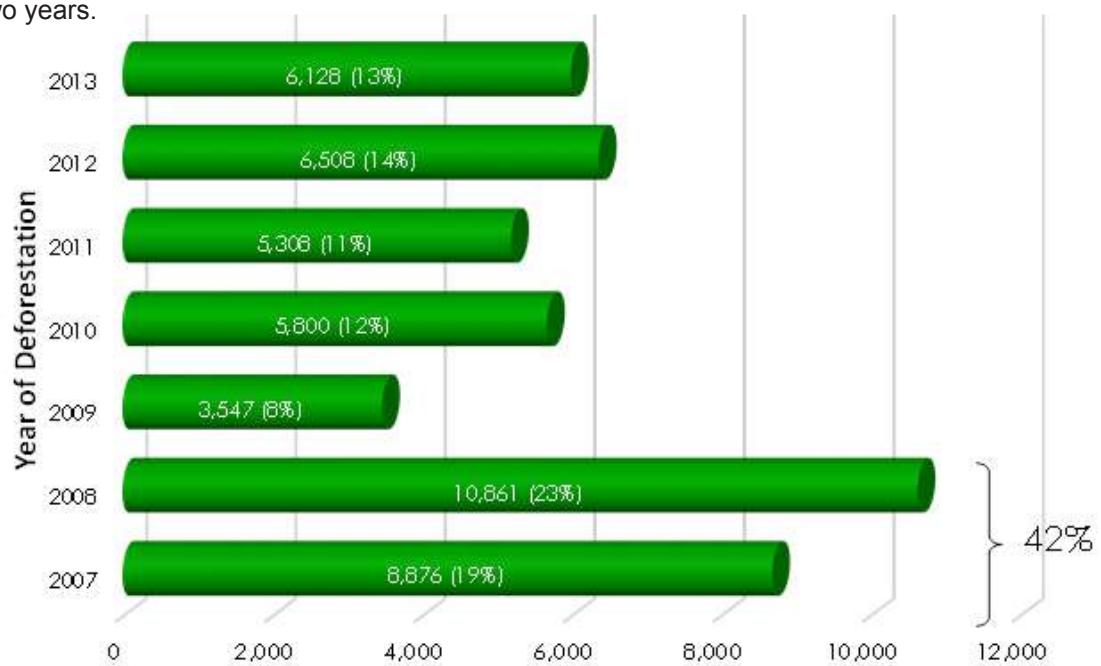


Figure 9 – Soy acreage by year of deforestation

4.5. Relevance of soy plantings in recent deforestations in the Amazon Biome

The Brazilian soy production for the year 2013/14 was 86.27 million tons, 5.8% more than the previous year. Brazil increased its soy acreage by 8.7% and had a reduction in yield of 2.5%, compared to the prior year. In the states monitored by the Soy Moratorium, increased production was due to the increase in planted area (CONAB, 2014). A recent study on the expansion of soybeans in the Amazon Biome showed that this expansion essentially occurred in areas converted from pastures that were deforested prior to the Soy Moratorium .

The results of this seventh monitoring cycle show that soy planting occurred on only 0.9% of the total deforested area in the Amazon Biome during the period of the Moratorium. This represents 0.16% of Brazil's total planted soy acreage in the 2013/14 crop year. In view of these results, there are strong indications that the Soy Moratorium continues to comply with its objective of inhibiting the advance of soybeans on areas in the Amazon Biome that have been deforested in the last seven crop years. However, this has not prevented deforestations from occurring in the soy-producing municipalities. It must be remembered that the average rate of deforestation since the Soy Moratorium is 5.1 times lower than that before the Moratorium, showing that the several mechanisms for reducing deforestation currently in effect have been effective in this Biome in the last few years.

In the 2013/14 crop year, soy acreage in deforested polygons during the period of the Soy Moratorium represents 1.57% of the total soy acreage in the Amazon Biome (Table 9). It should be highlighted that, in Mato Grosso state, responsible for 88% of the Amazon Biome's soy acreage, planting in deforested areas during the Moratorium represents 1.29% of the total soy acreage in this state within the boundaries of the Amazon Biome (Table 9). Nevertheless, Mato Grosso is responsible for 73% of the soy acreage that is in contravention with the Soy Moratorium. Despite the low participation of Pará state in the total soy acreage of the Amazon Biome (5.4%), 7% does not comply with the Soy Moratorium (Table 5).

Table 9 – Comparison between the soy acreage (in hectares) in contravention with the Soy Moratorium and the soy acreage in the Amazon Biome.

State	Soy Acreage in Contravention	Soy Acreage in the Amazon Biome	Soy Acreage in Contravention – %
Mato Grosso	34,161	2,638,783	1.29%
Pará	11,621	164,646	7.06%
Rondônia	1,246	178,432	0.70%
Others	-	22,450	-
Total	47,028	3,004,311	1.57%

Figure 10 shows a comparative graph of the deforested area in the Amazon Biome and in the 73 monitored municipalities, as well as the area of soy acreage on deforested land during the period of the Soy Moratorium. This Figure shows that the monitored municipalities were responsible for 19.7% of the deforestation in the Amazon Biome, of which 4.6% were used for soy crops in the 2013/14 crop year.

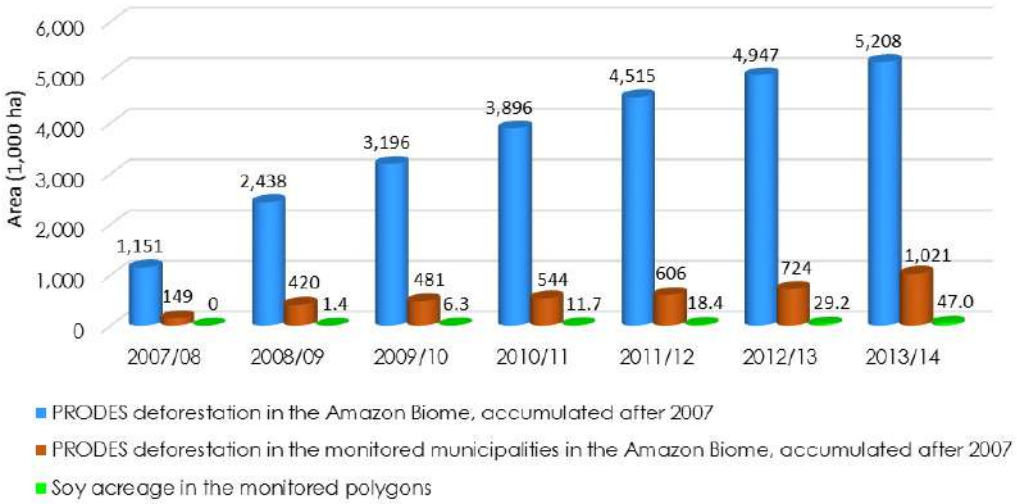


Figure 10 – Evolution of accumulated deforested area in the Amazon Biome after 2007, in the 73 monitored municipalities and the soy acreage in the context of the Soy Moratorium.

9- Risso, 2013.

V – CONCLUSIONS

Using satellite images, 47,028 hectares (181.6 sq. miles) were identified as having planted soybeans in the 2013/14 crop year on land that was deforested during the Soy Moratorium, which began on July 24, 2006. Mato Grosso State had the highest rate for soy acreage in contravention with the Soy Moratorium (34,161 hectares, or 131.9 sq. miles), followed by Pará State (11,621 hectares, or 44.9 sq. miles) and Rondônia State (1,246 hectares, or 4.8 sq. miles). Compared to the previous year, soy acreage in Mato Grosso increased 57%, from 21,771 hectares (84.1 sq. miles) to 34,161 hectares, while in Pará soy acreage increased 75%, from 6,625 hectares (25.6 sq. miles) to 11,621 hectares.

The 47,028 hectares of soybeans in contravention with the Soy Moratorium correspond to 1.1% of the deforestation (4.23 million hectares, or 16,332 sq. miles) in those parts of the states of Mato Grosso, Pará and Rondônia that belong to the Amazon Biome, in the period from 2007 to 2013. Based on these data, we can conclude that soybeans are not playing an important role in the deforestation of the Amazon Biome; they represent 4.6% of the deforestation that occurred in the 73 municipalities that concentrate 98% of soy crops and 0.9% of the deforestation in the Amazon Biome as a whole. However, the deforested area in the period 2007-2013, in the states of Mato Grosso, Pará and Rondônia, is significant as the Soy Moratorium has not been able to prevent deforestation in soy-producing municipalities. On the other hand, in the 73 monitored municipalities that concentrate 98% of soy acreage in the Amazon Biome, the average deforestation rate observed after the introduction of the Soy Moratorium is 5.1 times lower than that observed before the start of the Moratorium, showing the efficacy of the several mechanisms implemented in the last few years to reduce deforestation in the Amazon Biome.

The careful process of analyzing hundreds of satellite images to monitor the areas deforested after July 2006, with the objective of identifying soy crops that contravene the Soy Moratorium, made it possible to monitor 98% of the area of influence of soy crops in the Amazon Biome. We can conclude that this monitoring has provided a high level of trust in the identification and mapping of soy crops in deforested areas in the context of the Soy Moratorium.

São Paulo, October 1, 2014.

Carlo Lovatelli
President
ABIOVE

Bernardo Rudorff
Director
Agrosatélite

Marcos Adami
Researcher
INPE

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VII - TECHNICAL TEAM

7.1. AGROSATÉLITE

- General Coordinator: Bernardo Rudorff
- Technical Coordinator: Joel Risso
- Contributors: Daniel Alves de Aguiar, Moisés Pereira Galvão Salgado and Luciana Oliveira.

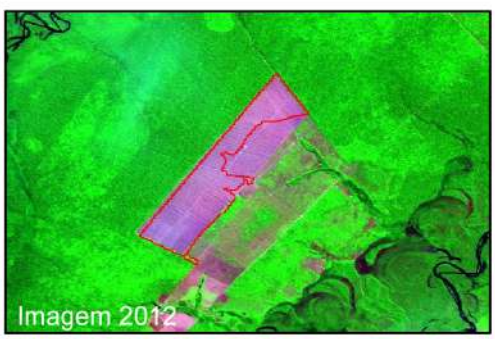
7.2. INPE

- Auditor: Marcos Adami

7.3. ABIOVE

- General Coordinator: Fábio Trigueirinho
- Technical Coordinator: Bernardo Machado Pires
- Contributors: André Amado Aguiar and Daniel Furlan Amaral

For additional information on the Soy Moratorium consult the site:
www.abiove.com.br



Land Use:
Soy / Deforestation

Area of Polygon:
776.09 hectares

Soy area:
769.10 hectares

Aerial survey date:
2013, January

VII - APPENDIX

8.1 – Polygons with soybeans in the state of Mato Grosso (MT)

ID	Polygon Area (in hectares)	State	Town	Soy Area (in hectares)
1998	903.82	MT	BOM JESUS DO ARAGUAIA	362.76
1905	36.78	MT	BRASNORTE	2.20
2149	704.46	MT	CLÁUDIA	91.53
2243	220.24	MT	CLÁUDIA	220.24
2253	337.87	MT	CLÁUDIA	123.86
2259	37.58	MT	CLÁUDIA	37.58
2313	235.93	MT	CLÁUDIA	91.26
2348	41.73	MT	CLÁUDIA	41.73
2387	106.86	MT	CLÁUDIA	106.86
2397	108.62	MT	CLÁUDIA	73.83
2483	85.61	MT	CLÁUDIA	82.99
2501	82.66	MT	CLÁUDIA	78.99
2534	26.24	MT	CLÁUDIA	7.71
2671	35.27	MT	CLÁUDIA	35.27
2503	236.73	MT	CLÁUDIA	81.26
742	49.37	MT	COMODORO	19.34
863	83.72	MT	COMODORO	83.72
989	84.21	MT	COMODORO	54.48
803	37.25	MT	COMODORO	37.25
3266	46.33	MT	CONFRESA	6.33
4383	1,364.23	MT	CONFRESA	107.32
309	25.27	MT	DIAMANTINO	25.27
315	84.61	MT	DIAMANTINO	84.61
1041	1,104.67	MT	FELIZ NATAL	287.27
1048	3,632.21	MT	FELIZ NATAL	175.65
1145	1,462.74	MT	FELIZ NATAL	87.21
1163	111.50	MT	FELIZ NATAL	111.50
1178	193.27	MT	FELIZ NATAL	10.95
1183	29.97	MT	FELIZ NATAL	29.97
1195	41.54	MT	FELIZ NATAL	17.80
1196	363.10	MT	FELIZ NATAL	143.56
1207	269.06	MT	FELIZ NATAL	83.38
1209	754.58	MT	FELIZ NATAL	83.15

ID	Polygon Area (in hectares)	State	Town	Soy Area (in hectares)
1349	1,325.69	MT	FELIZ NATAL	665.84
1360	53.75	MT	FELIZ NATAL	53.75
1378	1,355.73	MT	FELIZ NATAL	500.26
1392	165.38	MT	FELIZ NATAL	165.38
1393	30.37	MT	FELIZ NATAL	30.37
1405	539.25	MT	FELIZ NATAL	142.92
1447	197.13	MT	FELIZ NATAL	80.35
1448	62.71	MT	FELIZ NATAL	59.63
1480	49.68	MT	FELIZ NATAL	49.68
1618	201.66	MT	FELIZ NATAL	192.97
1633	232.22	MT	FELIZ NATAL	33.19
1658	1,489.11	MT	FELIZ NATAL	174.26
1667	159.01	MT	FELIZ NATAL	159.02
1848	58.57	MT	FELIZ NATAL	58.57
1853	297.95	MT	FELIZ NATAL	297.95
1898	412.70	MT	FELIZ NATAL	412.70
426	481.96	MT	GAÚCHA DO NORTE	481.97
514	93.55	MT	GAÚCHA DO NORTE	93.55
534	49.07	MT	GAÚCHA DO NORTE	49.07
544	265.66	MT	GAÚCHA DO NORTE	28.00
551	330.11	MT	GAÚCHA DO NORTE	330.11
573	388.34	MT	GAÚCHA DO NORTE	61.93
594	57.74	MT	GAÚCHA DO NORTE	38.99
604	118.55	MT	GAÚCHA DO NORTE	118.55
618	81.65	MT	GAÚCHA DO NORTE	81.66
635	96.91	MT	GAÚCHA DO NORTE	96.91
643	36.33	MT	GAÚCHA DO NORTE	36.33
649	1,054.21	MT	GAÚCHA DO NORTE	289.94
651	318.59	MT	GAÚCHA DO NORTE	18.60
653	138.53	MT	GAÚCHA DO NORTE	138.53
658	46.05	MT	GAÚCHA DO NORTE	46.05
674	222.21	MT	GAÚCHA DO NORTE	119.40
681	93.35	MT	GAÚCHA DO NORTE	93.35
685	441.28	MT	GAÚCHA DO NORTE	441.28
695	69.12	MT	GAÚCHA DO NORTE	31.16
708	255.46	MT	GAÚCHA DO NORTE	255.46

ID	Polygon Area (in hectares)	State	Town	Soy Area (in hectares)
748	31.63	MT	GAÚCHA DO NORTE	1.40
806	55.39	MT	GAÚCHA DO NORTE	55.39
821	27.28	MT	GAÚCHA DO NORTE	27.28
823	30.93	MT	GAÚCHA DO NORTE	30.93
826	58.60	MT	GAÚCHA DO NORTE	44.14
633	37.96	MT	GAÚCHA DO NORTE	12.66
4584	54.90	MT	GUARANTÃ DO NORTE	23.33
1769	28.96	MT	IPIRANGA DO NORTE	16.50
1785	30.73	MT	IPIRANGA DO NORTE	30.73
1835	465.88	MT	IPIRANGA DO NORTE	396.39
1978	280.16	MT	IPIRANGA DO NORTE	280.16
2005	169.00	MT	IPIRANGA DO NORTE	169.00
2011	1,703.43	MT	IPIRANGA DO NORTE	299.42
2166	1,305.10	MT	IPIRANGA DO NORTE	44.55
1554	186.20	MT	ITANHANGÁ	186.20
1597	38.01	MT	ITANHANGÁ	38.01
1611	36.99	MT	ITANHANGÁ	36.99
1614	137.55	MT	ITANHANGÁ	137.55
1649	159.07	MT	ITANHANGÁ	13.39
1655	68.67	MT	ITANHANGÁ	26.59
1778	48.45	MT	ITANHANGÁ	48.45
1829	123.44	MT	ITANHANGÁ	9.47
1849	232.33	MT	ITANHANGÁ	87.07
1902	113.55	MT	ITANHANGÁ	69.20
1912	340.67	MT	ITANHANGÁ	75.13
1924	679.52	MT	ITANHANGÁ	329.76
1954	2,868.24	MT	ITANHANGÁ	1,713.16
1973	218.29	MT	ITANHANGÁ	218.29
1991	37.47	MT	ITANHANGÁ	37.47
2750	30.92	MT	ITAÚBA	30.92
2808	87.76	MT	ITAÚBA	27.28
2380	768.56	MT	JUARA	505.00
828	70.72	MT	LUCAS DO RIO VERDE	7.16
846	472.44	MT	LUCAS DO RIO VERDE	18.46
852	126.90	MT	LUCAS DO RIO VERDE	89.90
2847	113.25	MT	MARCELÂNDIA	15.98
2880	41.31	MT	MARCELÂNDIA	41.31

ID	Polygon Area (in hectares)	State	Town	Soy Area (in hectares)
2890	60.67	MT	MARCELÂNDIA	1.29
2949	73.41	MT	MARCELÂNDIA	73.41
2953	38.30	MT	MARCELÂNDIA	38.30
2959	75.79	MT	MARCELÂNDIA	75.79
2998	25.04	MT	MARCELÂNDIA	8.21
3182	678.89	MT	MARCELÂNDIA	12.84
3215	35.21	MT	MARCELÂNDIA	34.46
4250	55.81	MT	MATUPÁ	6.59
4308	38.19	MT	MATUPÁ	28.89
4548	289.65	MT	MATUPÁ	289.65
4562	92.26	MT	MATUPÁ	92.26
4030	31.57	MT	NOVA GUARITA	14.20
667	77.99	MT	NOVA MARINGÁ	45.36
688	263.43	MT	NOVA MARINGÁ	263.43
693	256.63	MT	NOVA MARINGÁ	126.30
878	80.91	MT	NOVA MARINGÁ	10.81
887	102.71	MT	NOVA MARINGÁ	102.71
899	84.40	MT	NOVA MARINGÁ	24.55
914	285.11	MT	NOVA MARINGÁ	285.11
933	184.10	MT	NOVA MARINGÁ	184.10
936	454.14	MT	NOVA MARINGÁ	454.14
937	33.87	MT	NOVA MARINGÁ	33.87
1096	60.53	MT	NOVA MARINGÁ	60.53
1493	257.03	MT	NOVA MARINGÁ	85.37
1574	424.61	MT	NOVA MARINGÁ	424.61
1590	132.76	MT	NOVA MARINGÁ	132.76
1886	105.43	MT	NOVA MARINGÁ	105.43
1897	41.85	MT	NOVA MARINGÁ	41.85
1573	51.16	MT	NOVA MARINGÁ	39.94
2786	1,058.65	MT	NOVA SANTA HELENA	128.21
2827	229.06	MT	NOVA SANTA HELENA	117.05
3016	240.32	MT	NOVA SANTA HELENA	212.07
3033	32.26	MT	NOVA SANTA HELENA	25.83
3060	146.64	MT	NOVA SANTA HELENA	146.64
506	90.94	MT	NOVA UBIRATÃ	90.94
516	797.20	MT	NOVA UBIRATÃ	561.37
517	220.13	MT	NOVA UBIRATÃ	220.13

ID	Polygon Area (in hectares)	State	Town	Soy Area (in hectares)
533	31.85	MT	NOVA UBIRATÃ	2.93
606	50.47	MT	NOVA UBIRATÃ	50.47
747	342.17	MT	NOVA UBIRATÃ	149.14
783	28.42	MT	NOVA UBIRATÃ	28.42
801	129.16	MT	NOVA UBIRATÃ	129.16
816	224.21	MT	NOVA UBIRATÃ	224.22
850	34.15	MT	NOVA UBIRATÃ	34.15
871	198.54	MT	NOVA UBIRATÃ	98.00
895	33.78	MT	NOVA UBIRATÃ	33.78
982	283.89	MT	NOVA UBIRATÃ	2.29
995	231.51	MT	NOVA UBIRATÃ	231.51
1009	142.34	MT	NOVA UBIRATÃ	142.34
1217	348.79	MT	NOVA UBIRATÃ	70.22
1233	1,456.00	MT	NOVA UBIRATÃ	1,395.43
1245	334.84	MT	NOVA UBIRATÃ	14.71
1284	26.69	MT	NOVA UBIRATÃ	26.69
1569	30.19	MT	NOVA UBIRATÃ	23.47
1685	759.57	MT	NOVA UBIRATÃ	752.94
467	35.11	MT	PARANATINGA	6.64
531	209.72	MT	PARANATINGA	19.24
652	248.54	MT	PARANATINGA	248.54
656	334.98	MT	PARANATINGA	316.49
682	2,190.87	MT	PARANATINGA	32.50
2946	52.41	MT	PORTO ALEGRE DO NORTE	5.09
1934	99.18	MT	PORTO DOS GAÚCHOS	99.18
2061	122.24	MT	PORTO DOS GAÚCHOS	94.54
2278	321.63	MT	PORTO DOS GAÚCHOS	303.95
727	43.22	MT	QUERÊNCIA	43.22
793	861.12	MT	QUERÊNCIA	643.43
945	39.21	MT	QUERÊNCIA	39.21
1001	86.46	MT	QUERÊNCIA	86.46
1016	119.20	MT	QUERÊNCIA	119.20
1049	243.80	MT	QUERÊNCIA	228.65
1150	43.16	MT	QUERÊNCIA	7.54
1556	315.72	MT	QUERÊNCIA	315.72
2027	273.23	MT	QUERÊNCIA	46.34
1904	71.50	MT	SANTA CARMEM	5.35

ID	Polygon Area (in hectares)	State	Town	Soy Area (in hectares)
1907	573.84	MT	SANTA CARMEM	197.69
1920	33.36	MT	SANTA CARMEM	33.36
1928	255.22	MT	SANTA CARMEM	178.74
1932	41.82	MT	SANTA CARMEM	41.82
1933	52.32	MT	SANTA CARMEM	52.32
1953	439.11	MT	SANTA CARMEM	431.23
1958	29.00	MT	SANTA CARMEM	12.10
1995	46.97	MT	SANTA CARMEM	33.00
1996	67.92	MT	SANTA CARMEM	67.92
2006	355.03	MT	SANTA CARMEM	355.03
2009	51.67	MT	SANTA CARMEM	2.58
2020	758.33	MT	SANTA CARMEM	758.33
2022	33.24	MT	SANTA CARMEM	5.76
2031	170.90	MT	SANTA CARMEM	170.90
2041	55.47	MT	SANTA CARMEM	55.47
2074	31.45	MT	SANTA CARMEM	31.45
2077	45.04	MT	SANTA CARMEM	42.88
2087	32.74	MT	SANTA CARMEM	32.74
2165	336.23	MT	SANTA CARMEM	104.71
2188	1,555.39	MT	SANTA CARMEM	363.19
4311	281.19	MT	SANTA CRUZ DO XINGU	138.42
2328	25.87	MT	SÃO FÉLIX DO ARAGUAIA	25.87
2418	7,332.81	MT	SÃO FÉLIX DO ARAGUAIA	702.53
2556	38.53	MT	SÃO FÉLIX DO ARAGUAIA	26.14
2658	605.66	MT	SÃO FÉLIX DO ARAGUAIA	231.74
2672	457.26	MT	SÃO FÉLIX DO ARAGUAIA	255.04
548	356.33	MT	SÃO JOSÉ DO RIO CLARO	300.74
588	31.92	MT	SÃO JOSÉ DO RIO CLARO	31.92
3278	61.87	MT	SÃO JOSÉ DO XINGU	59.66
2046	26.81	MT	SINOP	22.28
2176	40.03	MT	SINOP	40.03
2185	129.45	MT	SINOP	129.45
2238	26.49	MT	SINOP	26.49
2267	133.61	MT	SINOP	133.61
2270	150.47	MT	SINOP	51.93
2286	58.43	MT	SINOP	50.48
2324	2,107.30	MT	SINOP	806.76

ID	Polygon Area (in hectares)	State	Town	Soy Area (in hectares)
1983	135.40	MT	SORRISO	135.40
2332	728.07	MT	TABAPORÃ	582.82
2358	51.11	MT	TABAPORÃ	51.09
2371	32.83	MT	TABAPORÃ	32.83
2375	25.79	MT	TABAPORÃ	9.66
2400	562.39	MT	TABAPORÃ	305.40
2562	34.71	MT	TABAPORÃ	23.52
908	92.75	MT	TAPURAH	92.75
996	27.72	MT	TAPURAH	9.25
1234	79.08	MT	TAPURAH	79.08
1310	76.84	MT	TAPURAH	71.85
1498	285.99	MT	TAPURAH	285.99
3183	584.05	MT	TERRA NOVA DO NORTE	358.23
3298	76.38	MT	TERRA NOVA DO NORTE	12.65
3703	52.87	MT	TERRA NOVA DO NORTE	1.76
2102	77.15	MT	UNIÃO DO SUL	77.15
2116	57.86	MT	UNIÃO DO SUL	57.86
2138	35.57	MT	UNIÃO DO SUL	35.57
2187	48.02	MT	UNIÃO DO SUL	48.02
2277	683.97	MT	UNIÃO DO SUL	358.26
2283	231.93	MT	UNIÃO DO SUL	119.17
2289	111.67	MT	UNIÃO DO SUL	111.68
1359	39.14	MT	VERA	22.43
1409	719.41	MT	VERA	36.12
1474	94.65	MT	VERA	94.65
1661	144.47	MT	VERA	137.70
1736	202.76	MT	VERA	54.71
1833	34.80	MT	VERA	34.18
76	40.23	MT	VILA BELA DA SANTÍSSIMA TRINDADE	18.88
89	34.99	MT	VILA BELA DA SANTÍSSIMA TRINDADE	34.99
208	26.55	MT	VILA BELA DA SANTÍSSIMA TRINDADE	26.55
213	25.67	MT	VILA BELA DA SANTÍSSIMA TRINDADE	25.67
4363	29.63	MT	VILA RICA	10.45
4382	60.39	MT	VILA RICA	40.85
4402	32.78	MT	VILA RICA	29.84
4462	159.01	MT	VILA RICA	50.78

8.2 –Polygons with soybeans in the state of Pará (PA)

ID	Polygon Area (in hectares)	State	Town	Soy Area (in hectares)
6878	102.81	PA	BELTERRA	35.81
6883	64.46	PA	BELTERRA	64.47
6885	26.14	PA	BELTERRA	5.75
6890	47.81	PA	BELTERRA	16.96
6899	29.30	PA	BELTERRA	25.93
5257	28.46	PA	CUMARU DO NORTE	20.07
5751	54.53	PA	CUMARU DO NORTE	29.64
6236	32.13	PA	DOM ELISEU	32.13
6240	40.39	PA	DOM ELISEU	40.39
6262	51.91	PA	DOM ELISEU	32.39
6277	471.62	PA	DOM ELISEU	458.72
6286	356.63	PA	DOM ELISEU	315.60
6288	93.07	PA	DOM ELISEU	26.20
6298	150.27	PA	DOM ELISEU	136.70
6304	27.56	PA	DOM ELISEU	27.56
6307	565.43	PA	DOM ELISEU	313.21
6314	403.64	PA	DOM ELISEU	398.01
6316	25.50	PA	DOM ELISEU	25.50
6321	306.70	PA	DOM ELISEU	20.23
6366	834.58	PA	DOM ELISEU	12.39
6370	25.89	PA	DOM ELISEU	19.03
6383	32.03	PA	DOM ELISEU	6.39
6384	225.95	PA	DOM ELISEU	48.94
6390	84.61	PA	DOM ELISEU	63.63
6407	349.98	PA	DOM ELISEU	281.35
6410	58.27	PA	DOM ELISEU	41.26
6413	83.62	PA	DOM ELISEU	24.83
6423	721.39	PA	DOM ELISEU	438.51
6424	173.86	PA	DOM ELISEU	21.78
6427	55.73	PA	DOM ELISEU	25.36
6434	45.14	PA	DOM ELISEU	45.13
6436	54.49	PA	DOM ELISEU	11.32
6437	577.45	PA	DOM ELISEU	402.61
6444	51.55	PA	DOM ELISEU	18.06
6465	305.80	PA	DOM ELISEU	134.23

ID	Polygon Area (in hectares)	State	Town	Soy Area (in hectares)
6472	58.72	PA	DOM ELISEU	49.19
6496	64.96	PA	DOM ELISEU	7.75
6503	248.70	PA	DOM ELISEU	62.28
6521	64.47	PA	DOM ELISEU	36.34
6522	61.16	PA	DOM ELISEU	34.61
6527	105.59	PA	DOM ELISEU	91.56
6529	54.20	PA	DOM ELISEU	8.41
6531	290.16	PA	DOM ELISEU	53.46
6534	112.81	PA	DOM ELISEU	78.59
6536	466.03	PA	DOM ELISEU	128.62
6545	100.36	PA	DOM ELISEU	11.03
6547	140.04	PA	DOM ELISEU	55.37
6570	1,465.19	PA	DOM ELISEU	520.29
6619	610.99	PA	DOM ELISEU	305.98
7161	28.58	PA	MOJUÍ DOS CAMPOS	13.58
6766	343.44	PA	PARAGOMINAS	257.04
6854	38.51	PA	PARAGOMINAS	38.51
6859	106.85	PA	PARAGOMINAS	106.85
6863	117.91	PA	PARAGOMINAS	117.90
6870	26.01	PA	PARAGOMINAS	26.00
6871	434.23	PA	PARAGOMINAS	179.52
6882	143.34	PA	PARAGOMINAS	105.06
6888	126.83	PA	PARAGOMINAS	108.64
6892	26.86	PA	PARAGOMINAS	4.86
6894	62.04	PA	PARAGOMINAS	45.21
6920	384.10	PA	PARAGOMINAS	369.66
6921	162.18	PA	PARAGOMINAS	162.17
6940	988.84	PA	PARAGOMINAS	262.72
6965	48.21	PA	PARAGOMINAS	48.21
6969	122.75	PA	PARAGOMINAS	88.23
6997	52.44	PA	PARAGOMINAS	52.44
7045	152.85	PA	PARAGOMINAS	152.85
7056	54.10	PA	PARAGOMINAS	39.44
7057	41.51	PA	PARAGOMINAS	33.90
7059	135.22	PA	PARAGOMINAS	37.10
7077	496.74	PA	PARAGOMINAS	496.71

ID	Polygon Area (in hectares)	State	Town	Soy Area (in hectares)
7111	174.32	PA	PARAGOMINAS	108.80
6156	50.96	PA	RONDON DO PARÁ	50.96
6161	159.74	PA	RONDON DO PARÁ	25.74
6182	55.22	PA	RONDON DO PARÁ	55.21
6199	268.74	PA	RONDON DO PARÁ	130.26
6235	80.80	PA	RONDON DO PARÁ	22.22
6242	111.58	PA	RONDON DO PARÁ	104.85
6248	50.01	PA	RONDON DO PARÁ	43.99
6272	72.44	PA	RONDON DO PARÁ	42.26
6278	47.67	PA	RONDON DO PARÁ	19.26
6296	798.12	PA	RONDON DO PARÁ	70.63
5045	63.98	PA	SANTANA DO ARAGUAIA	14.63
5095	545.50	PA	SANTANA DO ARAGUAIA	106.11
5131	32.53	PA	SANTANA DO ARAGUAIA	32.53
7187	30.82	PA	SANTARÉM	30.82
6578	50.38	PA	ULIANÓPOLIS	3.74
6603	55.94	PA	ULIANÓPOLIS	30.68
6605	312.87	PA	ULIANÓPOLIS	81.04
6609	313.57	PA	ULIANÓPOLIS	104.00
6612	744.51	PA	ULIANÓPOLIS	328.23
6613	100.82	PA	ULIANÓPOLIS	16.81
6636	101.47	PA	ULIANÓPOLIS	101.47
6642	29.04	PA	ULIANÓPOLIS	27.13
6648	6,594.24	PA	ULIANÓPOLIS	449.66
6724	34.41	PA	ULIANÓPOLIS	23.79
6732	410.15	PA	ULIANÓPOLIS	370.32
6734	84.87	PA	ULIANÓPOLIS	84.87
6736	31.12	PA	ULIANÓPOLIS	3.88
6746	77.48	PA	ULIANÓPOLIS	47.03
6749	25.32	PA	ULIANÓPOLIS	25.31
6750	45.84	PA	ULIANÓPOLIS	45.84
6753	64.96	PA	ULIANÓPOLIS	33.99
6754	215.34	PA	ULIANÓPOLIS	215.33
6756	1,504.11	PA	ULIANÓPOLIS	941.81
6758	72.93	PA	ULIANÓPOLIS	16.92

8.3 – Polygons with soybeans in the state of Rondônia (RO)

ID	Polygon Area (in hectares)	State	Town	Soy Area (in hectares)
382	118.40	RO	CABIXI	105.87
432	85.91	RO	CABIXI	1.29
535	390.03	RO	PIMENTEIRAS DO OESTE	390.03
546	633.63	RO	PIMENTEIRAS DO OESTE	633.63
977	125.82	RO	VILHENA	43.84
981	153.92	RO	VILHENA	23.29
975	54.74	RO	CORUMBIARA	47.99

IMPLEMENTATION

agrosatélite
geotecnologia aplicada

GTS – SOY TASK FORCE

ABIOVE

ANEC
ASSOCIAÇÃO NACIONAL DOS EXPORTADORES DE CEREAIS

ADM

Algar Agro

AMAGGI
Exportação e Importação

Baldo

BUNGE

Cargill

FIAGRIL

IMCOPA

LouisDreyfus Commodities

noble group

ÓLEOS MENU

Santarosa

Amigos da Terra
AMAZÔNIA BRASILEIRA

CONSERVAÇÃO INTERNACIONAL
BRASIL

GREENPEACE

imaflora

IPAM
Instituto de Pesquisa Ambiental da Amazônia

STTR de Santarém

The Nature Conservancy
Protege a natureza é preservar a vida.

WWF Brasil