

SOY PRODUCTION PRACTICES

SUSTAINABLE PRACTICES ARE WIDELY ADOPTED BY SOY PRODUCERS IN BRAZIL



In short

99% of soy produced in Brazil is cultivated in areas with long-standing crop production history (consolidated areas). Expansion of certain crops takes place by converting other annual crops or planted pastures. In consolidated areas, soy growers pursue yield increases by adopting several good agronomic practices: double cropping in the same season, low use of nitrogen fertilizers, no-till cropping, soil conservation, soil profile formation, crop rotation and rotation crop-pastures. Besides, as a requirement of the Brazilian Forest Code, soy farmers are responsible for conserving large stocks of native vegetation located within the farms. In essence, soy farms have a great potential to expand production over already used land (anthropic areas), avoiding the conversion of native vegetation.

Few Facts

Soy yields are growing 2% p.a. in Brazil. When combined with corn in double cropping, it is growing 3.8% per annum. Soy and corn planted in the same season produce 9,000 kilos per hectare. Corn grown in double cropping represents 73% of the total Brazilian corn production. The soy-corn double-crop system is a technology developed in Brazil, which helped preserve 14 million hectares of land from conversion, because corn is planted in the same area of soy (the first crop).

Soy properties located in the Cerrado Biome occupy 57 million hectares, of which 36.7 million are in use (anthropic) and 20 million hectares with native vegetation. In total, 35.1% of soy farm areas are covered with native vegetation, with 20.7% (11.8 million ha) declared by farmers as legally protected areas under the Forest Code provisions. Among the anthropic uses, 18.2 million ha are soybeans, 6.1 are pastures, and 7.45 are other agricultural uses. Anthropic non-soy uses with a high and medium potential for soy production due to soil and climate conditions amount to 13.55 million ha. Large cleared farm areas are available for conversion to soy without deforestation.

More info

The adoption of good agricultural practices is an indication of farmers' technological level. Consolidated areas producing annual crops require these good practices to preserve soil production capacity and keep yields growing. Brazilian soy production is mechanized and adopts state-of-the-art technologies in terms of high-performance seeds, agrochemicals, nitrogen fixation and plant nutrition.

At least 75% of soy planted area and 100% of corn double-crop are produced on a no-tillage or minimum tillage system. In no-till, only the grain is harvested, leaving on the ground leaves, trashes and straws. This natural cover contributes to preventing erosions, increases organic matter, retains moisture in the soil and captures carbon below the ground.

Brazilian soy average yield is 3,400 kg/ha. Top producers, however, are able to achieve much higher yields, almost reaching the agronomic potential. Brazil Soybean Strategic Committee (CESB) organizes a soybean yield contest since the 2008/09 season. Winners of the CESB contest achieve 30% higher yields than the Brazilian average. The main reasons for that are the crop management techniques adopted and good production practices used. Farmers performing crop rotation, soil conservation practices and building up soil profile, achieve higher yields and produce crops more resilient to water deficits.

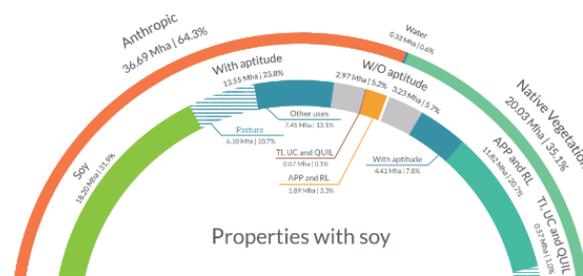
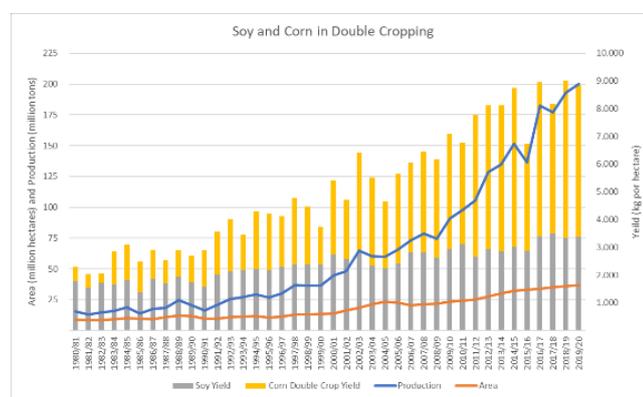


Figure 26. Representation of the Anthropogenic, Native Vegetation and Water categories for the 33,919 properties that currently grow soy in the Cerrado Biome, according to data registered with CAR. The second level divides the anthropic and native vegetation categories into the groups "With Sustainability" and "Without Sustainability", showing the area occupied by soy in crop year 2008/09 and the areas of APP and RL registered with CAR, as well as the areas of Indigenous Lands (TI), Conservation Units (UC, except for APP) and the Quilombola Communities (QUIL). In the anthropic category "With Sustainability", the pasture area is highlighted.

[1] Deforestation associated to soybean was 88.800 ha in the Amazon Biome from 2008 to 2019 and 360.000 ha in the Cerrado Biome from 2014 to 2019. $368.8 / 36.000 = 1\%$.
 [2] Geospatial Analysis of Soy Crop in the Cerrado Report, <https://abiove.org.br/en/publicacoes/analise-geoespacial-da-soja-no-cerrado/>
 [3] Evolução do Sistema de Plantio Direto no Paraná, https://febrapdp.org.br/download/EVOLUCAO_DO_SPD_NO_PARANA_2014.pdf and Sistemas de Preparo do Solo: Trinta Anos de Pesquisas na Embrapa Soja, <https://ainfo.cnptia.embrapa.br/digital/bitstream/item/92107/1/Doc-342-OL.pdf>.
 [4] Battisti, R. et al. Soybean Yield Gap in the Areas of Yield Contest in Brazil. Int. J. Plant Prod. 12, 159–168 (2018). <https://doi.org/10.1007/s42106-018-0016-0>