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PROGRAMA DE PÓS GRADUAÇÃO EM FITOTECNIA

# Análise Crítica – Parte 1

Disciplina: Tópicos Especiais

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## Agronomy Journal Abstract – Agronomy, Soils e Environmental Quality

The Quality of Sunflower Seed Oil Changes in Response to Nitrogen Fertilizer

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# DADOS SOBRE O ARTIGO

**Agronomy Journal Abstract – Agronomy, Soils e Environmental**

## **Vegetation Indices for Discrimination of Soybean Areas: A New Approach**

Carlos Antonio da Silva Junior, Marcos Rafael Nanni, Paulo Eduardo Teodoro and Guilherme Fernando Capristo Silva

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# ANÁLISE CRÍTICA

## TÍTULO

**Vegetation  
Indices for  
Discrimination of  
Soybean Areas: A  
New Approach**

- 1. Objetivo**
- 2. Claro**
- 3. Desperta curiosidade**
- 4. Curto**



# ANÁLISE CRÍTICA

## RESUMO

Regarding the ground line,  $R$  and  $R^2$  were above 0.92 and 0.84, respectively ( $p < 0.01$ ). The test results indicate that the proposed methodology is efficient for mapping soybean distribution, with 0.80 for the Kappa parameter, an appropriate crop spatial distribution, and no over- or underestimation of areas. Thus, this study allows automated mapping of areas cultivated with soybean crops at large scales.

Resultados e Discussão  
Conclusão

# ANÁLISE CRÍTICA

## IDEIAS CHAVES

- Automation of mapping of soybean areas.
- Use of remote sensors in the recognition of summer crop.
- Development of exclusive vegetation index for soybean.



São condizentes com a propósito e a descrição do presente trabalho

# ANÁLISE CRÍTICA

## INTRODUÇÃO

**R**EMOTE SENSING is an advanced technology that has been constantly improved, mainly with regard to its application to agriculture. Through this technique, it is possible to determine several crop characteristics, such as leaf area index, estimating areas, production, vegetative vigor, and management (Pan et al., 2012; Peng and Gitelson 2012; da Silva Junior et al., 2016).



CONTEXTUALIZAÇÃO DO PROBLEMA – traz o sensoriamento remoto como uma ferramenta tecnológica com diferentes aplicações na agricultura

# ANÁLISE CRÍTICA

## INTRODUÇÃO

In Brazil, despite the improvements with respect to technological knowledge, agricultural areas are often estimated in loco. One of the greatest difficulties in estimating these areas by means of low spatial resolution images is that mixed pixels do not correspond to a unique crop, mainly for small cultivated areas (named “small farmers”), thus hindering classification and requiring additional information from the field and/or provided by the same professionals (Wu and Li 2012).



APRESENTAÇÃO DO PROBLEMA – expõe o problema de pesquisa ressaltando o avanço do conhecimento tecnológico



# ANÁLISE CRÍTICA

## INTRODUÇÃO

For agricultural areas with larger spatial extent, the identification problem is minimized with regard to coarse spatial resolution images and different crop phenological stages, which can be spectrally differentiated through multitemporal images (Potgieter et al., 2010). Thus, it is essential to know the agricultural calendar of each crop according to agricultural zoning for a growing region.



APRESENTAÇÃO DO PROBLEMA – este parágrafo poderia ter sido apenas complementado com o anterior, não sendo estas todas estas informações necessárias.

# ANÁLISE CRÍTICA

## INTRODUÇÃO

The MODIS sensor, on board the TERRA and AQUA satellites, is very useful for mapping large agricultural areas (Ozdogan 2010; Wu and Li 2012; Peng and Gitelson 2012). One of the significant features of its operation is that it provides temporal resolution almost daily (a positive point in obtaining cloud-free images), and image production is with 12-bit quantization in 36 spectral bands.



**SOLUÇÃO DO PROBLEMA** - Logo após o problema de pesquisa, os autores expõe a solução para a problemática, conectando a ideia do segundo parágrafo a esta.

# ANÁLISE CRÍTICA

## INTRODUÇÃO

With available images arising from remote sensing satellites, the development of studies for identifying and monitoring agricultural crops is growing (Peng et al., 2011; Son et al., 2012). During certain stages of development, agricultural crops present phenological patterns that spectrally distinguish them from other vegetable classes. Therefore, the use of satellite time-series images has gained a positive reputation for identifying agricultural crops (Bernardes et al., 2011). Some methods currently used to estimate soybean areas by remote sensing are presented satisfactorily with principal component analysis (Bernardes et al., 2011), guidance on geo-object (da Silva Junior et al., 2014), vegetation index (Rizzi et al., 2009; Risso et al., 2012), and automatic classification (Adami et al., 2010).



SOLUÇÃO DO PROBLEMA -  
ferramentas do sensoriamento  
que podem contribuir para a  
melhoria na discriminação da  
soja no Mapeamento.

# ANÁLISE CRÍTICA

## INTRODUÇÃO

Furthermore, the use of remote sensing to study soybean distribution has been confirmed worldwide and is used for discriminating and quantifying areas (da Silva Junior et al., 2014, 2016), identifying phenological stage (Sakamoto et al., 2010) and estimating yield by chlorophyll content (Peng and Gitelson 2012). To meet new methodological challenges for interpreting high resolution images, development of oriented analysis was necessary not only to verify values represented in gray levels but also to verify object shapes and their neighboring relationships (Schiewe and Tufte 2007).



**CONFIRMAÇÃO E REFORÇO** do por que mapear áreas de soja com sensores de menor resolução espacial.

# ANÁLISE CRÍTICA

## INTRODUÇÃO

Thus, to overcome problems due to heterogeneity of pixels and, for example, variability of agricultural crops in images obtained by remote sensing, techniques based on objects have been increasingly used in remote sensing (Blaschke 2010). The basic idea of analysis based on an image's objects (GEOBIA) is segmenting and building a hierarchical network of homogeneous objects that, in the case of crop ratings, chart limits.



APROFUNDAMENTO NA PROBLEMÁTICA - faz um pequeno aprofundamento, expondo o principal problema da pesquisa e expõe uma ferramenta do sensoriamento para possível resolução

# ANÁLISE CRÍTICA

## INTRODUÇÃO

The development of systematic mapping of agricultural crops in Brazil is a challenge due to its extent of cultivation and multitude of planted crops. The challenge of systematization, especially with regard to the soybean crop, is relevant to Brazil because a large part of its economy is directed toward this activity, and the extent of the agricultural area is currently inaccurate.



REFORÇA NOVAMENTE a importância da aplicação deste estudo para o Brasil.

# ANÁLISE CRÍTICA

## INTRODUÇÃO

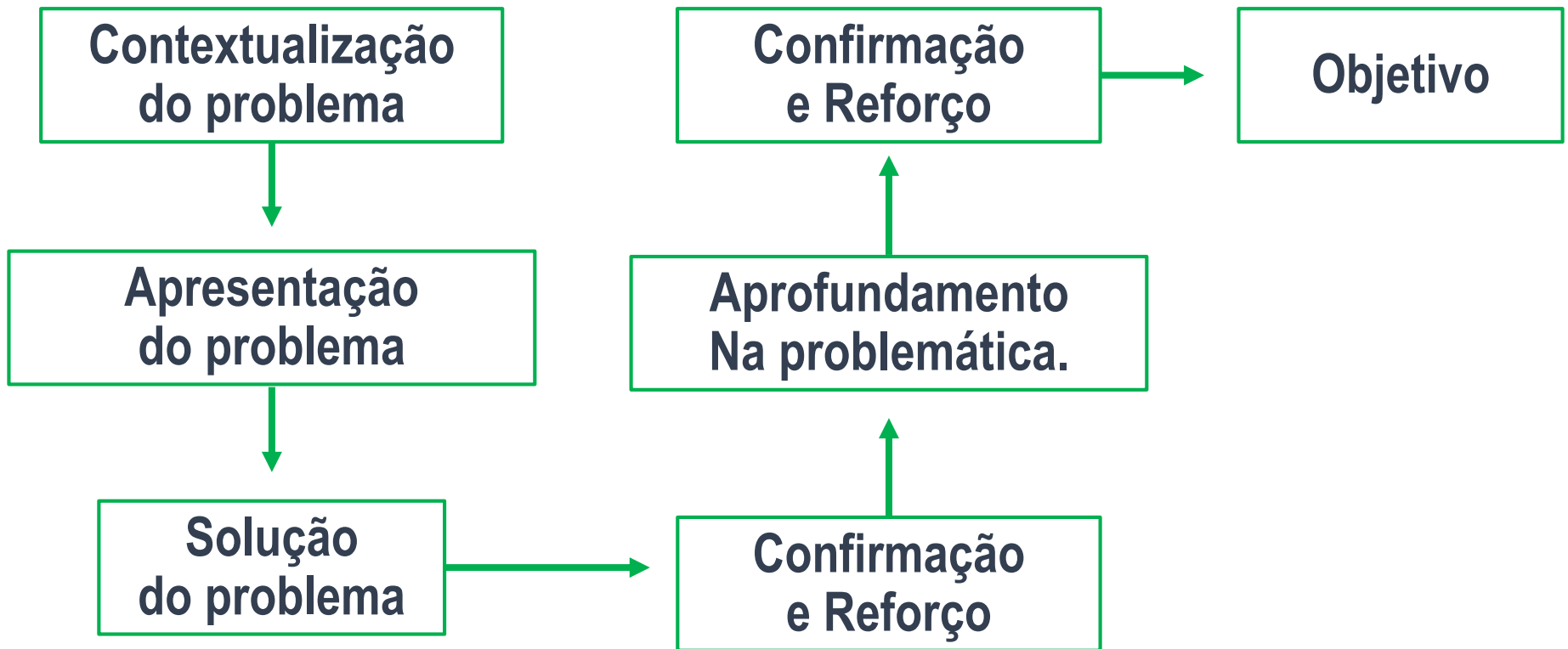
The main aim of this study was to estimate and map areas with soybean crop in the state of Paraná, Brazil, using mono and multi-temporal MODIS images. We develop the vegetation index PCEI and apply threshold determination for the automation of soybean area detection by geo-object oriented analysis (GEOBIA).



**OBJETIVO DO TRABALHO** - estimar e mapear áreas com cultivo de soja no estado do Paraná, utilizando imagens MODIS mono e multitemporais.

# ANÁLISE CRÍTICA

## INTRODUÇÃO







**OBRIGADO**