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Remote Sensing to study soil-management systems in Itaí-SP

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Nowadays, there is a worldwide concern to develop sustainable technologies for agriculture and a correct soil management is one of the principles toward the ecological production of crops. Soil covering is one of the most important tecniques to reduce erosion because the barrier on the surface prevents the direct impact of the rain drops. This technique improves soil fertility, keeps the soil moisture, reduces the evaporation losses and reduces the need of irrigation by 20%. The species used to cover the soil depends on the aim of the work, but is always important to know previously the availability of the material in the area and the possibility to use material of previous crops. In São Paulo State some studies are trying undertand how different soil-covering-systems affect plant production, especially for common bean, very important nutritionally and economically in Brazil.
Nowadays, remote sensing could is used to study spatial dynamics, and to understand data in any place on the globe easily. For that, images of Earth freely obtained on the Internet are analyzed and interpreted to understand the dinamic of a specific local by the interaction between an electromagnetic radiation and different covering-vegetation.
The aim of this study was monitoring by remote sensing an area of bean production with straw-covered-soil and straw-incorporated in the soil. The experimental site is in Itaí, São Paulo, Brazil, irrigated by central pivot. Images of different satellites (Landsat 7 and Landsat 8) were downloaded and analyzed by determining the soil moisture index (IUS) as a function of the normalized difference vegetation index (NDVI) for both straw-systems.
There was correlation between IUS and NDVI data, and the highest value obtained was 0.98 for both systems and the lower one was 0.59 in the straw-covering system and 0.61 in the straw-incoporated system. Thus, the sensors were not sensitive to detect differences between the systems, and further studies are needed to identify which management system is better for soil physics, water holding and plant development.