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## Range Condition Evaluation in Empedrado, Corrientes - Argentina

DITMAR BERNARDO KURTZ<sup>1</sup>, MARIA CRISTINA GOLDFARB<sup>2</sup>, FRANCISCO NUNEZ<sup>2</sup>, OSCAR QUIROS<sup>2</sup>

<sup>1</sup>University of Bonn, Institute of Crop Science and Resource Conservation - Crop Production, Germany

<sup>2</sup>National Institute for Agricultural Technology, Corrientes, Argentina,

### Abstract

The total area of rangelands constitutes 78 % of the Empedrado department surface (Corrientes province — Argentina). Rangeland evaluation is considered essential part of a good management and sustainable use of the grassland resource. Worldwide, different tools with different complexity are available, from field to remotely based procedures. In these work, both approaches were investigated. For that reason, two sampling sites were considered: highlands and lowlands, both selected regarding accessibility and representativeness. In each field site, several attributes were recorded in a nine-block design of 28.5 m × 28.5 m. and five random samples within. In the laboratory, normalised difference vegetation index (NDVI) was calculated from a Landsat 5 TM image (path 226, row 079) acquired on 27 July 2006 coincident with the fieldwork date. In addition, trend and cover index was calculated as an indicator of range condition.

The results indicate that in the highland site, weeds contributed with 49.1 % whilst grasses contributed with 48.6 % of the species. Dry matter yield (DMY) was 3,506 kg/ha; weeds contributed 2,295 kg/ha (65.5 %) and grasses 1,180 kg/ha (33.7 %). Species that contributed to total DMY were: *Vernonia chamaedrys* (50.1 %), *Sorghastrum agrostoides* (13.7 %), *Eryngium horridum* (11.3 %) and *S. nutans* (10.9 %). In the lowlands, grasses contributed up to 97.3 % and grasslike plants about 2.3 %. DMY was 2,287.1 kg/ha and grasses contributed 2,225 kg/ha (97.3 %). Species that contributed more to total DMY were: *Paspalum intermedium* (45.4 %), *S. agrostoides* (26.7 %) and *Andropogon lateralis* (18.3 %). Statistical analyses indicate that the two sites are significantly different regarding standing death material, total DMY and NDVI. Additionally, the trend and cover index was sensitive to detect the different range conditions, being higher in the lowland site than in the highland site. No significant differences were found when considering mulching and percentage of bare soil. Interestingly, NDVI and trend and cover index show to be inversely related. The ongoing results suggest further studies to take advantage of the remote sensing techniques.

**Keywords:** Landsat, normalised difference vegetation index, rangelands, trend and cover index