Volume XXXVIII-8/W20

Int. Arch. Photogramm. Remote Sens. Spatial Inf. Sci., XXXVIII-8/W20, 56-60, 2011
www.int-arch-photogramm-remote-sens-spatial-inf-sci.net/XXXVIII-8-W20/56/2011/
doi:10.5194/isprsarchives-XXXVIII-8-W20-56-2011

SPATIAL TEMPORAL SOWING PATTERN OF RAPESEED-MUSTARD CROP IN INDIA USING MULTI-DATE IRS AWIFS DATA

D. R. Rajak, H. A. Patel, K. N. Chaudhari, N. K. Patel, S. Panigrahy, and J. S. Parihar
Earth, Ocean, Atmosphere, Planetary Sciences and Applications Area, Space Applications Centre (ISRO), Ahmedabad-380015, India

Keywords: Rapeseed-Mustard Crop, Crop Sowing Pattern, Remote Sensing, Multi-date IRS P6 AWiFS

Abstract. This paper highlights the results on spatial pattern of sowing of rapeseed/mustard in four major states in India using multidate Advanced Wide Field Sensor (AWiFS) data for 2010-11 crop season. Geo-referenced, calibrated AWiFS data acquired during October 2010 to February 2011 were used to generate the Normalised Difference Vegetation Index (NDVI) image sets. Iterative Self-Organizing Data Analysis Technique (ISODATA) based clustering of the multi date NDVI dataset for mustard crop pixels was performed. The clusters were segregated to spectral emergence classes using a spectral profile matching approach with reference to ground truth data. The sowing dates were derived from the spectral emergence data using a lag period based on field observation. Analysis showed the sowing pattern in the study states is spread over around 60 days from mid October to mid December. Three distinct clusters of sowing pattern were observed. The major one (around 40%) is sown between mid October and first week of November. Around 25% area is sown from last week of November to mid December. The other 35% area is sown in between these two periods. Analysis of temperature, a key weather variable influencing the growth of this crop, showed that the crop sowing in northern Rajasthan and Haryana is delayed by about one month to avoid the frost damage during reproductive phase. In the parts of Gujarat, southern parts of Rajasthan and Madhya Pradesh (MP), an early sowing in the second fortnight of October was observed, mainly to avoid higher mean temperatures during the month of March.

Conference Paper (PDF, 839 KB)

Citation: Rajak, D. R., Patel, H. A., Chaudhari, K. N., Patel, N. K., Panigrahy, S., and Parihar, J. S.: SPATIAL TEMPORAL SOWING PATTERN OF RAPESEED-MUSTARD CROP IN INDIA USING MULTI-DATE IRS AWIFS DATA, Int. Arch. Photogramm. Remote Sens. Spatial Inf. Sci., XXXVIII-8/W20, 56-60, doi:10.5194/isprsarchives-XXXVIII-8-W20-56-2011, 2011.

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