



Assessment of Seasonal Crop Produce of District Dadu Using Landsat Images

A.A. MEMON, A.G. MEMON,* S. SOOMRO **, H. U. ABBASI *** S. M. GHOTO ***

Center for Environmental Sciences, University of Sindh, Jamshoro, Pakistan

Corresponding author: A. A. MEMON e-mail: engabdulaleem@yahoo.com, Cell. No. 03003075458

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Abstract: Crop yield is essential for those countries that are based on agriculture production, which is the main source of economy. In the forecast of experts and decision makers about potential decrease in crop yields, this study was carried out with work approach and the techniques of Remote Sensing (RS) based crop discrimination and area estimation. With single date approach based on maximum likelihood classification algorithm, The Landsat imagery data used for assessment of Rabi crop (Rice), from past two decades. The research work has been focused on mapping and assessment of Rabi Crop (Rice) to identify the state of crop and its impact on socio economic environment of District Dadu. From our research it has been revealed that significant reduction was continuously monitored from 2009 to 2010 in rice crop and remote sensing results were counter-check with revenue record for authentication of RS results. This research work will be supportive for policy makers to build up complete precise, perfect and dynamic plans for administration of Dadu District crop and develop the future socio-economic environment.

Keywords: Analysis of Crop; Land use/Land cover remote sensing; supervised classification method; Landsat.

1. **INTRODUCTION**

Crop yield is necessary, particularly for those countries that depend on agriculture as their main source of economy. Such forecasts reports of the decision makers about probable reduction in crop yields (Shafian *et al.*, 2007). Crop yield estimation is very important in national and regional scale (Anup *et al.*, 2006). Because of the population increased, needs micro-level planning and particularly the demand for crop insurance (Anup *et al.*, 2006), Crop yield estimation has an important role on economy development. This research work developed basic conceptual framework and identified specific techniques for crop monitoring by RS and how it is useful in estimating crop parameters. The remote sensing technology, efficiency and accuracy of traditional agricultural statistics, the crop area and yield estimation by remote sensing measurements of agricultural, condition monitoring significantly benefits, a huge of economic and social sectors (Fumin, *et al.*, 2010). In view of the fact that the 90s of 20th century, speedy enlargement of tools in crop temporal monitoring and yield assessment by remote sensing technology; Food and Agriculture Organization (FAO) create a worldwide early notice food information system to observe and calculate universal crop capitulate; Canada employ NOAA to realize crop, water measurement, disaster warning,

yield forecasting in large area; Russia utilize MODIS to approximation crop land in the south of Russia; South Africa calculate approximately crop area with the support of remote sensing data and unmanned airborne vehicles; Brazil monitors crop estate and yield in the south of Brazil using remote sensing data; In Asia, Japan, India, Thailand, Indonesia, Vietnam and other state also use remote sensing method to calculate yield (Wu, 2004., Fumin, *et al.*, 2010).

Study area

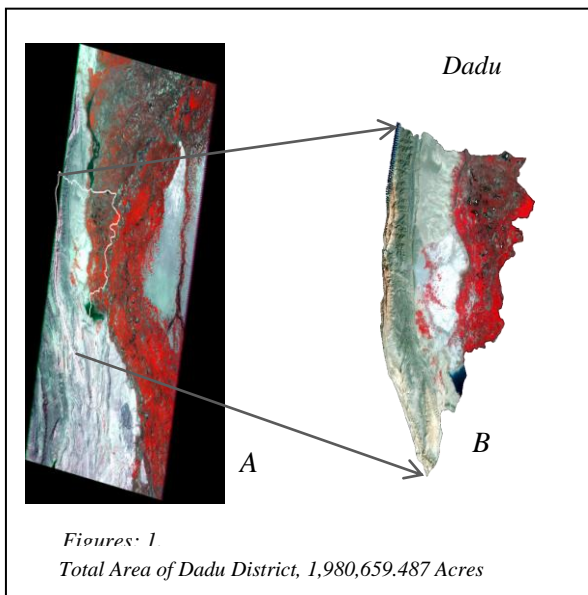
District Dadu has 4 talukas (Tehsils) including Dadu, Johi, Mehar and Khairpur Nathan Shah. The crop growing soil of region consists of three neighborhoods: (i) Stream Zone (ii) Sailabi (River Spill in Kacho area) and (iii) rainwater in Kachho area. The Dadu is supplied by Sukkur Barrage, there are two major inland waterway in Dadu (i) Rice Canal (ii) Dadu Canal. The all crops of Rabi are grown in area such as Rice, Sugarcane, Cotton, Maize, Bajra, Pulses, Barley, Juwar, Seasum and Grams. The overall cultivated area of region is 1, 93,779-0 acres. The type of weather of Dadu is intensive warm about 45^oC in summer and less 5^oC centigrade in wintry weather. The yearly precipitation as 139mm (5.6 Inch). The majority of the rainfall over 50% appears in Monsoon months, July, August and September. The western depression fetches

* Institute of Mathematics and Computer Science, University of Sindh, Jamshoro, Sindh, Jamshoro

**Department of Industrial Engineering and Management, Mehran University of Engineering and Technology, Jamshoro

*** Department of Energy and Environment Quaid -E-Awam University of Engineering, Science Technology, Nawabshah

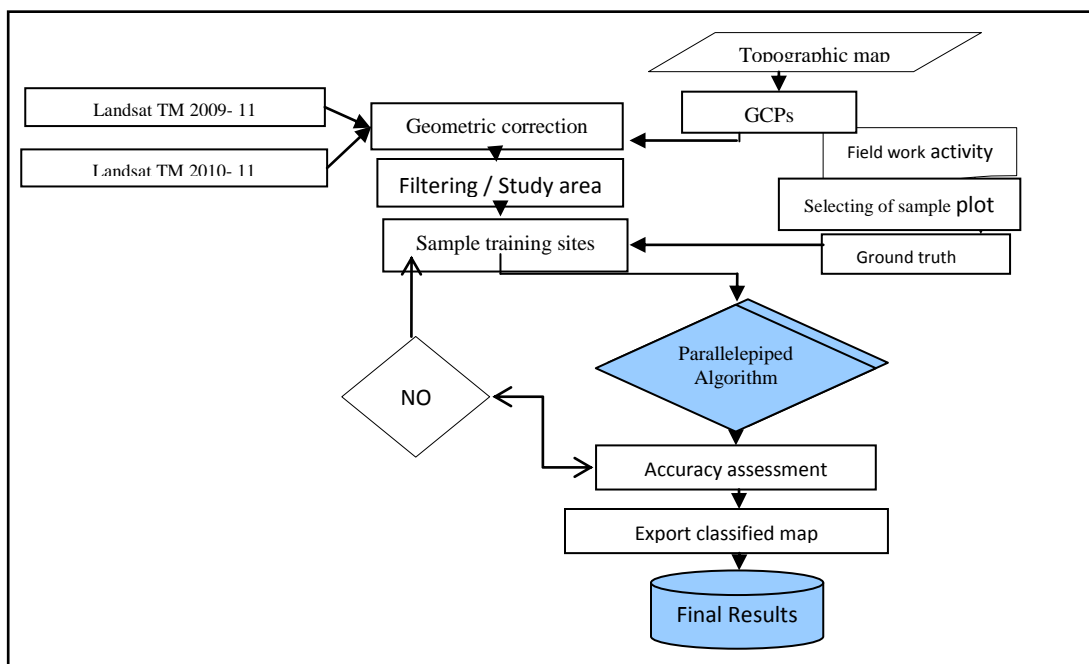
comparatively little amount of rainfall, 17mm beginning in December to March. Elevated veritably of rainfall (50-70%) is experienced and the rainfalls come up to in a small number of heavy showers.



2. MATERIAL AND METHOD

The study areas of Dadu district are covered with two satellite images, TM sensor imagery & data estimate on ENVI 4.0 (Environment for Visualizing Images) software tool; the raster images were enhanced by division stretch & as well employed false color composites & subset desired area. Geo-referencing correction has been done to remove geometric distortion from the image, via the topographic map and ground survey. Ground control points (GCP) to develop for geometrical correction of the images. Geometrically correct imagery was mosaiced by image mosaic technique and color similar scheme were employed on mosaiced images. The borderline of the Dadu crop has been digitized. The Dadu district was land divided into two classes land use/cover, such as crop, water body, grass/ barren land (Abbasi *et al.*, 2011). After that Parallelepiped has been carried out, The (ROI) regions of interest has been use for categorization, shown in methodology flow chart and finally these results will be used in crop production assessment of Dadu district (Abbasi *et al.*, 2011).

Flow chart of Crop Produce and Environmental Condition



3. RESULTS AND ANALYSIS

The distantly sensed data were utilized for crop measurement; data was selected for crop period, in the month of Sept: when there were seasonal crop present in that regions in the Dadu district. The

improved false colour combination of imagery, the grass/ cultivation land appears in dazzling red plot of land and it may possibly without difficulty to differentiate beginning other soil features. In satellite imagery of 2009, has been analyzed that there were huge amount of thick and in good physical shape

crop in the upper Dadu district, from Tharri Mohbat to Dadu city, from 2009 to 2010 reduction in seasonal crop was observed.

Supervised Classification of Land sat Imagery

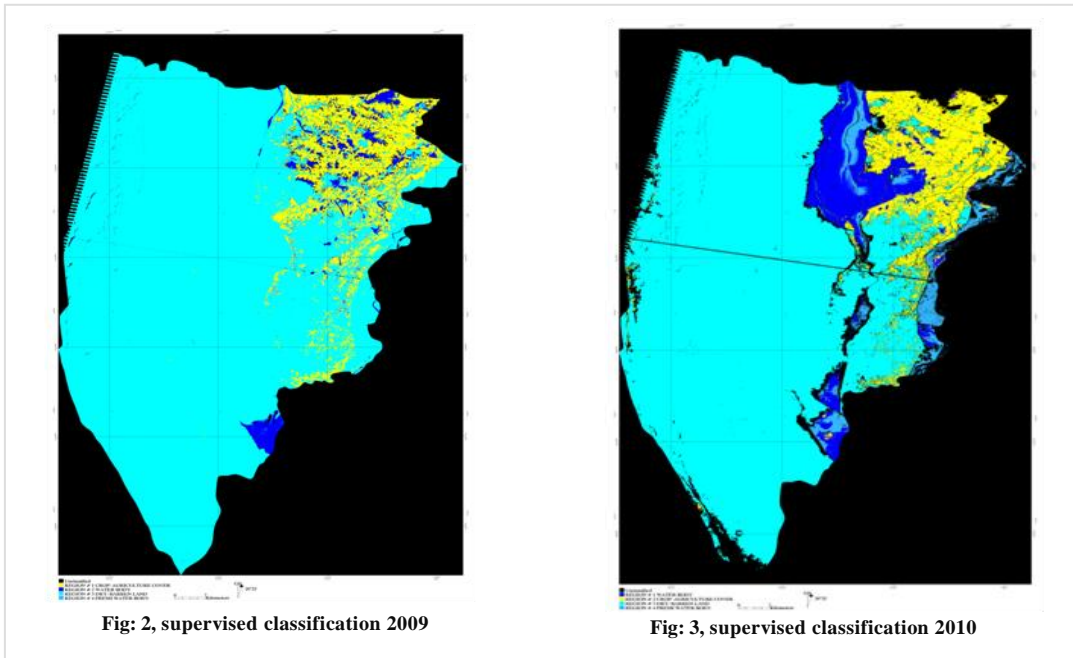


Table 1, Evaluation and crop assessment of areas of Dadu district, were based on supervised classification of Landsat Imagery data of two different years and other objects in (%) 2009 to 2010

CLASSIFICATION OF DIFFERENT OBJECTS				
Region	Crop cover	Water body	Dry land/ land cover	Fresh w Water
landsat TM Data sat 2009	5.572%	1.182%	46.961%	1.067%
landsat TM Data sat 2010	5.360%	3.610%	39.787%	1.769%

Table 2, Crop production of Dadu district

2009-2010				2010-2011	
Sr. No.	Type Of Crop	Irrigated Area in 000 Hectares	Production	Irrigated Area in 000 Hectares	Product ion
1	Rice crop	37.7	125.3 Tons	55.0	206.3 Tons
2	Sugarcane crop	2.9	143.6 Tons	2.2	97.5 Tons
3	Cotton crop	11.2	45.5 Bales	9.2	38.6 Bales
	Total	50.8		66.4	

The present research work focuses on crop production assessment of Dadu District using remote sensing tool. From our research it has been revealed that crop production significantly has been reduced from 2009- 2010, the results are in agreement with revenue record, according to the revenue record seasonal crop was in 2009 5.572%, and 2010 5.360%, but according to the remote sensing image results have shown that in 2009 seasonal crop was 12.85% and in 2010 8.562% shown in table slightly on higher site due to a higher accuracy of the methods as compared to manual results.

Table 3, Comparison of revenue record with remote sensing Result

According to revenue records		Remote sensing results		
Total area of District is 801572.89 Hectares				
Irrigated Area in 2009	50800 Hectares	10.81%	Npts 2000740	12.86%
Irrigated Area in 2010	66400 Hectares	8.28 %	Npts 1332089	8.56%

4. CONCLUSION

The present research work has been focused on monitoring and assessment of Rabi Crop through image processing to identify the state of crop and its

impact on socio economic environment of District Dadu. From our research it has been revealed that significant reduction from 2009 to 2010; In Rabi crop in 2009, 12.85%, and in 2010, 8.56%.The current investigate of study will be useful for decision makers to build up broad accurate and active strategy for running of Dadu District crop and can recover the future socio economic atmosphere.

5. **ACKNOWLEDGEMENT**

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