Advances in Bioresearch
Adv. Biores., Vol 8 (2) March 2017:146-152
©2017 Society of Education, India
Print ISSN 0976-4585; Online ISSN 2277-1573
Journal's URL:http://www.soeagra.com/abr.html
CODEN: ABRDC3
DOI: 10.15515/abr.0976-4585.8.2.146152

Advances in Bioresearch

ORIGINAL ARTICLE

Application of Satellites Imagery in Detecting and Mapping *Striga hermonthica* in a Sugar Cane Field

Yasir A. Qurashi[1]; E. S. Ganawa[2]; A. F. Kheiralla[2];A. A. Hassaballa[3*]
[1]Sennar Sugar Factory, Sudan
[2]University of Khartoum, Sudan
3Precision Agriculture Research Chair (PARC), King Saud University, Saudi Arabia
* Corresponding Author address:Precision Agriculture Research Chair (PARC), King Saud University, Saudi Arabia
E-mail: ahassaballa@ksu.edu.sa, Tel.: +966542053994

ABSTRACT
This paper presented the applications of remote sensing imagery and GIS on Striga hermonthica weed mapping in a sugar cane fields at Sennar sugar factory where located in the southeast region of the Sudan. In this work, a remote sensing system was developed and implemented for detecting and mappings triga in selected fields. The developed system used satellite images and differential global positioning system (DGPS) points as inputs to determine the striga infestation level through supervised classification technique. It was noticed that the striga population density was allocated to the field's boundary. The study also intended to examine the impact of striga development on sugar cane yield during seasons 2009, 2010 and 2011. A considerable negative relationships between striga extent and sugar cane yield were noticed where an average infestation area increase of 34- 40 % caused yield drop of 150 – 200 tons over the studied fields during the three mentioned seasons. These results drew the attentions to the severity of striga expansion over Sennar sugar cane fields.
Keywords*: Striga hermonthica, Sugar cane, Remote sensing, GIS, Weed mapping.*

Received 01/11/2016 Revised 12/01/2017 Accepted 19/02/2017

How to cite this article:
Yasir A. Qurashi; E. S. Ganawa, A. F. Kheiralla; A. A. Hassaballa. Application of Satellites Imagery in Detecting and Mapping *Striga hermonthica* in a Sugar Cane Field. Adv. Biores., Vol 8 [2] March 2017: 146-152.

INTRODUCTION

Weed management is an important practice in crop production, since weed infestation in agricultural fields causes high yield losses. Based on the worldwide estimates, the potential crop loss due to all pests is 40%– 80%, varying for different crops, and the potential of yield losses due weeds is estimated at34% of all pests [1].Precision plant protection often uses maps for decision support, and these maps are frequently produced from discrete sampling datasets. Maps are usually essential in a target-oriented pesticide application because it is widely accepted, particularly for weeds that are heterogeneously distributed in arable land [2-4]. A noxious weed location map with information on size and density of an infestation is also critical for planning control efforts. Integrated weed management involves using the most efficient control methods. It is very difficult to determine what methods are the most effective and efficient without documentation of the problem. This documentation is also critical for designating priority control areas, identifying infested areas and determining the budget required to do the job. Maps are also a critical component of developing contracts and cooperative agreements that identify areas of responsibility for all parties and define each partner's obligation.

Striga is a parasitic weed which attaches itself to the roots of cereals and other plants, not only robbing them of nutrition but also causing various debilitating effects which have earned them their common name of "Bodah". The two most important species (*Striga Hermonthica* and *Striga Asiatica*) parasitize cereal crops, particularly sorghum and millets, but also maize, upland rice and sugarcane. Another, (*Striga Gesnerioides*) attacks cowpeas. Striga produces numerous tiny seeds which remain viable in the soil for