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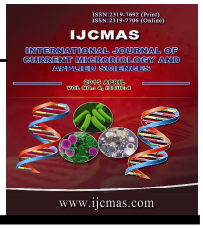

Original Research Article

Influences of Agricultural Expansion on Grazing lands in Tendalti Locality, White Nile State, Sudan

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A B S T R A C T

The study was carried out in Tendalti locality rangeland in White Nile State during the season of 2014. The aim of the study is to assess the impact of crops cultivated land expansion on grazing land and livestock corridors. A group discussion and questionnaire were used as tools for collecting the data about expansion of cultivated land into grazing land, gap of land use map, increasing of animals' number in rangeland and rangeland degradation caused by invaders plants species from animal owners, at different seasonal grazing areas. Five villages of Naphakhat, Abu Rokba, Tamolika, Nala AlJalean and Karmal were selected. Moreover, field observation also was used to collect information of the physical features in the area. The results show that, rangeland in Tendlti locality is facing many problems such as expansions of crops cultivated land into grazing land which in turn has led to deterioration problems and gap of land use map and recurring conflicts between farmers and herders.

Keywords

Conflicts, degradation, farmers, grazing lands and livestock

Introduction

The study area lies approximately between latitudes 12^0 58 and 14^0 30 North and longitudes 31^0 49 – 31^0 38 East. It covers an area about 982 square kilometers. The climate of the area is semi- arid, the annual rainfall is 250 - 800 mm from North to South. The average temperature range from 15 c° – 30 c° in winter and from 24 c° – 45 c° in summer (Ministry of Agriculture, 2012). Livestock form an important component of agricultural sectors; with production mainly based on traditional pastoral system. 90% of livestock in the Sudan belongs to the traditional pastoral production system (Zaroug, 2007). The total Livestock populations in Tendalti locality is 1245113 heads of camels, sheep, cows and goats which is equal to 73.7 % of the total State livestock population in the State (Ministry of Agriculture , 2012). Livestock in Sudan are owned mainly by pastoral and agro-pastoral groups, the former are dependent on livestock and the latter on both livestock and cultivation. Pastoral herders are mainly semi-nomadic at Tendalti locality. They move across within two corridors from Abu Rokba to Wad Dokona and form Tendalti to Elmeganes. During the

movements free grazing of rangelands is the most common feeding system for livestock during the year. Elhadary (2010) stated that, several lands digestions have been introduced since the colonial period and during the successive national governments aiming to provide the state full authority to control land resources and undermining the traditional communal right of pastoral people. Among these was the unregistered act of 1970, this act has given the government the full power to reallocate the land to the public and private sectors, without taking into account the communal right of utilization and access to land, which is the major source for pastoral livelihood.

Babiker (2008) added that the cultivated farming has expanded rapidly at the expense of traditional right causing implications and threat on pastoral economy. These implications include: livelihood insecurity, drop out from traditional sectors, collapse of pastoral adaptation, poverty, rural - urban migration, weakening the role of tribal leaders and acute conflict over limited resources. Furthermore, several land legislations have been introduced such as act of 1925 and of 1930 the overall objective is to dismantle customary land tenure systems based on common property and to provide the State full power to control and owned.

Most of the rural areas of the Sudan are dominated by a population of pastoralists and agro-pastoralist who are totally dependent on land and its natural resources as a means of their livelihoods. The traditional natural resource tenure system used to be effective for meeting the demands of herders and farmers without harming the overall environment. However, the increase in population and livestock, horizontal expansion in mechanized farming, and the series of droughts inflicting fragile ecosystem, (UNDP, 2006)

Materials and Methods

The following methods were used for collecting data:

1. A questionnaire was designed to collect information from the animals' owners at seasonal grazing land, rangeland problems, expansion of cultivated lands, and animal numbers in rangeland. Twenty five households were selected mainly from herders that used seasonal grazing lands.
2. Groups discussion, and
3. Field observations.

Result and Discussion

Expansion of cultivated land into grazing land

Figure 1. Shows that, most of range lands are occupied by undemarcated rain fed farming, the expansion of cultivated areas into rangeland has closed the animal routes between rainy seasonal grazing land and summer grazing land. The expansion of cultivation was on expense of land use previously as grazing land. This result is similar as stated by (Ministry of Agriculture, 2012).The expansion of cultivation areas into rangeland may force pastoralist to concentrate on small land and putting more pressure on rangeland and this has led to rangeland environmental problems. Moreover, the cultivated land had increased due to a change of an economic activity, that is, from pastrolism to farming. As a result the vast areas were cultivated by cash crops, such as sesame, groundnut and water melon, and livestock corridors were closed. Hence other rangeland problems like grazing land degradation, increasing conflicts between herders and farmers and competition over limited rangeland resources were common place.

Figure.1 Expansion of cultivated land into grazingland

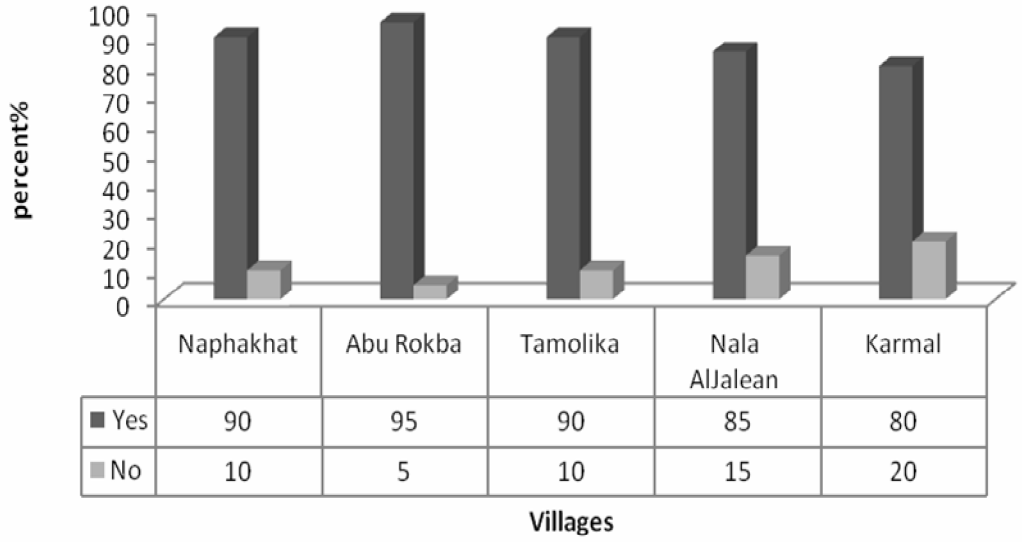


Figure.2 Gap of land use map

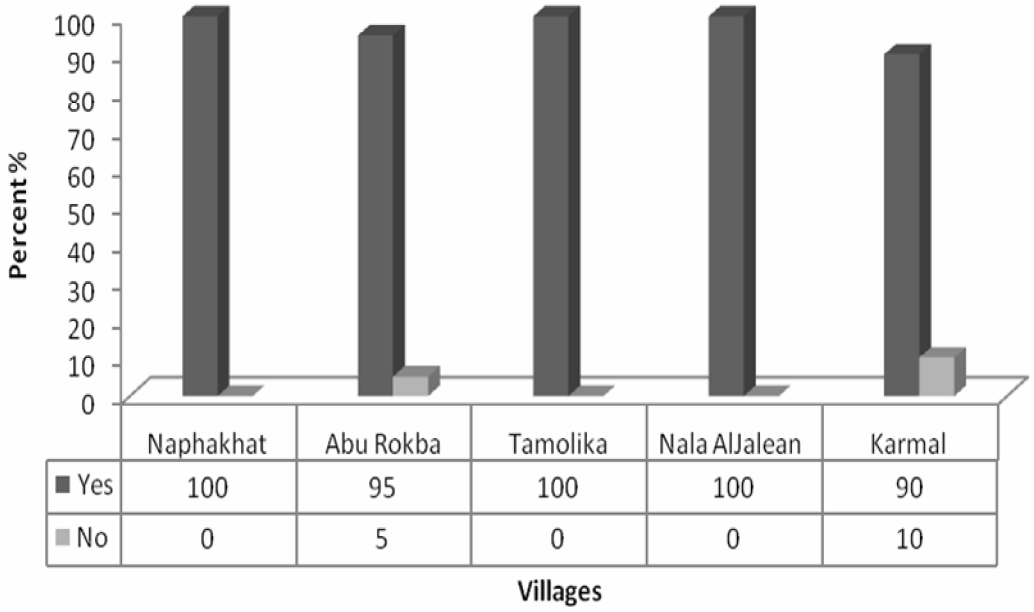


Figure.3 Rangeland degradation by invaders plants species

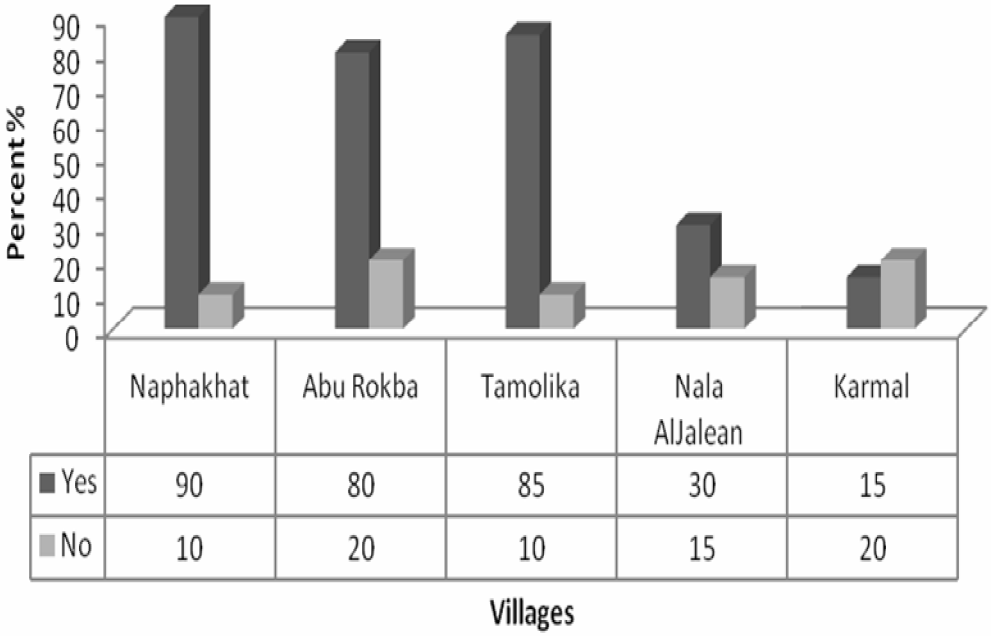
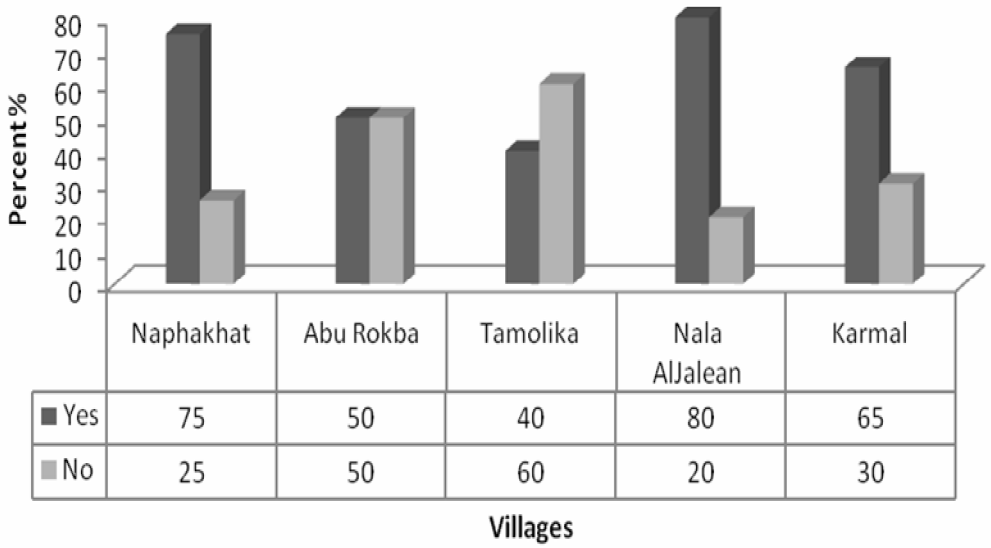


Figure.4 Increase of animals in rangeland



Gap of land use map

Figure (2) indicated that, there is a gap of land use map and the discussion reported that there is no land use map. This may be

due to the fact that traditional land use pattern of herders is practiced through open grazing. In the past the practicing of the open grazing during the year using historical routes and corridors with damaging the ecology of grazing land and traditional farming. The best rangelands were converted to crop lands and livestock routes were blocked. This led to destruction of plant cover and subjects the land to erosion. Also the native plant species are slow to recover, this may be due to land clearance for cultivation and the invading plants species are increased due to the fact that, the native plant species have not been able to survive.

Rangeland degradation by invaders plants species

Figure (3) showed that, environmental degradation is a common phenomenon in Tendalti area. Palatable plants species have disappeared from rangeland, and replaced by unpalatable ones such as *Colotropis procera* species in Nafakhat and El-Nala El Jalean villages, and *Prosopis* species locally (Mesquite) and *Cassia tore* locally (Kawal) are spreading in Abu rokba and Tamaleaka villages. This is sported by group's discussion (2014). In the other three villages the invaders plants species were found in rangeland, this may be due to extensive grazing practices during rainy season when vast areas were cultivated by crops. Also the earlier grazing affects rangelands environment, by grazing annual plants species during milk seeds stage and may decreases soil seeds bank. Moreover, the large areas in Tendlti locality were converted from rangelands to crops production lands. Mesquite species spread in the Southern parts of the locality round Abu-Rokba villages, this considers as noxious and problematic shrubs species due to its aggressive ability to invade farmland and grazing lands.

Increase of animals in rangeland

In figure (4), the respondents answered that the number of animals has increased in rangeland, especially in Nala El Jalean ,Nafakhat and karmal villages, which account for 80% ,75% and 655 respectively. This result is the same as reported by Ministry of Agriculture , (2012) the livestock population in the State account for 73.7 % of the total livestock in the State. These have negatively affected palatable plants species and then rangeland degradation. According to groups discussed the past pastoralist mobility used to be the appropriate ecological rangeland used and effective land use strategy that was sported by civil administration, but due to expansion of crops cultivation land, grazing land had decreased and animals were concentrated on small land. Hence, rangeland may subject to extensive practice; this may lead to more rangeland environmental problems.

The study concluded that, large area in Tendlti locality were converted from rangeland into crops production lands, as a result many problems such as rangeland degradation, and conflict between farmers and herders have intensifieded. Gradual change of plants species , emergence of new plants species such as *Prosopis chelenisis*, *Cassia tore Colotropis procera* were dominant and covered a vast area of range lands. The gap of land use map was changed into cultivated land.

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