

## ***DEDICATION***

*To the soul of my father, to my mother, my brothers and my sister Asha*

*To my wife Sumia and my children*

*To Hafiz Hamad's Family*

*I dedicate this humble work*

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# **Abstract**

## **Competition on Range Resources and its Role on the conflict in Darfur. A Case Study: “Eddaain locality” South Darfur state**

Over the last three decades demand on natural resources has increased as the population of man and his livestock has increased, and the resources have eroded by unwise expansion of farming, grazing and desertification. Rainfall has been low, populations have migrated to more fertile areas, and political instability and violence have increased.

Natural resources are being fought over and are being destroyed as feature of the violence. The main factors for conflict over natural resources have been significantly exacerbated by the current crisis. Actions include the destruction of crops and water points, the restriction of livestock migration causing local over grazing and the destruction of trees and rangelands.

The range resources, in Eddaain locality which is located in the south east part of South Darfur State, were assessed within two seasons; 2005 and 2006.

Information about human population and livestock numbers and farming expansion in addition to socioeconomic studies for the inhabitants and nomadic visitors were collected from government departments and the targeted groups.

The principle objective of the study was to investigate whether competition over range resources is the main cause of the tribal and political conflicts in western Sudan. The specific aim was to formulate strategies and approaches, for suitable management systems for the rangelands, at least to reduce the causes of conflicts to the minimum.

The study area was divided into three equal sections, first section was located in the wet season grazing area, the second section located in the winter grazing area (transitional zone), while the third section was located in the dry season grazing area south of the study area .

Biomass productivity, carrying capacity, stocking rate, total plant and species composition, plant species frequencies, ground cover and plant species densities were assessed.

Data concerning increase in population, livestock numbers, and the agricultural expansion for the last fifteen years were obtained from the government departments.

Questionnaire data were used for socioeconomic studies in the area for the nomads and the sedentary farmers.

Range production all over the area was found to be 0.780 tons/ hectare, while the forage available for grazing animals (50%) of the total production was found to be 0.390 tons/ hectare.

Plant composition in the study area was found to be 61.6%, litter 14.9 and bare soil 23.5%.

Percentage composition for the five species which dominated the area was (17.6%) for *Eragrostis aspera*, (11.8%) for *Schenoefeldia gracilis*, *Cenchrus setigerus* (11%), *Aristida spp.* (9.4%) and *Sida cordofolia* (9.3%).

The desirable forage composition (decreasers) was (27.7%), less desirable species (increasers) was (52.9%), while the composition of none forage species (invaders) (19.4%). Based on the above percentages the range condition was classified as fair.

The densities of the five species which dominated the area were 31 plant/m<sup>2</sup> for *Eragrostis aspera*, 21 plant/ m<sup>2</sup> for *Schenoefeldia gracilis* , 12 plant/ m<sup>2</sup> for *Cenchrus setigerus*, 11 plant/ m<sup>2</sup> for *Dactyloctenium aegyptium* and 8 plant/ m<sup>2</sup> for *Aristida spp*

The density for the forage plants (Decreasers) was 66 plant/ m<sup>2</sup>, less desirable plants (increasers) 93 plant/ m<sup>2</sup>, while undesirable plants( invaders) was 12 plant/ m<sup>2</sup>.

The frequencies of the five plant species which dominated the area was 64.8% for *Eragrostis aspera*, 53.1% for *Cenchrus setigerus*, 48.8% for *Schenoefeldia gracilis*, 48.6% *Dactyloctenium aegyptium* and 39.5% for *Bracharia spp.*

The population density in the study area were found to be 10 persons for square kilometer in year 1993, increased to 12 persons per square kilometer in year 1998, it became 13 persons in 2003 and reached to 15 persons per square kilometer in 2006.

Animal Units (AU) in the study area was found to be 1,229,613, 1501223, 1,684,019, and 1,909,937, in 1992, 1997, 2002 and 2006 respectively.

The total area cultivated in Eddaein area was 1,1984,61 feddans in year 1991, 1,553,618 feddans in year 1996, reached to 1,992,582 feddans in 2001 while in 2006 declined to 962,549 feddans.

Some illegal activities that are considered as main causes of conflicts between the people were observed during data collection. The highest percentage of these illegal activities is 72% representing cultivation in and around the migration routes,

cultivation inside and around the rest area represent 16.2%, illegal enclosures represent 2.33% while cultivation in and around the water points represent 9.3% of these illegal activities.

The questionnaire data showed that majority of the two groups interviewed agreed about the deterioration of the range resources, scarcity of forage and competition over this scarce forage which normally causes problems in social situation and causes social and political conflicts.



## ملخص الدراسة

المنافسة على الموارد الرعوية واثرها على النزاع فى دارفور

”دراسة حالة“ محلية الضعفين ولاية جنوب دارفور

خلال الثلاثة عقود الماضية ونتيجة للانفجار والزيادة الكبيرة فى اعداد السكان ازداد معها الاحتياج الى الموارد الطبيعية بصورة كبيرة لم قابلة متطلبات الزيادة السكانية من الغذاء مما ادى الى الاستغلال الغير مرشد لعناصر هذه الموارد الطبيعية مما تسبب فى تدهورها وتدميرها عن طريق الزراعة. زيادة المساحة المزروعة وازالة الاشجار بغرض التوسع الزراعى بالاضافة الى الرعى المكثف الجائر. خلال هذه الفترة تم حل الادارة الاهلية وتجريد صلاحياتها رغم الدور الكبير الذى كانت تلعبها هذه الادارات الاهلية سابقا فى المحافظة على الموارد الطبيعية وفض النزاعات وإجراء المصالحات, هذا بالاضافة الى قلة وتذبذب الامطار فى بعض المناطق مما ادى الى هجرة كثير من السكان الى المناطق ذات التربة الخصبة والامطار العالية مما سبب عدم الاستمرار الاجتماعى والسياسي وزيادة حدة الاحتكاكات بين المهاجرين والسكان الاصليين.

تعتبر الموارد الطبيعية من العناصر الهامة والاساسية فى النزاع الدائر حاليا فى دارفور مما ادى الى تدميرها وتدهورها كنتيجة لهذا العنف. اجمع كثير من المهتمين بشؤون البيئة والمنظمات الدولية ان هذا التدهور تفاقم بسبب الصراع والعنف الدائرين. ويرى معظمهم ان من اسباب هذا التدهور تدمير المزارع ومصادر المياه واعاققة حركة الرعاة وانحصارها فى مناطق بعينها ادى الى تدهور المراعى والرعى الجائر وتدمير الغابات والمراعى الطبيعية فى تلك المناطق مما سبب فى ندرة هذه المراعى والتنافس عليها مما ادى الى عدة نزاعات بين المستغلين لهذه العناصر.

تم دراسة وحصر الموارد الرعوية بمحلية الضعفين والتي تقع فى الجزء الجنوبى الشرقى من ولاية جنوب دارفور. استغرقت هذه الدراسة موسمين 2005 و 2006 .

بالاضافة الى حصر الموارد الرعوية تم جمع بعض المعلومات من المؤسسات الحكومية شملت معلومات عن الزيادة فى عدد السكان والثروة الحيوانية بالاضافة الى التوسع الزراعى خلال السنين الماضية.

ايضا تم اجراء دراسة اجتماعية اقتصادية لشريحة المستقرين والرحل الذين يستغلون هذه المنطقة كل على حدة.

الهدف من هذه الدراسة هو البحث عما اذا كانت المنافسة على الموارد الرعوية تشكل السبب الرئيسى فى النزاع بين الرعاة والمزارعين والذى ربما يتطور الى نزاع قبلى ثم سياسى فى ولايات دارفور. اما الهدف المباشر هو استنباط استراتيجيات ونظم للادارة السليمة والمستدامة للموارد الرعوية لتقليل الاسباب التى تؤدى الى النزاع بين الرعاة والمزارعين

تم تقسيم منطقة الدراسة الى ثلاثة اقسام متساوية فى المساحة حيث يقع القسم الاول فى منطقة المخرف, ويقع القسم الثانى فى المنطقة التى يستغلها الرعاة فترة الشتاء بينما يقع القسم الثالث فى منطقة المصيف فى الجزء الجنوبى من المحلية.

خلال الدراسة تم حصر وتحديد الانتاجية الكلية للمرعى بالمنطقة، الحمولة الرعوية ونسبة التحميل، المحتوى النباتي، التردد النباتي، نسبة التغطية الارضية والكثافة النباتية. بالاضافة الى الزيادة فى عدد السكان والثروة الحيوانية والتوسع الزراعى والدراسة الاقتصادية الاجتماعية للسكان بالمنطقة. أثبتت الدراسة ان الانتاجية الكلية للمرعى بـ بمحلية الضعين 0.780 طن/الهكتار بينما كمية العلف المتاح للرعى والذي يمثل 50% من الانتاجية الكلية كانت 0.390 طن /الهكتار.

الطاقة الرعوية للمنطقة 2.308 هكتار/الوحدة الحيوانية /اربعة اشهر، 6.923 هكتار/الوحدة الحيوانية/السنة، بينما نسبة التحميل كانت 0.433 وحدة حيوانية/هكتار/اربعة اشهر، 0.144 وحدة حيوانية/هكتار/السنة. اما نسبة التغطية الارضية كانت 68%.

نسبة المحتوى النباتى الكلى كانت 61.6%، نسبة الهشيم كانت 14.9% بينما نسبة الارض الجرداء كانت 23.5%. اما المحتوى النسبى للخمس نباتات السائدة فى المنطقة كانت 17.6% لنبات البنو، مفيريضة كانت 11.8%، الحسكيت الخشن كانت 11%، القو 9.4% بينما 9.3% لنبات النيادة.

اما المحتوى النسبى للنباتات المرغوبة (متنافسة) فكانت 27.7%، النباتات الاقل رغبة (متزايدة) كانت 52.9% بينما المحتوى النسبى للنباتات الغير مرغوبة (غازية) فكانت 19.4%. لذلك فان حالة المرعى بالمنطقة تصنف على انها فى درجة مقبول اعتمادا على هذه النسب.

الكثافة النباتية للخمس نباتات التى تسود المنطقة كانت البنو 13 نبات/المتر<sup>2</sup> مفيريضة 21 نبات/المتر<sup>2</sup>، الحسكيت الخشن 12 نبات/المتر<sup>2</sup>، ابو اصابع 11 نبات/المتر<sup>2</sup>، القو 8 نباتات/المتر<sup>2</sup>. اما الكثافة الكلية للنباتات العلفية المرغوبة (متنافسة) كانت 66 نبات/المتر<sup>2</sup>، كثافة النباتات العلفية الاقل رغبة (متزايدة) 93 نبات/المتر<sup>2</sup>، بينما النباتات الغير مرغوبة (غازية) كانت 12 نبات/المتر<sup>2</sup>.

اما التردد النباتى للخمس نباتات السائدة بالمنطقة كانت 64.6% لنبات البنو، الحسكيت الخشن 53.1%، مفيريضة 48.6%، ابو اصابع 48.6% وابو جقرة 39.5%.

اما فيما يختص بالزيادة السكانية توصلت الدراسة الى ان الكثافة السكانية فى منطقة الضعين فى العام 1993 كانت حوالى 10 اشخاص فى الكيلومتر المربع، ازداد الى 12 شخص فى الكيلومتر المربع فى العام 1998، ثم الى 13 شخص فى العام 2003 واخيرا الى 15 شخص للكيلومتر المربع فى العام 2006.

اما الوحدات الحيوانية بالمنطقة كانت 1229613، 1501223، 1684019، 1909937 وحدة حيوانية فى الاعوام 1992، 1997، 2002 و 2006 على التوالى.

اما المساحات المزروعة بالمنطقة كانت 1198461 فدان فى العام 1991، 1553618 فدان فى العام 1996، 1992582 فدان فى العام 2001 انخفض الى 962545 فدان فى العام 2006.

خلال فترة الدراسة لوحظ ان هناك بعض الانشطة الغير قانونية والتى غالبا ماتسبب الاحتكاكات بين الرحل والمزارعين. أولى هذه الانشطة الغير قانونية هى الزراعة حول وداخل المراحيل وشملت حوالى 72% من جملة الانشطة الغير قانونية، الزراعة حول وداخل الصوانى شملت 16.2%، المسورات الغير قانونية شملت 2.33% بينما الزراعة حول مصادر المياه والمشارب 9.3%.

اتفقت المجموعتان اللتان اجريت عليهما الدراسة الاجتماعية الاقتصادية ان هناك تدهوراً في  
المراعى , ندرة في الاعلاف مما ادى الى خلق منافسة حول هذه الاعلاف بين المستخدمين للمرعى  
مما سبب في عدم استقرار المواطنين وادى الى الكثير من النزاعات الاجتماعية والسياسية والتوتر  
السياسى فى كل المنطقة.