

Dedication

*To the soul of my late father
whom I lost during
my survey of
Juba*

Wisal Elnour

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Acronyms

- AAT: African Animal Trypanosomosis.
- AOAD: Arab Organization for Agricultural Development
- BNS: Blue Nile State.
- CARE: Cooperative for Assistance and Relief Everywhere.
- CES: Central Equatoria State.
- ECF: East Coast Fever.
- FAO: Food and Agriculture Organization.
- GDP: Growth Domestic Products
- HAT: Human African Trypanosomosis.
- IAEA: International Atomic Energy Agency.
- ILRAD: International Laboratory for Research on Animal Diseases.
- ILRI: International Livestock Research Institute
- ISCTRC: International Scientific Council for Trypanosomosis Research & Control
- KSC: Kenana Sugar Company.
- LRA: Lord Resistance Army.
- MARF: Ministry of Animal Resources and Fisheries
- MAR-D: Ministry of Animal Resources- Damazin
- MAR-J: Ministry of Animal Resources-Juba
- OIE: Office International des Epizooties.
- RTTCP: Regional Tsetse and Trypanosomaisis Control Programme.
- SILA: State Interim Legislative Assembly
- SUST: Sudan University of Science and Technology
- SIT: Sterile Insect Technique.
- TTBD: Tick & Tick-Borne Diseases.
- WHO: World Health Organization.

SYNOPSIS

A socio-economic survey was conducted among cattle-rearing communities in and around Damazin town (11° 46' N, 34° 21' E), Blue Nile State (BNS), south-eastern central Sudan and around Juba town (04° 50' N, 31° 35'E), Central Equatoria State (CES), southern Sudan. The overall objective of this study was to identify and assess the socio-economic impacts of tsetse and trypanosomosis (nagana) on the livelihood of pastoralist communities in these states. Primary data were collected by using questionnaires, group discussions together with direct observations and personal interviews with community leaders. A purposive sampling technique (non-random sampling technique) was used to collect data from 60 respondents from each state. The questionnaires covered three aspects: farming system and village economics, tsetse–cattle contact and livestock and trypanosomosis. Secondary data were obtained from official reports, theses and publications.

Results showed that the main ethnic groups inhabiting the BNS are the Felata (Umbararo, Hawsa and the Fulani), Kennana, Rufaa, Angasana, and the Nuba whom are the only exogenous tribe in the state. But in CES most dominant tribes are Mondari and the Bari even though there are minor 14 ethnic groups inhabiting the state. There were statistically significant differences between the BN and CE states: in the communal residence ($\chi^2=6.95$, $P = <0.03$), economic activities ($\chi^2= 9.5$, $P= <0.009$), staple crops ($\chi^2= 51.9$, $P<0.000004$), providing feed supplement to cattle ($\chi^2 = 95.0$, $P = < 0.00000001$), cattle importance to the community ($\chi^2= 50.0$, $P <0.00000001$), management of migratory cattle when resident at the villages

($\chi^2 = 14.7$, $P < 0.003$). Ownership system of cattle ($\chi^2 = 39.2$, $P < 0.00000001$).

While in CES, there is multiple ownership of cattle single ownership dominates in the BNS which explains the highly significant difference between the states in the involvement of farmers in cattle management ($\chi^2 = 49.2$, $P < 0.00000001$). There are also significant differences in who consumes the milk ($\chi^2 = 33.7$, $P = <0.00000001$), the amount of milk consumed with the BNS farmers consuming more milk ($\chi^2 = 152.0$, $P = <0.00000001$) and also milking more species of livestock ($\chi^2 = 56.0$, $P = <0.00000001$). Pastoralists in the BNS take red meat more frequently than in CES ($\chi^2 = 34.1$, $P < 0.00000001$). Similarly they slaughter more species of livestock ($\chi^2 = 80.0$, $P = <0.000001$). Farmers in CES never use their livestock for field work nor for transportation, while in the BNS most farmers use donkeys and camels for transportation. Oxen for transport are used by the Umbararo tribesmen only especially during migration.

Although trypanosomosis is the most serious disease affecting cattle in both states, ranking of other diseases affecting cattle herds differed significantly between the two regions ($\chi^2 = 30.5$, $P = <0.000004$). In both states trypanosomosis causes high calf's mortality, high abortion rates as well as reduction in milk production.

The familiarity with tsetse flies is significantly different between the two states ($\chi^2 = 10.4$, $P = <0.002$) as the majority of CES farmers know tsetse flies while some farmers in the BNS do not or have just heard of them. However, in both states there are local vernacular names for trypanosomosis, tsetse and other biting flies.

While in CES farmers treat only sick animals against trypanosomosis in the BNS they use blanket treatment including donkeys

and camels ($\chi^2 = 39.1$, $P = <0.0000003$). In the BNS Berenil is the most popular trypanocide and is used at 2.15 doses / animal / year. In CES Ethidium bromide is the most popular and is used at 2.5 doses/animal/year. Although trypanosomosis treatment and livestock production costs are relatively higher in the BN than in CE, budget analysis revealed that livestock is kept at a loss in both states.

مستخلص الأطروحة

تم إجراء هذه المسموحات الاقتصادية و الاجتماعية في وسط مربيي الأبقار حول وداخل مدينة الدمازين -ولاية النيل الأزرق (E 21' 34⁰, N 46' 11⁰) ، جنوب شرق أواسط البلاد. وكذلك حول مدينة جوبا (E 35' 31⁰, N 50' 04⁰) بالولاية الاستوائية الوسطى بجنوب السودان. الهدف الاساسى لهذه الدراسة معرفة و تقييم الأثر الاقتصادي والاجتماعي لذبابة التسي تسي وداء المثقليات على هذه المجتمعات الرعوية.

جمعت البيانات الاولى بواسطة الاستبيانات والمقابلات الجماعية والملاحظة المباشرة إضافة إلى المقابلات الشخصية مع القادة المحليين. الشريحة المستهدفة تم اختيارها بواسطة العينة الغير عشوائية المختارة بهدف.

الاستبيانات غطت ثلاثة مواضيع أساسية: نظم الزراعة والاقتصاديات الريفية، الأبقار واحتكاكها بذبابة التسي تسي ثم الماشية وداء المثقليات.

حجم العينة ضم حوالي 60 مستهدف من كل ولاية. البيانات الثانوية تم جمعها من التقارير الرسمية و الدراسات السابقة و الأوراق المنشورة أشارت النتائج إلى إن المجموعات القبلية التي تقطن ولاية النيل الأزرق هي الفلاتة، كنانة، رفاعة، الانقسنا والنوبة. في الولاية الاستوائية الوسطى معظم الشريحة المستهدفة أتت من قبيلتي الباريا والمندارى من وسط 14 مجموعة قبلية تسكن الولاية.

هناك اختلاف معنوي واضح بين النيل الأزرق و الولاية الاستوائية الوسطى في نمط السكن ($\chi^2 = 6.95, P = < 0.03$) ، النشاط الاقتصادي ($\chi^2 = 9.5, P = < 0.009$)، أنواع المحاصيل ($\chi^2 = 51.9, P < 0.0000004$)، إعطاء الأبقار عليه إضافية ($\chi^2 = 95.0, P = < 0.00000001$)، أهمية الأبقار لإفراد المجتمع ($\chi^2 = 50.0, P < 0.00000001$) ، نمط التربية في القطيع المترحل و المستقر في القرى ($\chi^2 = 14.7, P < 0.003$)، نظام ملكية الأبقار ($\chi^2 = 39.2, P < 0.00000001$). بينما في الولاية الاستوائية الوسطى نظام ملكية الأبقار هي الملكية الجماعية نجد إن الملكية الفردية هي السائدة في ولاية النيل الأزرق وهذا بدوره يوضح الفرق المعنوي بين الولايتين في مشاركة المزارعين في تربية وإدارة القطيع ($\chi^2 = 49.2, P < 0.00000001$) . وكذلك هناك فرق معنوي بين الذين يعتمدون في غذائهم على اللبن ($\chi^2 = 33.7, P =$)

$\chi^2 = 152.0, P = <0.00000001$ ، وكمية اللبن المتناولة بواسطة المزارعين في النيل الأزرق ($\chi^2 = 34.1, P <0.00000001$) وأنواع الحيوانات المنتجة للألبان ($\chi^2 = 80.0, P = <0.000001$) ، الرعاة في النيل الأزرق يتناولون اللحوم الحمراء أكثر من رصفائهم في الولاية الاستوائية الوسطى. أنواع الماشية التي تزيح في كل من الولايتين متساوية ($\chi^2 = 30.53, P = <0.000004$) ، المزارعين في الولاية الاستوائية الوسطى لا يستخدمون حيواناتهم في العمليات الفلاحية في الحقل ولا التنقل. بينما في ولاية النيل الأزرق معظم المزارعين يستخدمون الحمير والجمال إما الثيران كحيوانات للتنقل يستخدمها أفراد قبيلة امبررو خاصة في موسم الهجرة. بالرغم من ان وداء المثقليات يعتبر من الأمراض الهامة من الناحية الاقتصادية والتي تؤثر على الأبقار في كل من الولايتين فهناك اختلاف معنوي بين الولايتين في ترتيب الأمراض الأخرى التي تفتك بقطعان الأبقار ($\chi^2 = 10.44, P = <0.002$) . معظم المزارعين في الولاية الاستوائية الوسطى على دراية تامة بذبابة التسي تسي بينما بعض من المزارعين في ولاية النيل الأزرق لا يعرفون ذبابة التسي تسي أو سمعوا بها فقط مجرد السمع. في كل من الولايتين يستعمل المزارعين والرعاة أسماء مميزة في اللهجات المحلية لداء المثقليات ، ذبابة التسي تسي و أنواع الذباب القارص الأخرى. بينما المزارعين في الولاية الاستوائية الوسطى يعالجون الأبقار المصابة بداء المثقليات فقط. نجد رصفائهم في ولاية النيل الأزرق يعالجون كل القطعان سواء كانت مصابة بداء المثقليات او سليمة بالإضافة إلى الحمير والجمال ($\chi^2 = 39.08, P = <0.0000003$) . البرنيل هو التريبانوسايد الأكثر شيوعاً و استعمالاً في ولاية النيل الأزرق ويستعمل بمعدل 2.15 جرعة / الحيوان/ العام. بينما الاسيديم بروما يد هو الشائع وواسع الانتشار بين مربى الماشية في الولاية الاستوائية الوسطى ويستعمل بمعدل 2.5 جرعة / الحيوان/ العام. بالرغم من ان علاج داء المثقليات وتكاليف الإنتاج الحيواني عالية إلى حد ما في ولاية النيل الأزرق عنها في الولاية الاستوائية الوسطى. تحليل الميزانية وضح ان قطعان الأبقار تربي في كل من الولايتين لأسباب اجتماعية أكثر من كونها استثمارية.

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