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## Communal farmers' perception of drought in South Africa: Policy implication for drought risk reduction

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### ABSTRACT

O.R. Tambo District is vulnerable to the effects of drought, given the social and economic circumstances of residents in the Eastern Cape province of South Africa. The communal farmers of O.R. Tambo District engage in crop and livestock farming activities in pursuit of their livelihoods. Economic reliance on agriculture and the depletion of resources increase their vulnerability to drought. The lack of adequate resources to prepare for and respond to drought has led to high drought vulnerability. The main aim of this study is to analyse the perception of communal farmers towards drought. This study is based on primary data collected from 87 communal farmers following a structured questionnaire survey, purposive sampling method procedures, and the creation of a perception index. The results revealed that perceptions held by communal farmers indicate that (i) they receive inadequate government support for drought risk reduction, (ii) they do not consider social networks as being effectively involved in drought risk reduction, (iii) there is a system of gender stereotyping among the farmers with discrimination against women, (iv) psychological stress affects their farm activities, and (v) they experience high levels of stock theft and insecurity in their farming. The study recommends that there should be coordination and collaboration among all role players. This includes coordination between monitoring agencies in terms of reliable early warning data, communicated in a comprehensive way to decision-makers, farmer's organisations and private sector. Collaboration with government departments at national and provincial level should also be strengthened. This includes collaboration with the Department of Agriculture, Forestry and Fisheries (DAFF) at national level, provincial Departments of Agriculture, National and Provincial Disaster Management Centres (NDMC and PDMC), Department of Water Affairs (DWA), South African Weather Service (SAWS) and the South African Police Service (SAPS). This coordination and collaboration will help to strengthen strategies which target enhancing communal farmers' awareness of the importance of social networking, role of government, level of security, stress and gender equality. The result of this study will directly contribute to the development of South African drought plan which is currently under formulation.

### 1. Introduction

Drought is a disaster affecting most people in the world [64]. The FAO [26] claims that the world has experienced a general increase in the incidence and severity of drought and reports that drought has caused the death of more than 11 million people and has affected more than 2 billion people. Approximately 60% of sub-Saharan Africa is considered to be susceptible to drought [51]. Aid agency Oxfam reported that 10 million people, mostly in Africa, face hunger because of droughts [27].

Droughts have shown an increasing trend [59] with prolonged periods of widespread drought affecting South Africa throughout much of the 1960s, 1980s and the 1990s [42,45]. The most extensive drought

occurred during the 1982/83 season [62] whilst the most severe drought occurred during 1991/92. Prolonged droughts are regular and recurrent features affecting communal farmers and is one of the most important natural disasters in economic, social and environmental terms in southern Africa including South Africa [7,59]. Prolonged droughts are a significant threat to the vulnerable communities of the region including O.R. Tambo districts of South Africa. The Eastern Cape province is one of the six provinces that were declared as disaster areas in 1982/1983, 2003/2004, 2007/2008 and 2009/2010 by National Disaster Management Centre (NDMC) [31,50]. In 2015/2016, Eastern Cape province was also declared as a drought disaster area by the NDMC [60]. The 2015/2016 drought was a result of an extremely strong El Niño, which is comparable with the 1933 and 1982

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droughts in South Africa, with more than 2.7 million households facing water shortages across the country [69]. The drought in South Africa cost farmers' losses up to R10 million (USD 689, 655.2) in 2015 (R = Rand, the South African unit of currency). Communal farmers are the most vulnerable to drought due to (i) a lack of resources, (ii) lack of access to financial institutions and insurance, (iii) imperfect market systems, (iv) overgrazed and highly degraded land, (v) lack of knowledge and managerial skills, and (vi) poor extension support [39]. The 2015/2016 drought is not incorporated in this study because the data for this study was collected during the period of August to September 2014.

Farmers in Eastern Cape province of South Africa are incurring millions of Rands in losses attributable to spoiled crops and unproductive livestock, while others are racking up ever more increasing debt just to be able to feed their animals. One of the areas which have been hit hardest in the province is the O.R. Tambo District. This drought placed food security in the country, provinces and districts under threat, as many crops like maize and livestock crops have been destroyed. Drought in Eastern Cape province has claimed more than 150 000 head of livestock, with communal farmers suffering the greatest losses [19,38]. The Eastern Cape province is highly vulnerable to disaster owing to a high level of poverty, low standards of living, environmental degradation, poor household economies and a lack of access to resources. The Eastern Cape province not only has the biggest cattle, goat and sheep herds in South Africa, it is where communal farming is practised on the largest scale in South Africa [53]. Communal farmers are farmers, irrespective of size, who practice farming activities on communal land. Government, municipalities or Chiefs can own or manage the land and farmers have usufruct right on land, but they hold no title to the land [75].

Several drought response programmes have been undertaken in southern Africa, especially after the 1980s and 1990s droughts. The FAO [25] reports that most of the programmes were emergency programmes, enabling governments to respond to drought's devastating impacts. The South African agricultural sector has repeatedly experienced drought and South Africa has been involved with drought management for a long time. The South African government has responded to drought with drought relief schemes, although the relief is not on time and insufficient [31,40]. The drought relief scheme, mostly focused on addressing the communal farmer's immediate needs instead of their resilience to possible future droughts [51]. Drought relief, without an insight into communal farmer's vulnerability does not reduce risk. Therefore, an understanding of communal farmer's perception of vulnerability to drought is crucial for the development of relevant policies for drought reduction. Moreover, the drought experienced in southern Africa illustrates the importance of drought risk reduction through the development of drought resilience strategies.

Agriculture plays an important role in the economy of O.R. Tambo district, contributing 7.3% to the GDP of the Eastern Cape province and 2% to agriculture in South Africa [18,68]. Drought is a typical phenomenon in the province. Therefore, it is important to study and analyse the perception of farmers towards drought.

Existing international studies, such as those by Habiba et al. [32], Ashraf and Routray [5], Tripathi and Singh [71], Udmale et al. [72], Jarawura [37], Duinen et al. [20], Wanigasundera and Alahakoon [74], Melka et al. [48], Chandrasiri and Perera [10], Manandhar et al. [47], Abid et al. [1] and others focus on coping and adaptation mechanisms, climate change and perceptions of drought impacts on farmers' socio-economic activities and environment in respect of religious belief, temperature variation, change in the timing of rainy seasons, inadequate supply of electricity for irrigation, depletion of groundwater, lack of canals and rivers, population growth and migration, deforestation, decreasing of production and yield, increase of unemployment, stress and impact of health and personality traits.

In the African context, most of the studies concentrated on

preparedness, impact on and response by the farming community to drought, perceptions on climate change, the inter-relationship between land degradation and drought, rainfall and drought, scarcity of water and coping responses ([11,16,29,30,34,52,63,65] and others). None of them assesses the perceptions of communal farmers to drought in respect to drought to their farming operations, gender, social network, role of government, stress, security and safety awareness. As a result of this, current knowledge is insufficient to understand how communal farmers in South Africa perceive drought in the context of agriculture and in respect to gender, social network, the role of government, stress, security and safety awareness. Therefore, the present study attempts to fill this gap in knowledge and literature.

The main objective of the study was to assess the farmers' perception of agricultural drought,<sup>1</sup> with an insight into drought vulnerability to their farming operations, gender, social network, role of government, stress and security and safety. Findings from this study reveal how communal farmers perceive agricultural drought in South Africa. Such findings will help policy makers in formulating appropriate policy interventions to sustain communal farmers against the perils of drought, which is threat to food security, human survival and living standards of farmers. The research which is reported in this article is part of a more comprehensive research project on "Vulnerability, adaptation and coping with drought: The case of the commercial and subsistence extensive livestock sector in the Eastern Cape" (Water Research Commission, 2014).

## 2. Material and method

### 2.1. Study area

The O.R. Tambo District lies along the eastern side of the Eastern Cape province of South Africa. It stretches along the Indian Ocean coastline for about 160 km and has as its neighbours, KwaZulu-Natal province to the northeast, Joe Gqabi District of Eastern Cape to the northwest, Alfred Nzo District of Eastern Cape to the north, Amathole District of Eastern Cape to the southwest, and Chris Hani District of Eastern Cape to the west [55,56]. Fig. 1 below shows a map of O.R. Tambo District within the Eastern Cape province of South Africa.

The population of O.R. Tambo district municipality accounted 1,819,596 [17]. Two-thirds of the O.R. Tambo population live in the rural areas, which are generally characterised by low income, least developed infrastructure, poor access to health and dependable water accessibility [28]. O.R. Tambo District, like the rest of the Eastern Cape, has the highest levels of poverty and high unemployment levels [35].

Eastern Cape Development Cooperation (ECDC) (2014) states that agriculture has been identified as an economic growth sector for the Eastern Cape and O.R. Tambo district municipality. The Eastern Cape province has been termed the "livestock province", having 21% of the nation's cattle, 28% of the sheep, and 46% of the goats [23]. Communal farmers rely on maize, livestock and sorghum farming [61]. Musunda et al. [49] stated that maize is the most popular summer crop grown by the communal farmers in the province. The communal farmers in the province produce an average of approximately one tonne per hectare. Low and erratic rainfall, shallow, infertile soils and increasingly high temperatures have been blamed for causing low maize production.

### 2.2. Sampling procedure

To understand the perception of drought in O.R. Tambo District of South Africa, we used primary data utilising a semi-structured ques-

<sup>1</sup> **Agricultural drought:** is a reduction in the availability of water below the optimal level required by a crop during each different growth stage, leading to compromised growth and reduced harvests. Reed [58] views agricultural drought as the impact of both meteorological and hydrological droughts on the production of livestock and crops.

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