

*Full Length Research Paper*

## Economy-wide effects of drought on South African Agriculture: A computable general equilibrium (CGE) analysis

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South Africa's agricultural sector is comprised of livestock, field crops and fruit in their order of size, in gross value terms. Agriculture in South Africa accounts for a relatively low share in the economy (3% of gross domestic product - GDP), 6% of employment and about 10% of exports (over R144 billion in 2015). Currently (2015/16), South Africa is experiencing the worst drought in over 100 years, which has resulted in significant effects on agriculture, with eight of the nine provinces being declared disaster areas. The motivation of the study was to understand the severity of drought on agriculture as well the impact on the whole economy (to quantify the economy-wide effects/losses emanating from the drought). To quantify these effects a single-country computable general equilibrium (CGE) model was used. Four scenarios were developed: Impact of field crops losses; impact of livestock losses; impact of aggregated agriculture losses; and impact of aggregated agriculture losses plus drought relief. The analysis shows that all scenarios led to a negative impact on GDP, employment and exports while the drought relief was found to have saved some jobs, albeit not significantly.

**Key words:** Drought, computable general equilibrium (CGE) model, field crops, livestock and fruit, GEMPACK.

### INTRODUCTION

Based on gross value of production, South Africa's agricultural sector is comprised of livestock (e.g. beef, poultry, game, sheep and others) as the biggest sub-sector, followed by field crops (e.g. maize, wheat, sugar, beans, barley, sorghum and oilseeds) and fruit (e.g. fruits, nuts, flowers and vegetables). Agriculture accounts a relatively small share in the economy (3% of GDP),

6% of employment and about 10% of exports (over R144 billion in 2015) (StatsSA, 2015). From a developmental viewpoint, agriculture plays a pivotal role in ensuring food security and providing jobs for low skilled people in the country. Furthermore, agriculture provides raw materials to secondary sectors such as manufacturing and retail which reduces the country's dependency on international

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# Economics Of African Agriculture

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