Abstracts:

Keynote Presentations

THEME:
"EDUCATION AND RESEARCH FEED AGRICULTURE THAT FEEDS HUMANITY"

Prof Herman D van Schalkwyk & Johan D van der Merwe

Potchefstroom Campus, North-West University

E-mail: herman.vanschalkwyk@nwu.ac.za

ABSTRACT

South Africa is unlikely to feature at the top of the agenda at any international dialogue on food security. The country is a net exporter of agricultural commodities and has a high per capita income, even for an emerging economy. There are no tight foreign-exchange constraints, and the country is not landlocked. The innovative constitution entrenches the right to adequate nutrition, and this is the basis of the national Integrated Food Security Strategy (IFSS). Taking these features into account, one could easily conclude that food ought to be available and accessible in South Africa at all times.

The confusing reality is that despite all the favourable indicators and South Africa's national "food-secure" status, between 14% and 52% of the households, depending on the source, are regarded as food insecure. It is thus clear that despite strong government commitment, tremendous disparities in food security persist. Statistics suggest that food insecurity is most severe in rural areas, where an estimated 70% of South Africa's poor reside. Moreover, rural agricultural development has been prioritised by government as a way of eradicating poverty and ensuring food security in these rural regions. The focus of rural agricultural development is primarily on the redistribution of commercial agricultural land and the production of high value market crops i.e. maize, wheat, sunflower etc. and their products. However, similar to other programs and policies, this has not yielded the desired outcome with the failure being ascribed to the lack of adequate skills and knowledge, inefficient training etc.

To address these issues, cooperation of all stakeholders in the agricultural sector must become a reality. Suggestions to promote cooperation include the establishment of centralized independent institutions with the responsibility to focus on research and training.

REVOLUTIONARY SHIFTS IN WEED MANAGEMENT: PAST AND FUTURE

CF Reinhardt

Extraordinary Professor: Weed Science, Department of Plant Production and Soil Science, University of Pretoria

E-mail: charlie.reinhardt@up.ac.za

The average world yield of several important grain crops has more than doubled since the 1940s, which happened to be the decade that saw the advent of the first selective herbicides (2,4-D and MCPA). Until well into the 1980s this leap in production per unit land area could almost exclusively be ascribed to increased usage of pesticides and fertilisers, improved cultivars, and progressive increases in disease tolerance that was attained in classical plant breeding programmes. Constant improvements in production practices and technological innovation in machinery also made significant contributions during those approximately four decades.

The down side of the *Green Revolution* (1940s to 1960s) and its aftermath (1970s, 1980s), which saw giant leaps in company and farmer profits, was growing public opinion against the presence of pesticides and man-made nutrients in the environment, in particular in water. Agrochemical companies were quick to respond by designing more environmentally benign compounds and backing them up with better practices. However, despite these significant technological advances and greater knowledge about the factors governing crop growth and production, the question remains whether crop production is affordable and sustainable from both an economic and environmental viewpoint.

It is generally accepted that in the next three to four decades food production will have to at least be doubled again in order to keep pace with burgeoning human populations – the world human population is projected to increase from the current about 6 billion to 9 billion by 2050. In the quest for greater sustainability in terms of both economic crop production and environmental conservation, the 1990s saw the agrochemical and seed industries joining forces on a spectacularly positive development in the form of transgenic crops that are insect and herbicide tolerant. This caused a type of 2nd *Green Revolution* through another dramatic spike in company and farmer profits, but this time round the companies involved were far fewer (only those in possession of GM technology). Farmers making use of this technology were making meaningful profits at long last, despite soaring fossil fuel and fertiliser prices.

Despite the well-deserved optimism for the future of crop production, enormous challenges lurk on various fronts – e.g. weed resistance to herbicides, weed responses to “climate change”, fewer new herbicides, shrinking arable land, etc. Thankfully, due to innovative and constantly evolving technology the challenges in achieving substantial yield improvement of major food crops over the next four decades may yet prove to be not that daunting after all.

HARNESSING KNOWLEDGE, SKILLS AND TECHNOLOGY FOR FOOD SECURITY

PE Haumann

Grasland Ondernemings, PO Box 948, Lichtenburg 2740

E-mail: phaumann@grasland.co.za

INTRODUCTION

A country that cares for its agriculture cares for its Future. Dr JG Strijdom, former prime minister of the Union of South Africa, made this statement in the 1950's and it is even more true in our new millennium. It is estimated that almost a billion (thousand million) people globally suffer from food insecurity. This paper is aimed at discussing possible interventions using skills and technology to enhance current knowledge of agriculture and advance food security.

DISCUSSION

Knowledge of natural resources, education regarding the properties of the natural resources and research as to the way the natural resources have to be treated to realize their agricultural potential form the basis of successful food production. Traditional research using glasshouse and small plot experiments always have the disadvantage of extrapolation to the farm. Since soils are a continuum this leads to uncertainty and errors. Precision farming techniques on the other hand supersede the necessity for extrapolation since they represent reality in a more exact way. The main advantage is that the producer (farmer) can be in control of the natural resources on his farm and be part of the research. Any knowledge gained from one farm could certainly be extrapolated to another farm in the same toposequence more accurately than that from small plot experiments. The GPS and GIS technology available is perhaps relatively expensive but offers vast advantages for the producer as well as the scientist. Food security for more countries will definitely be a higher probability using knowledge obtained from this "new research".

CONCLUSION

Agricultural resources are constantly under pressure to provide enough food for an ever increasing population of people. Financial resources are equally under pressure to provide the necessary education and research actions needed for sustainable agriculture. Primary soil research conducted in South Africa has revealed many valuable norms for crop production. The main drive in sustainable agriculture is to optimize resources over time. In this drive a "new research" has evolved. This precision farming concept not only enhances efforts of agriculturists but also empowers the producer on the farm.

AGRICULTURE IN THE MODERN MEDIA

JC Burgess

Media24 Head Office, Naspers Centre, 40 Heerengracht, Cape Town 8001

E-*mail*: Chris.Burgess@landbou.com

ABSTRACT

Technological advances in the media industry have revolutionised the way information is presented and disseminated. Today traditional printed media is only one of several platforms used for journalism. Never before has media been so pervasive and so accessible. No longer is it passively consumed. Instead, today, traditional media consumers have become active participants through blogs, apps and social media. The impact of these changes on how agriculture puts its message across has been profound, and has, in effect, revolutionised the very message itself. The way these changes are managed hold great promise, not only for driving primary production, but also for the marketing of agricultural produce, and influencing the broader public's perception of agriculture as a whole.