

Abstracts: Keynote Presentations

SCIENCE AS THE DRIVER OF THE AGRO-FOOD VALUE CHAIN

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In an increasingly globalized world, agro-food chains from across the globe are increasingly competing with one another in order to access markets. To achieve true competitiveness, all links in the value chain have to be efficient and add specific value to provide a quality end-product to the market at a lower price than the competitors, and still remain sustainable. Sustainability encompasses the three fundamentals or so-called bottom-lines, viz. economical, social and environmental sustainability. To drive efficiencies and achieve sustainability, improved productivity and total stewardship are fundamental to this process. Science is at the core of both improved productivity and responsible stewardship. Internationally, high IRR's indicate a huge underinvestment in agricultural science. Also, available research funds are being diverted to health issues, bio-fuels, et cetera, while productivity issues are being neglected. The slowdown internationally in total factor productivity is of major concern. Increases in productivity ultimately result in more and cheaper food, thus ensuring food security at household, national, regional, and global level. The benefit is ultimately a public good benefit, and not a narrow interest benefit. While there is an equity versus efficiency trade-off, the right balance has to be achieved. In terms of stewardship, additional funds by both the public and private sector will have to be leveraged to address issues of climate change, loss of biodiversity, sustainable use of resources and sustainable materials management. In short, we will have to increasingly gear ourselves to develop a Green Growth Strategy in agriculture, underpinned by good science.

Keywords: agro-food chains

THE PHILOSOPHY OF SOIL SCIENCE

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INTRODUCTION

Besides a generic philosophy of science there are specific philosophies of e.g. biology, chemistry and engineering. This is a first attempt at outlining a philosophy of soil science, addressing each of the traditional branches of philosophy from a soil science perspective. The objective is to show that such philosophy has practical significance.

METAPHYSICS

Soil is a particular with attributes; an object having properties. It exists apart from the rock giving rise to it and the biota which colonise it. This is fundamental.

EPISTEMOLOGY

We acquire knowledge about soils by observation and experiment, making measurements in the field and laboratory, appraising them statistically, identifying relationships between soil and its properties and formulating abstract concepts which allow us systematically to define sub-disciplines.

ETHICS AND POLITICS

Soil has value which can be quantified objectively. The concept of intrinsic value central to deep ecology and environmentalism is flawed and fraudulent; it lacks cognitive significance. The concepts of soil quality and health are often used interchangeably. The former represents objective value. The latter implies intrinsic value and is therefore wrong. Another fraudulent notion is that of soil "delivering" services - a postmodernist anthropomorphism. Soil, and the land to which it imparts value, can be viewed from an individualist perspective (capitalist, free society) or a collectivist one (socialist or fascist, centrally planned, coercive). The way we formulate research priorities and the manner in which research is funded depend strongly on which political system prevails the most strongly. There is a tendency for collectivism and environmentalism to have become conflated. Both violate the rights of the individual. Resolution of pollution and soil erosion issues can be achieved by legislation (administrative law) or jurisprudence (common law). The latter demands greater rigour, is less prone to corruption and therefore preferable.

AESTHETICS

Some soil profiles are beautiful. The colour and tilth of a ploughed field can be fine things to behold. Some creative art is soil based e.g. ceramics and mineral pigments. Soil related themes in literature and the performing arts can be inspiring and symbolic; they ought to be accurate.

CONCLUSIONS

The philosophy of soil science warrants more attention by soil scientists because it affects choice of work, funding of research, management of the environment, food production and human welfare, and the self respect of practitioners. It also makes soil science more durable.

ACKNOWLEDGEMENTS

The SSSSA is sincerely thanked for inviting and funding the presentation of this paper.

Keywords: Cognitive significance, common law, philosophy, soil quality, soil science, value

FRUIT BREEDING: PAST, PRESENT, AND FUTURE

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In the past most fruit breeding programs were carried out by public institutions. At the present time public fruit breeding programs are in jeopardy due to declines in funding. The apple scab resistant breeding program which was cooperative between Purdue University, the University of Illinois, and Rutgers University (PRI) from 1948 to 2000 has led to the introgression of Vf gene for scab resistance into high quality apples and these selections are now used worldwide. Three apples from this program, 'GoldRush' and 'CrimsonCrisp' and 'Pixie Crunch' show promise of extensive commercial production because of their excellent quality characters. Seedlings from 'GoldRush' appear to be a prepotent parent for quality. However, the scab resistance gene shows evidence of being overcome by new races, the same problem that is being found in some fungicides, indicating that the scab resistant apples must be managed to avoid the problems of races overcoming the resistance. Breeding for seedlessness is showing promise in loquat and there is evidence that stoneless stone fruits are feasible. The recent success of the supersweet pineapple and of the yellow kiwifruit is an example of the benefits that can be obtained by fruit breeding. In the future fruit breeding will have to pay increasing attention to consumer preferences for quality, disease and pest problems, and quality factors.

Keywords: fruit breeding

ADDRESSING THE CHALLENGES OF MISINFORMATION AND ANTI-PESTICIDE LOBBYING IN SOUTH AFRICA

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Since the appearance of the internet people that have not been informed about issues have gained access to an information resource that is both infamous and irrefutably valuable in the global village. Internet is used to establish and voice opinions irrespective of the scientific basis of such opinions. Pesticides feature daily on websites, web based discussion forums, e-mail user groups and the recently establish mobile phone communication channels. The South African agricultural sector and pesticide industry in particular have been targeted by anti-pesticide protagonists with outcries ranging from valid to patently ridiculous calling for banning and severely restrictive measures against the manufacture, distributions, sales and use of certain pesticides. Western Cape residents have been bombarded with statements about herbicides such a glyphosate being extremely toxic and mcpa causing severe respiratory tract irritation when people are exposed to area where such products were applied. Even foliar feeds have been implicated in ill health amongst people while fungicides have been branded as carcinogenic in general.

It is imperative that the agricultural sector in general take a firm position against misinformation and negative lobbying to ensure that pests and diseases are adequately and responsibly managed. Failure to respond to these challenges lead to negative perception in government departments and management practices being forced down by regulatory authorities to combat the perceived negative impacts of pesticides. The dire situation with alien and invasive plant species bear witness to the fact that herbicides for example are critical in the management of these alien invaders but with the negative lobbying continuing unchallenged some essential herbicides may become lost to this cause. Poor application standards and unqualified individuals that apply herbicides irresponsibly also fuel the fires of anti-pesticide lobbyists. Such individuals and companies are often contracted by government departments who willfully act against legislation that govern pesticides.

The scientific community should also become a strong voice for sensible information dissemination and promotion of the responsible application and management of pesticides. Scientists have the undisputed and peer reviewed facts about pesticides but shy away from addressing the challenges posed by individuals and institutions with political motives.

Mitigation measures to address the misinformation and lobby will be discussed during this presentation.

Keywords: glyphosate, anti-pesticide