Plant health in South Africa – threats to biosecurity, biodiversity and food security
10-11 June 2021

NSTF Discussion Forum Concept Document

Background

Protecting plants to secure our future. Plant health is an important factor in all processes of life, namely:

- Climate change and the environment
- Food and resources
- Economy and recreation
- Health
- And biodiversity

Plant health has the potential to contribute to the wider goal of ensuring the sustainability of primary production on an economic, ecological and social level. Plants are the source of air we breathe and over 80% of the food we consume. Plant health plays a critical role in achieving sustainable and competitive agriculture and forestry sectors, and the protection of biodiversity and ecosystems. Therefore, keeping plants healthy is not only important – it is absolutely vital.

The achievement of healthy plants, however, is challenging for several reasons. For one, the trade and the movement of goods and people facilitate the introduction, spread and establishment of plant pests and diseases. In fact, the Food and Agriculture Organization (FAO) estimates that up to 40% of food crops are lost due to plant pests and diseases annually. This impacts the food supply of millions of people and damages agriculture. Furthermore, climate change and intensification in agricultural and forest management practices can lead to the emergence of new pests and diseases, and existing ones are likely to become more severe. Adding to these challenges, people have turned to pesticides to secure yields in plant production. In doing so, there are mounting concerns over the effects of plant protection products on the environment, non-target organisms and human health.

Increasing food production with minimal resources while protecting the environment poses a significant challenge for humanity. Healthy plants are able to grow and produce in the face of environmental stress, pests, and competition. The nation's food supply relies upon sufficient sources of healthy plants. A range of variables affect plant health, including the surrounding environment and the extent to which they are protected from pests and disease.

Protecting plants from pests and diseases is far more cost effective than dealing with full-blown plant health emergencies since they are often impossible to eradicate once they have established themselves and management is both time consuming and expensive.

The NSTF Discussion Forum

Discussion Forum Themes

1. Impact of inadequate government support to maintain phytosanitary regulations and relevant services.
2. Monitoring, analysis and detection, research into pests and pathogens, chemicals vs biological control, and the detection of plant health problems.
3. The role of breeding and technology to incorporate tolerance/resistance to pests and pathogens.
4. New technologies for detection of plant health problems – drones, satellites, etc.

Some key concepts that could be explored (dependent on time and speakers):

- Plant health and biosecurity. Impact of inadequate government support to maintain phytosanitary regulations and relevant services.
- Plant health and epidemics. Monitoring, analysis & detection, research into pests and pathogens, chemicals vs biological control, detection of plant health problems.
- Plant health and Climate change.
- Plant health and innovation. New technologies for visual detection of plant health problems – drones, satellites etc the role of breeding and technology to incorporate tolerance/resistance to pests and pathogens.
- Plant health awareness; as well as food security
    - How can everyone take accountability for plant health?
    - Is there enough information about plant health to our small scale farmers?
    - Indigenous plant knowledge as a resource for plant health
    - Alien vegetation
    - Alternatives to using pesticides

Healthy plants are the crux of:

- A healthy diet
- Export opportunities
- Optimising income
- Conserving biodiversity and
- Water conservation

Categories of industries and threats to plant health

Industries:

Type	Main category	Main use	Examples
Agriculture	Horticulture	Floriculture	Proteas, indigenous bulbs
		Food	Vegetables
		Fruit	Deciduous fruits, stone fruits, nuts
	Agronomy	Food	Grains, sugar
		Fibre	Cotton, Hemp

		Fuel	Soybean, maize, sorghum
Forestry		Timber trees	Pines, Eucalyptus

What influences plant health?:

In the plant	Pests
	Pathogens
	GMO vs non-GMO
Around the plant	Soil microbes
	Rhizobium
	Vesicular arbuscular mycorrhiza
Nutrition	Soil health

Scope

The topic is very wide and the material to be presented is enough for a major conference, because South African scientists are very active in this field. However, the scope is limited to highlighting the main issues, as outlined in the four Themes listed above, and in the Draft programme.

References

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