



GRAIN SA
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KONGRES
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2017

Mapping grain research for the future

Grain SA Congress

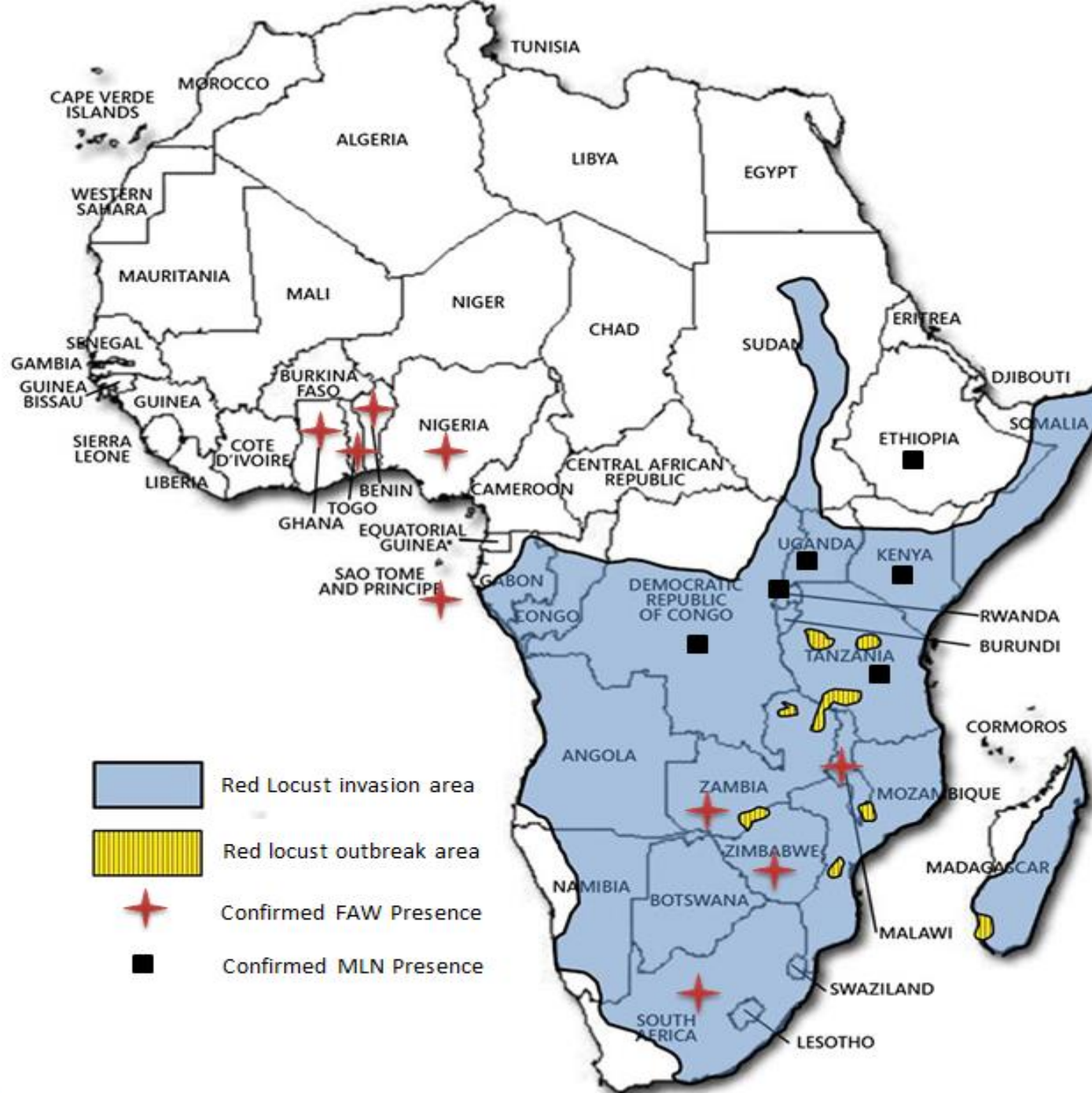
8 March 2017

Dr Marinda Visser





Crop Biosecurity concerns



- Maize Lethal Necrosis (MLN)
- Fall armyworm (FAW)
- Red locusts etc.



Maize-virus survey of Maize lethal necrosis disease

Background: Maize lethal necrosis disease is a viral disease of maize that causes extensive damage and yield loss and was recently been reported in various East African countries and poses a risk to South African maize production. The disease is caused by the co-infection of maize with two viruses: Maize chlorotic mottle virus (which does not occur in SA) and viruses from the genus potyvirus (a number of which do occur in SA). Identifying all the species of potyviruses on South African maize will allow us to begin assessing the risk of this serious and devastating disease becoming an epidemic on maize in SA if maize chlorotic mottle virus enters SA.

Steps to follow to assist with the survey:

Look for plants with any abnormal, disease-like symptoms e.g. streaks on leaves, yellowing of the veins, stunted plant, mottling/flecking on leaves (see pictures to the right)

Collect 3-5 leaves from each plant with disease symptoms (including at least one young leaf)

If it is possible to get the samples to us within 1 week store the leaf material in plastic ziploc bags and store in the refrigerator (do not freeze)

If it will take longer than 1 week before the sample reaches us, store the plant material in a paper envelope to allow it to dry out

- Label all plastic bags or envelopes:
1. Date of collection
 2. Location where they were collected (GPS lat./long. co-ordinate if possible)
 3. Maize cultivar if known
 4. Your name and contact details



Stunted growth with streaked or mottled leaves



Variations of streaks and vein yellowing

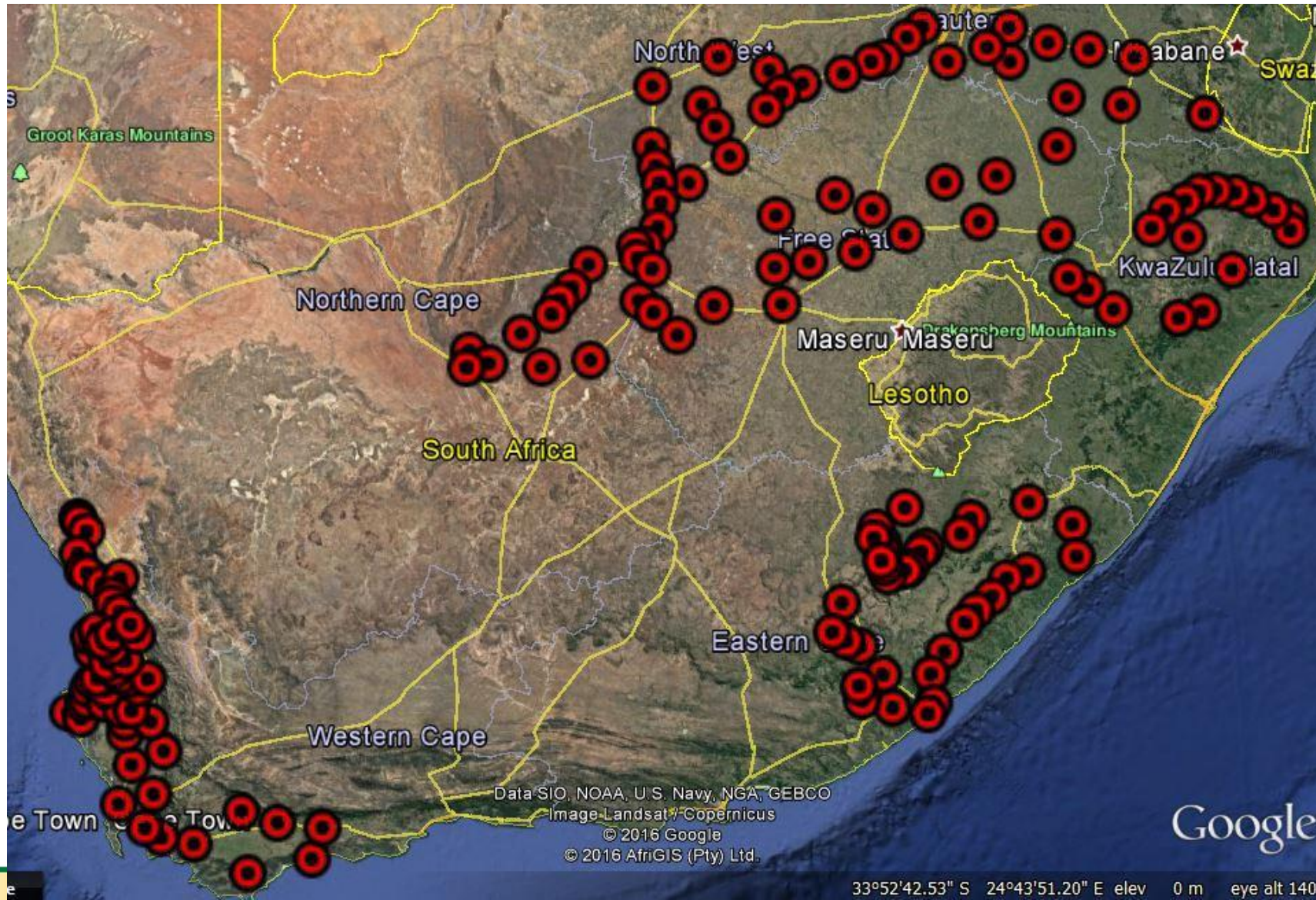


Variations of finer streaks and mottling

Contact: Dept. Of Microbiology and Plant Pathology,
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MSc student, Azille Schulze: azille012@gmail.com



Fall armyworm (FAW) surveillance



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Grain SA R&D Themes

- Crop Improvement
- Crop Protection
- Climate Change
- Conservation Agriculture



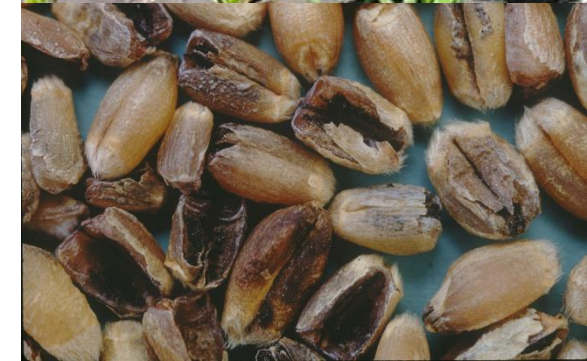
Crop Improvement

- **Breeding**
 - Wheat
 - Maize
 - Sorghum trials
 - Cultivar trials
- **Policy & Regulations**
 - MOU with overseas collaborators
 - Access to seed & latest technology
 - Bilateral agreements - R&D focus
 - Inputs into legislation matters



Crop Protection

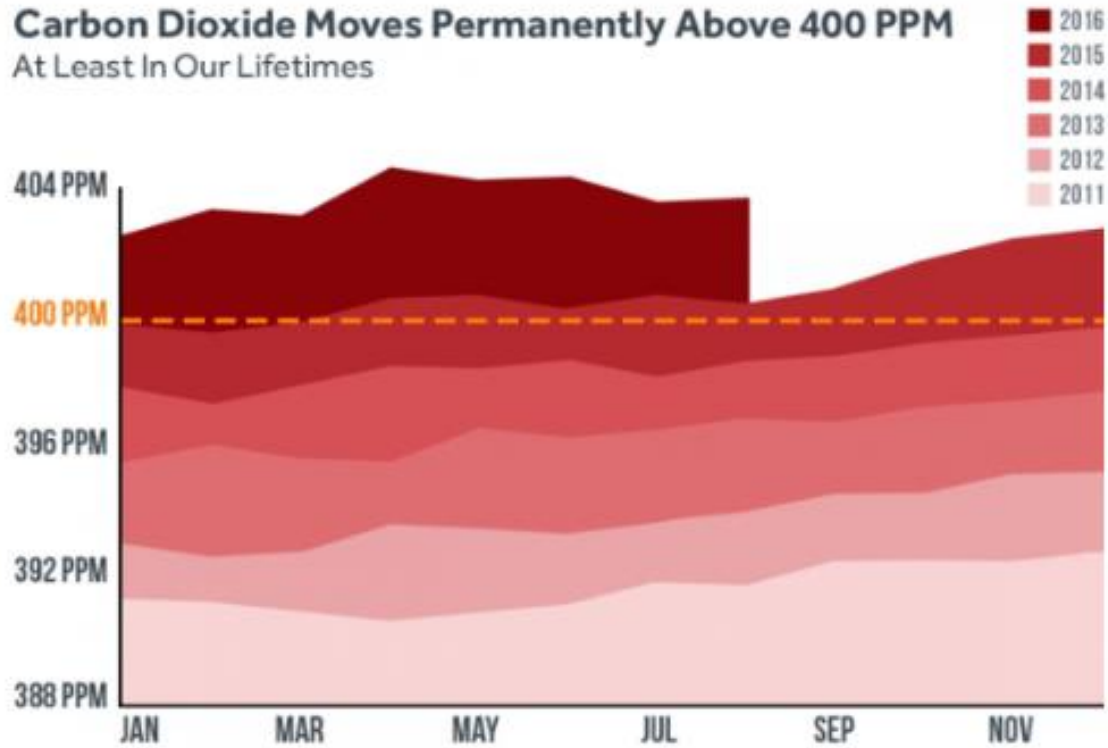
- **Maize**
 - Fall armyworm (Quarantine pest)
 - Maize Lethal Necrosis (Quarantine disease)
- **Wheat**
 - Karnal bunt (Quarantine disease)
- **Soybean & Sunflower**
 - Sclerotinia
 - Alternaria
 - Nematodes etc
- **Early warning response system**





Climate Change

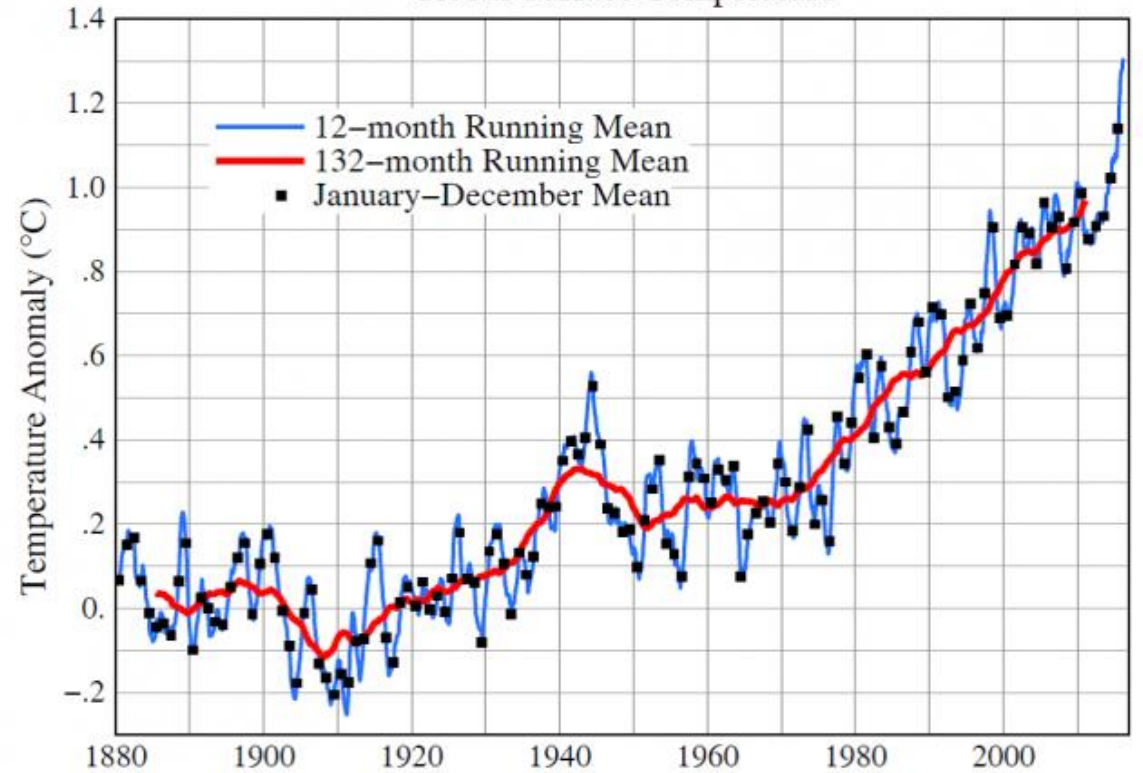
Carbon Dioxide Moves Permanently Above 400 PPM
At Least In Our Lifetimes



Source: Scripps Institution of Oceanography, Mauna Loa Observatory

CLIMATE CENTRAL


Global Surface Temperature



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Climate Change (CC)

• Maize

- Atmospheric CO₂ concentrations & global temperatures are 
- Multiple effects on regional climate
- Direct and indirect implications for plant performance
- Maize drought responses under future climates



Climate Change - Conservation Agriculture

- **Key climate change mitigation & adaptation strategy**
- **Fixing carbon in soils (through CA)**
 - 1 of the few practical means to actually reduce global atmospheric CO₂ levels
- **Building up soil organic matter is a **win-win** situation for the fight against CC**
 - as well as for: soil health, crop yields etc.





Stakeholders



science & technology

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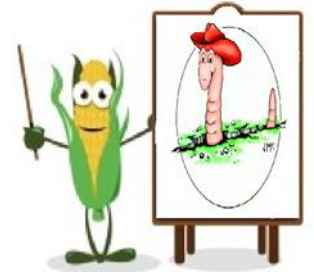


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Ons vier 30 jaar van omgee vir boere en hul grond.



environmental affairs

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Thank you

Grain Research & Policy Centre team



Marinda



Hendrik



Petru



GF
GI *Wandile*

