

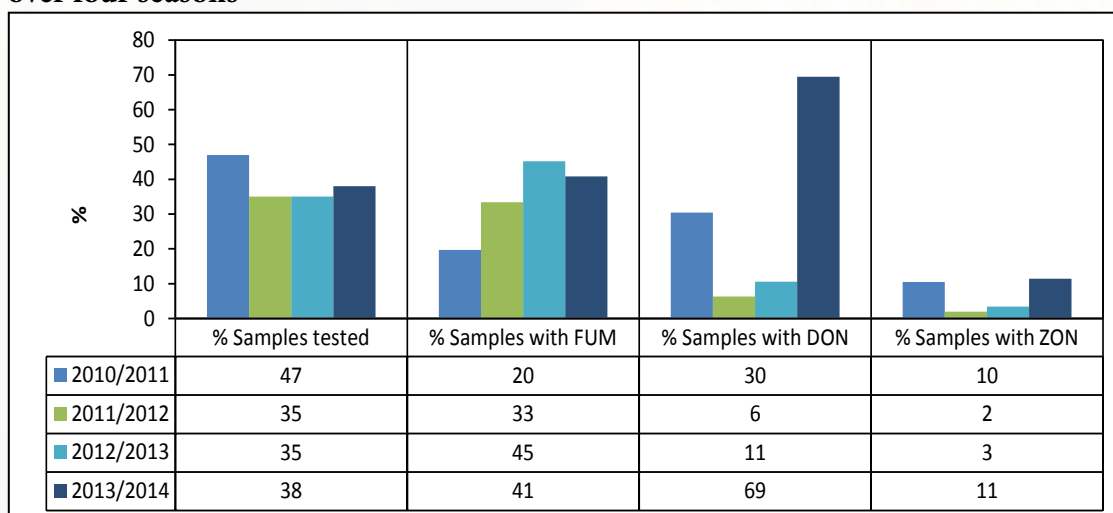
MYCOTOXINS

The annual maize crop quality surveys provide an ideal opportunity to evaluate the occurrence status of mycotoxins throughout all production regions in South Africa. Reliable analytical data is accumulated to establish a database to enable industry to comment on proposed legislative levels and to supply reliable data for targeted research projects to effectively manage the mycotoxin levels in maize.

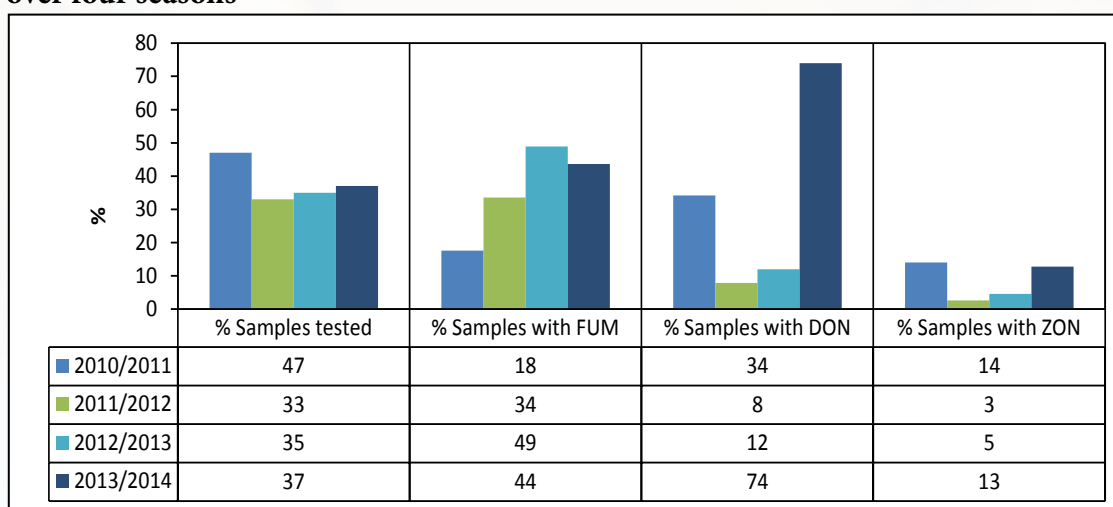
For the 2010/2011 season, a total number of 325 samples were analysed for mycotoxin residue levels. From the 2011/2012 to 2013/2014 seasons, 350 samples were analysed annually. The samples were selected to represent all the production regions as well as both white and yellow maize proportionally.

Graphs 44 to 46 provide a summary of the seasonal effect on the percentages total crop, white maize and yellow maize samples that tested positive for Fumonisin (FUM), Deoxynivalenol (DON) and Zearalenone (ZON).

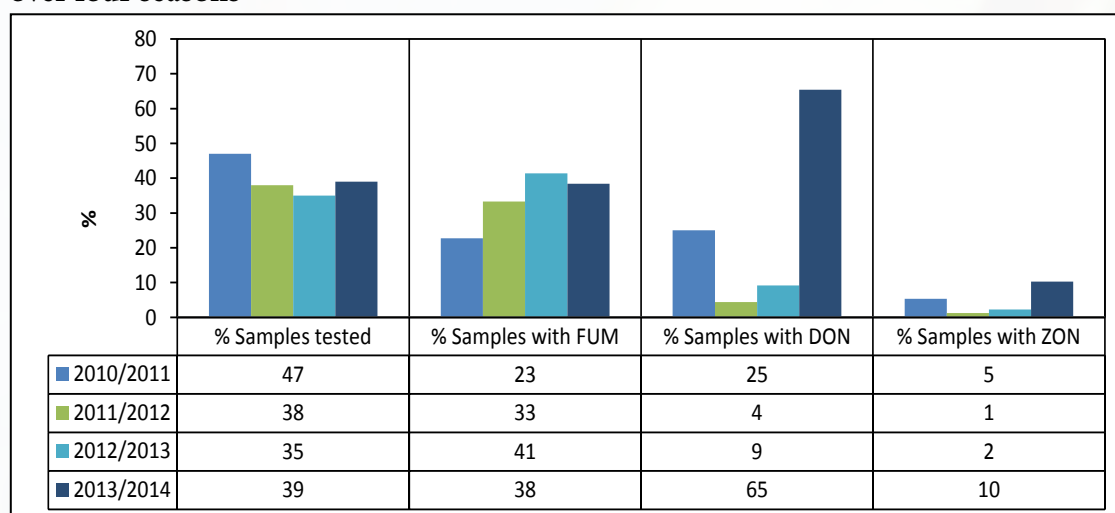
Graph 44: Percentage white and yellow maize samples that tested positive for mycotoxins over four seasons



Graph 45: Percentage white maize samples that tested positive for mycotoxins over four seasons

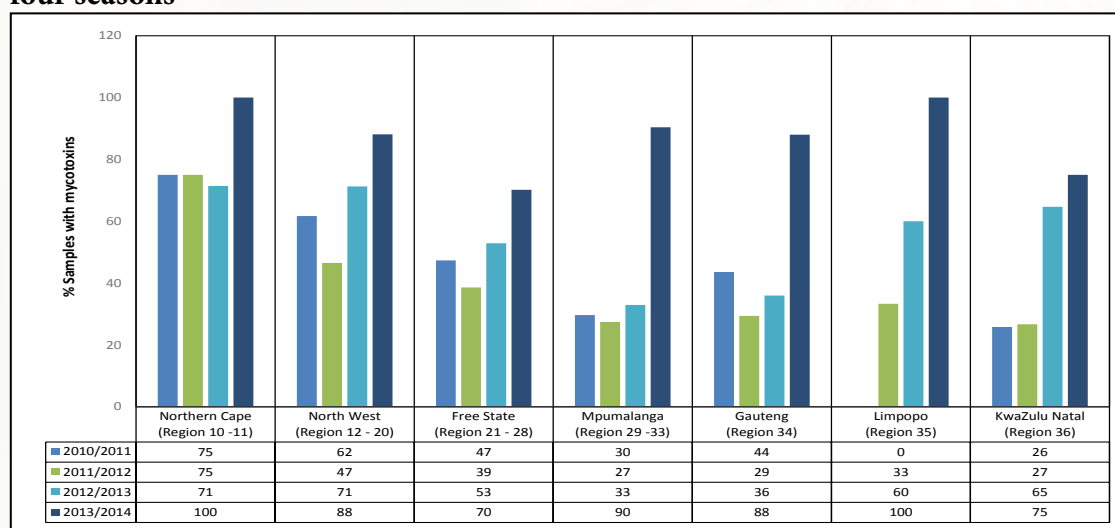


Graph 46: Percentage yellow maize samples that tested positive for mycotoxins over four seasons



The percentage of samples that tested positive for mycotoxins per season in the different provinces are provided in Graph 47.

Graphs 47: Percentage of samples that tested positive for mycotoxins per province over four seasons



Please note that the percentages referred to in Graphs 44 to 47 were calculated based on the number of samples analysed for mycotoxin residue levels and not the total number of samples received for the crop survey.

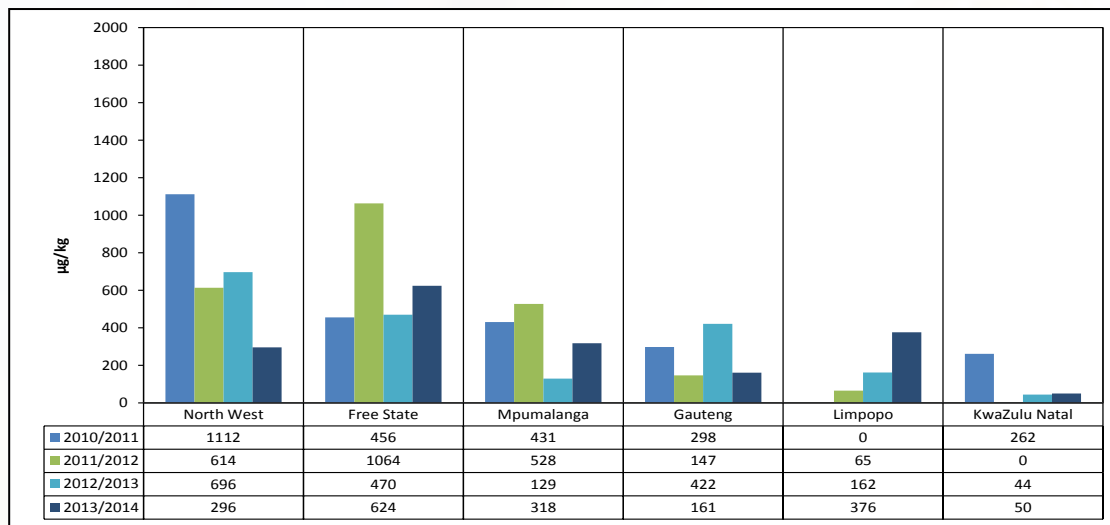
Results obtained with comprehensive mycotoxin surveys, such as the worldwide annual survey conducted by Biomin are useful to answer questions such as how severe is the mycotoxin contamination in different commodities, what is the situation worldwide and in different regions and which mycotoxins and concentration levels occurred. The Biomin survey report for 2014 (www.biomin.net) covers 6 844 agricultural commodity samples from 64 countries. The samples of primary components used for animal feed including maize, wheat, soybean meal, barley, etc. were tested for Aflatoxins (Afla), Zearalenone (ZON), Deoxynivalenol (DON), T-2 toxin, Fumonisin (FUM) and Ochratoxin A (OTA).

Of the African samples tested, 78% tested positive for ZON, 69% for DON, 67% for FUM, 15% for Afla, 8% for OTA and 2% for T-2 toxin. Globally, DON poses the most frequent threat to livestock and was found in more than half of the samples tested, with 82% of the samples containing DON levels exceeding the risk thresholds for livestock. FUM and ZON are also causes for concern with 50% of the samples exceeding risk threshold levels. The average concentrations of DON and ZON nearly doubled compared to 2013.

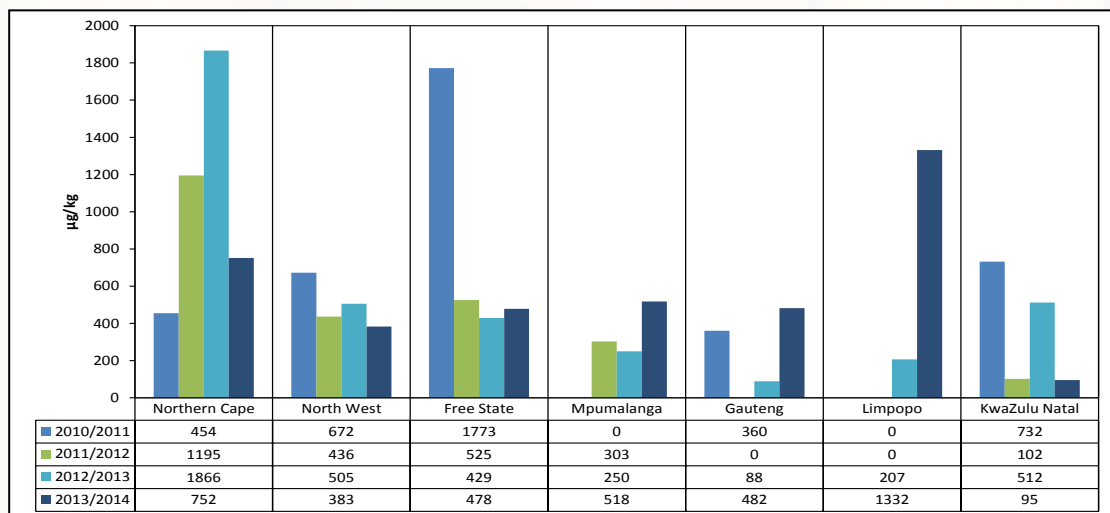
The Biomin report for the first time also highlighted the co-occurrence of mycotoxins. Of 814 samples tested, all contained multiple metabolites. Finished feed and maize were most affected by mycotoxins with finished feed, maize and silage most affected by DON, FUM and ZON.⁽¹⁾

Locally, FUM and DON were found in samples from all the maize producing regions. Different patterns of occurrence are observed in different seasons. Mean concentration levels also differ over seasons. FUM tend to show higher mean concentrations on yellow maize compared to white maize from the same region. Please see Graphs 48 and 49.

Graph 48: Total Fumonisin mean concentration in white maize per province over four seasons

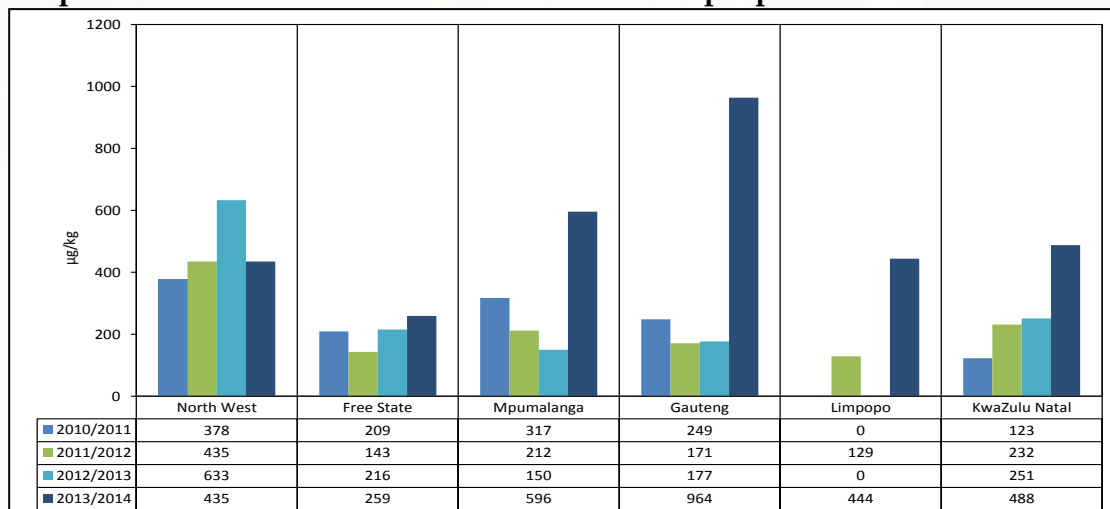


Graph 49: Total Fumonisin mean concentration in yellow maize per province over four seasons

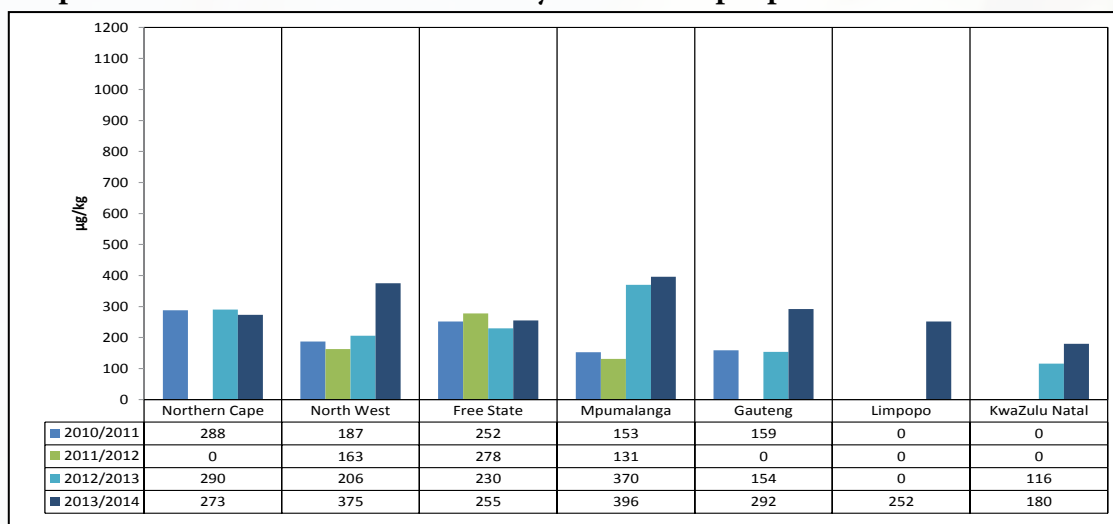


DON shows higher mean concentrations on white maize than yellow maize from the same region. Please see Graphs 50 and 51.

Graph 50: DON mean concentration in white maize per province over four seasons

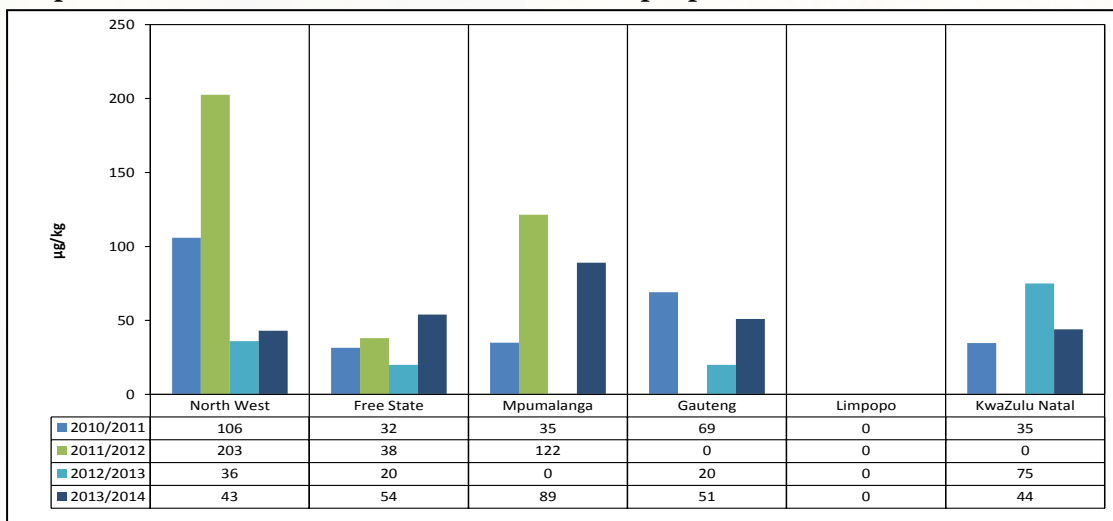


Graph 51: DON mean concentration in yellow maize per province over four seasons



ZON mean concentrations tend to show better correlation between white and yellow maize from the same region, than FUM and DON. Please see Graphs 52 and 53.

Graph 52: ZON mean concentration in white maize per province over four seasons



Graph 53: ZON mean concentration in yellow maize per province over four seasons

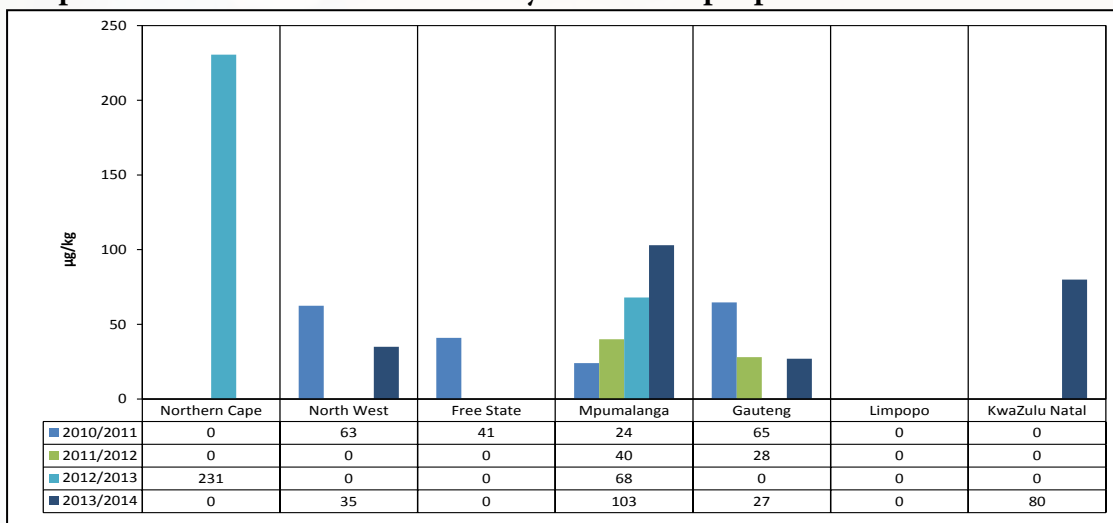


Table 21 on pages 71 to 82 provides the mycotoxin results of all 350 samples analysed for the 2013/2014 season. Table 22 on page 83 provides an overview of the mycotoxin results obtained from the 2001/2002 to 2013/2014 seasons.