

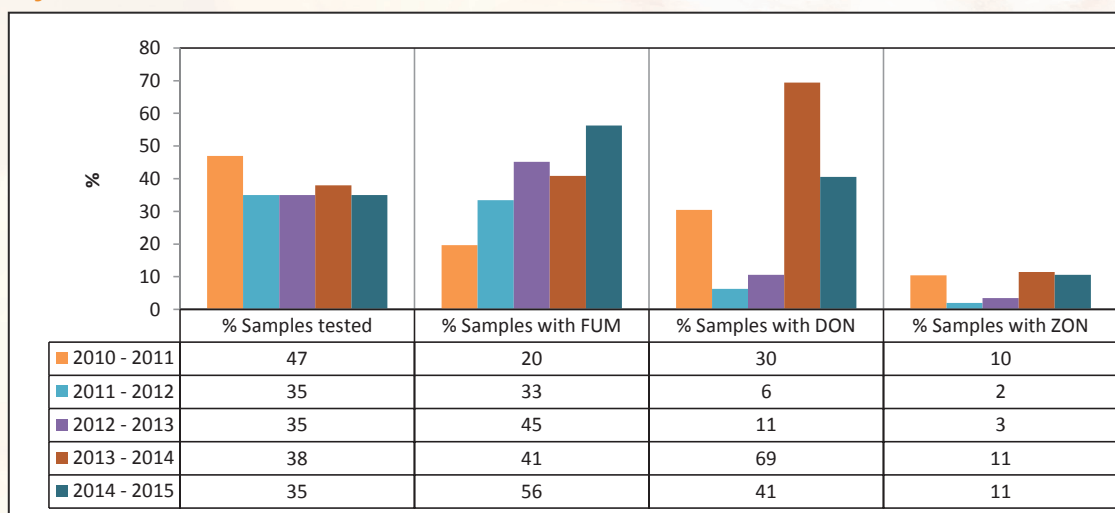
MYCOTOXINS

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.

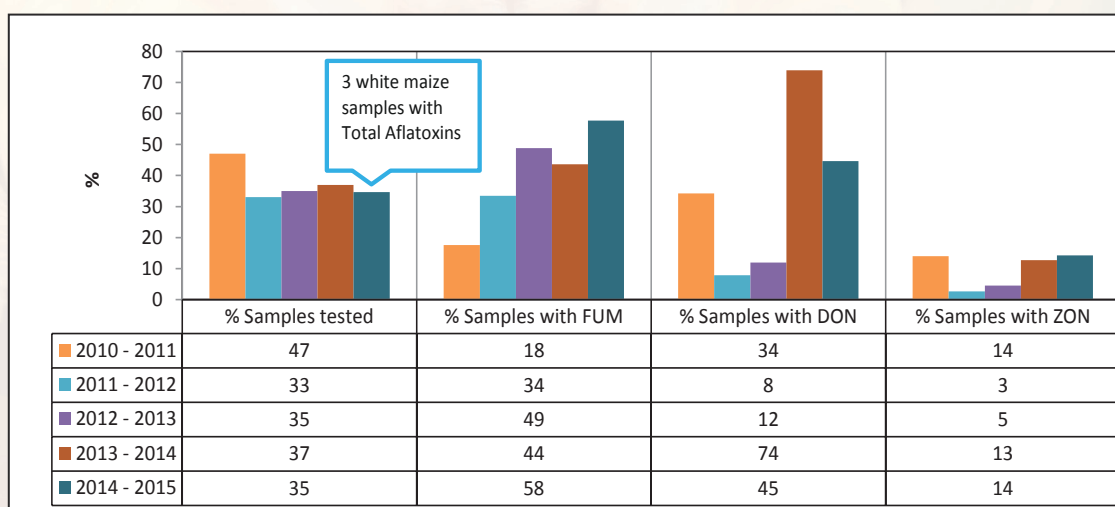
A total number of 325 samples were analysed for mycotoxin residue levels in the 2010/2011 season. From the 2011/2012 season onwards to this, the 2014/2015 season, 350 samples were analysed annually. The samples were selected to represent all the production regions as well as both white and yellow maize proportionally.

Graphs 45 to 47 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 45: Percentage white and yellow maize samples that tested positive for mycotoxins over five seasons

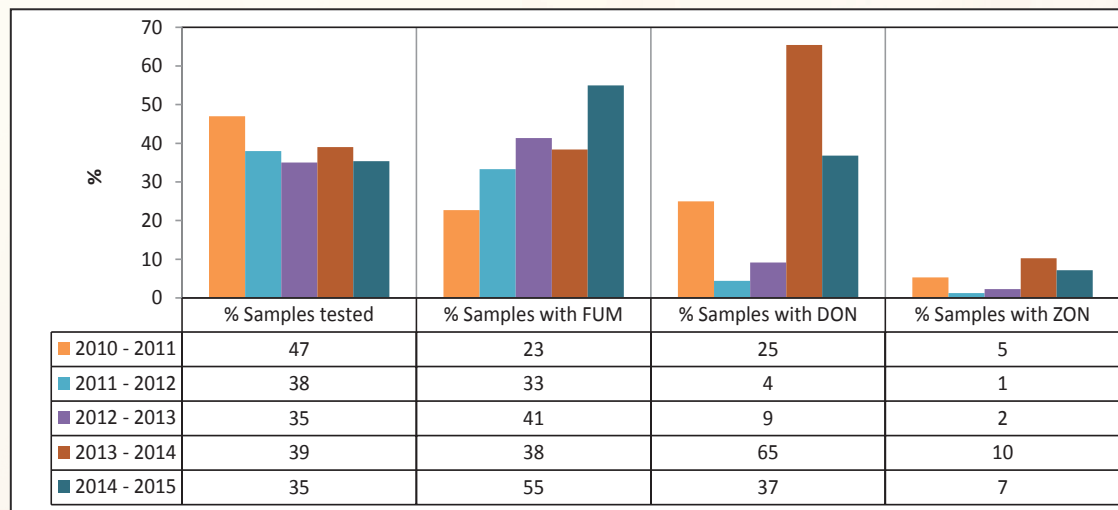


Graph 46: Percentage white maize samples that tested positive for mycotoxins over five seasons



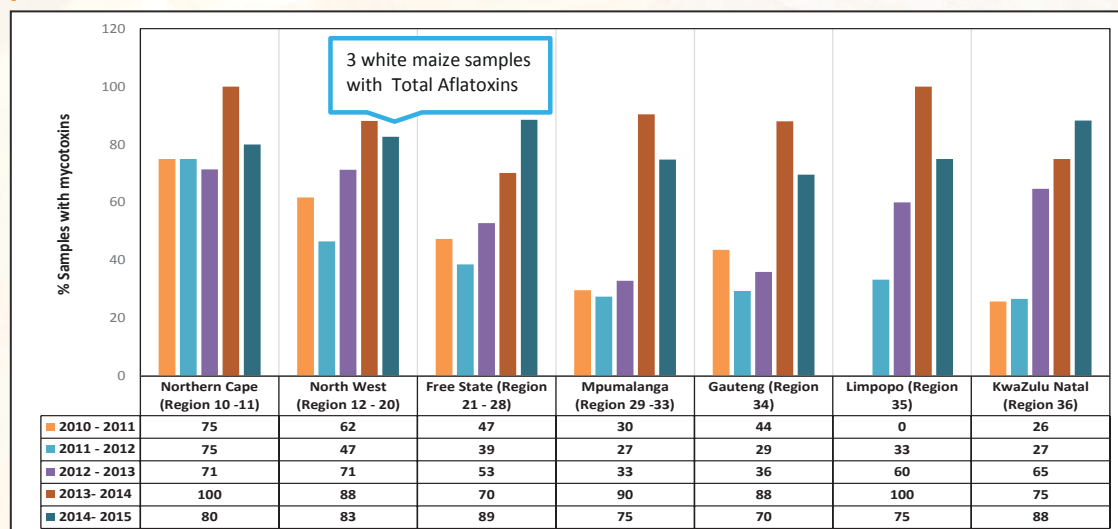
For the first time since the 2010/2011 season, three samples tested positive for Aflatoxin (Afla) residues. All three of these samples were white maize from regions in North West.

Graph 47: Percentage yellow maize samples that tested positive for mycotoxins over five seasons



The percentage of samples that tested positive for mycotoxins per season in the different provinces are provided in Graph 48.

Graphs 48: Percentage of samples that tested positive for mycotoxins per province over five seasons



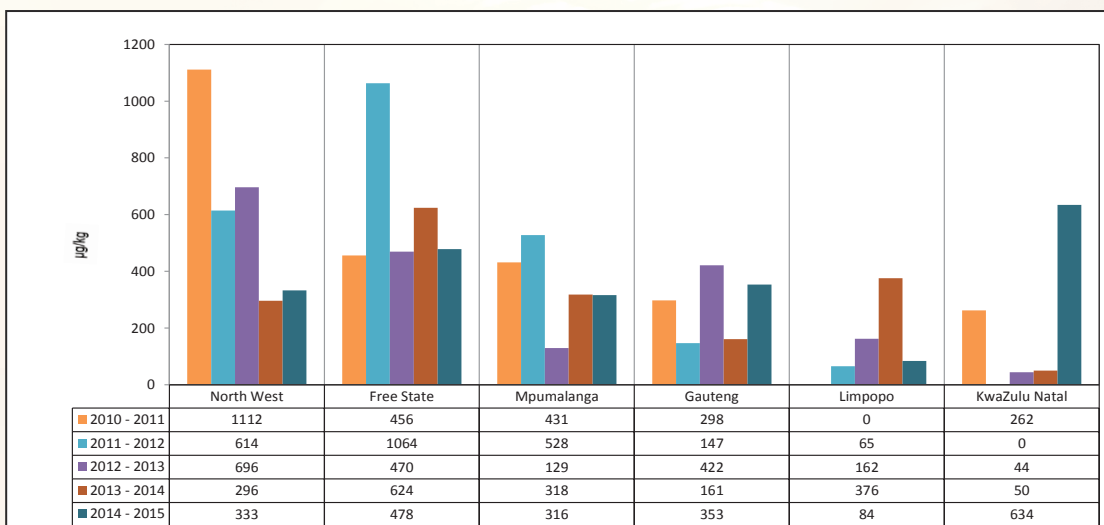
Please note that the percentages referred to in Graphs 44 to 47 were calculated based on the number of samples analysed for mycotoxin residue levels and not the total number of samples received for the crop survey.

Global trends in the occurrence and concentration levels of mycotoxins are summarised in the Annual BIOMIN Mycotoxin Survey report of 2015. A total number of 8 271 agricultural commodity (primary components used for feeds) samples from 75 countries were analysed, these include approximately 1 700 maize samples. Of these, 74% of the samples were contaminated with FUM, 76% with DON, 48% with ZON and 13% with Afla. Samples from South Africa (not only maize), showed 6% Afla, 94% ZON, 86% DON and 76% FUM contamination and none with T-2 or Ochratoxin A.

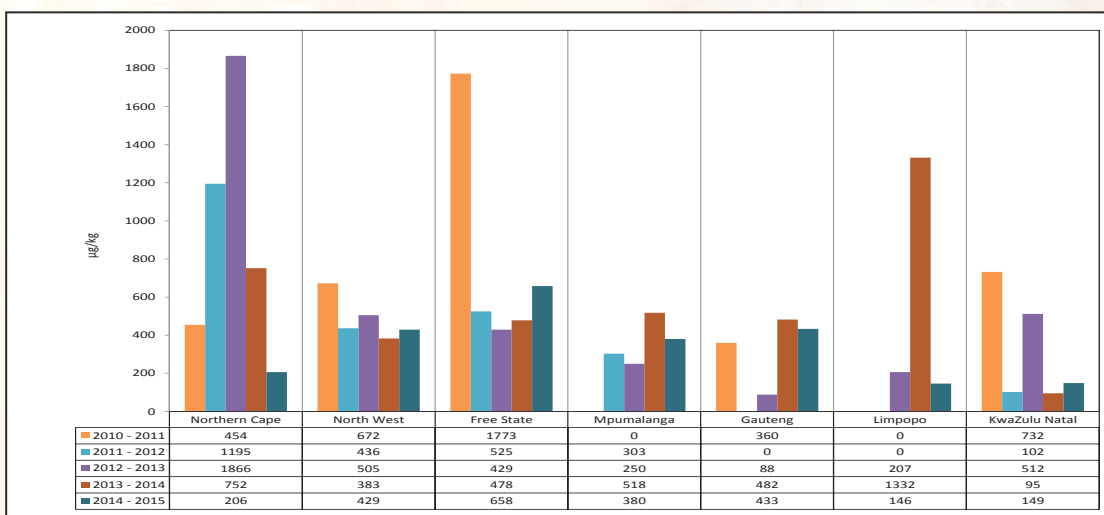
In North America, the DON concentration increased with approximately 10% and the prevalence of DON doubled in South America since the previous year, with 32% of the samples testing positive. Seventy percent of all the samples from South America was contaminated with FUM at an average level of 2 235 µg/kg. The highest FUM value worldwide was detected in a Brazilian maize sample (36 489 µg/kg). Aflatoxins were present in 18% of the samples at 40 µg/kg on average and 11% of all the samples exceeded the risk threshold. The second highest average values of Afla were detected in the African samples. Overall, DON constitutes the most frequent threat to feed commodities followed by ZON and FUM.⁽¹⁾

Locally, FUM and DON were found in samples from all the maize producing regions, except for Limpopo where no DON was found. 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 49 and 50.

Graph 49: Total Fumonisin mean concentration in white maize per province over five seasons

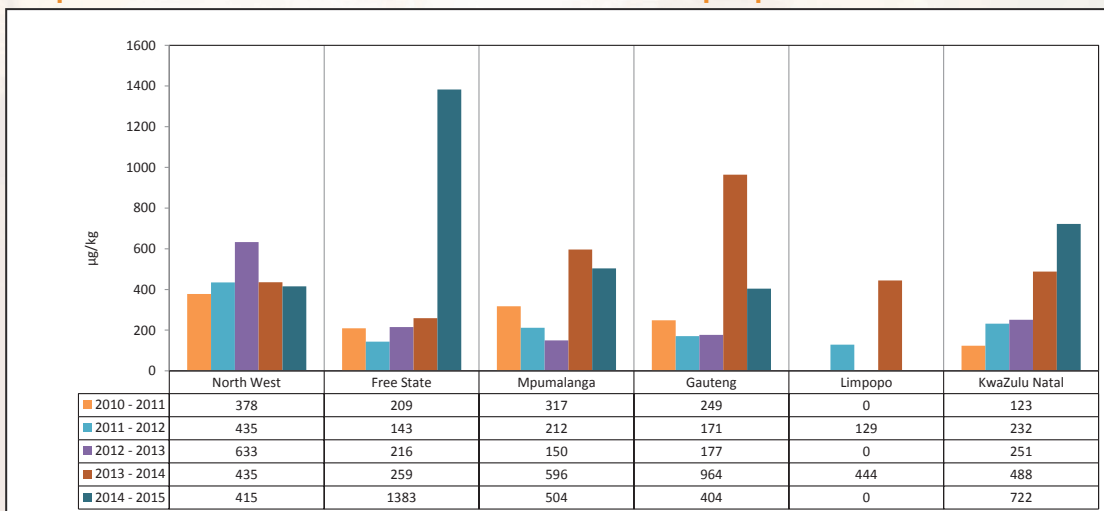


Graph 50: Total Fumonisin mean concentration in yellow maize per province over five seasons

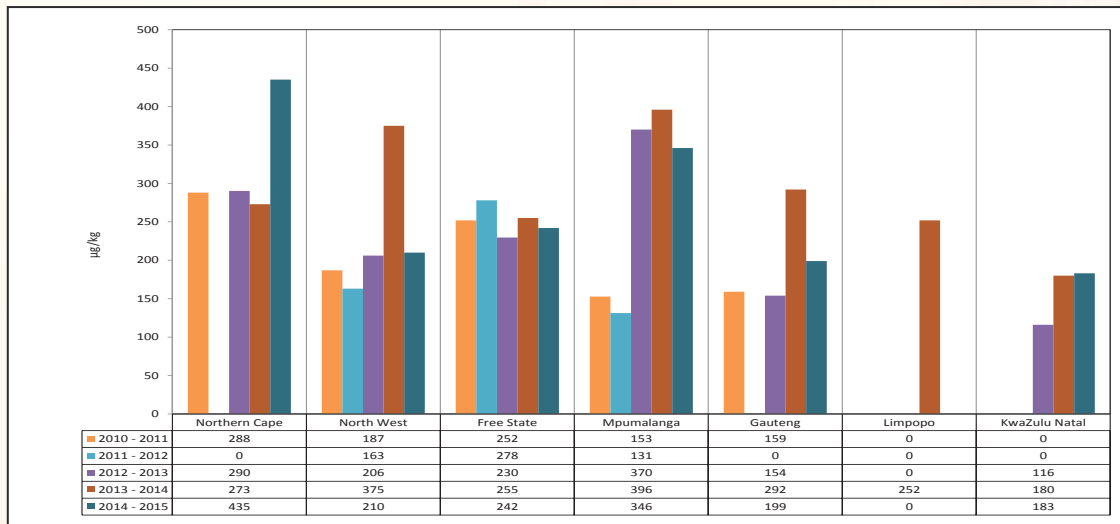


DON shows higher mean concentrations on white maize than yellow maize from the same region. Please see Graphs 51 and 52.

Graph 51: DON mean concentration in white maize per province over five seasons

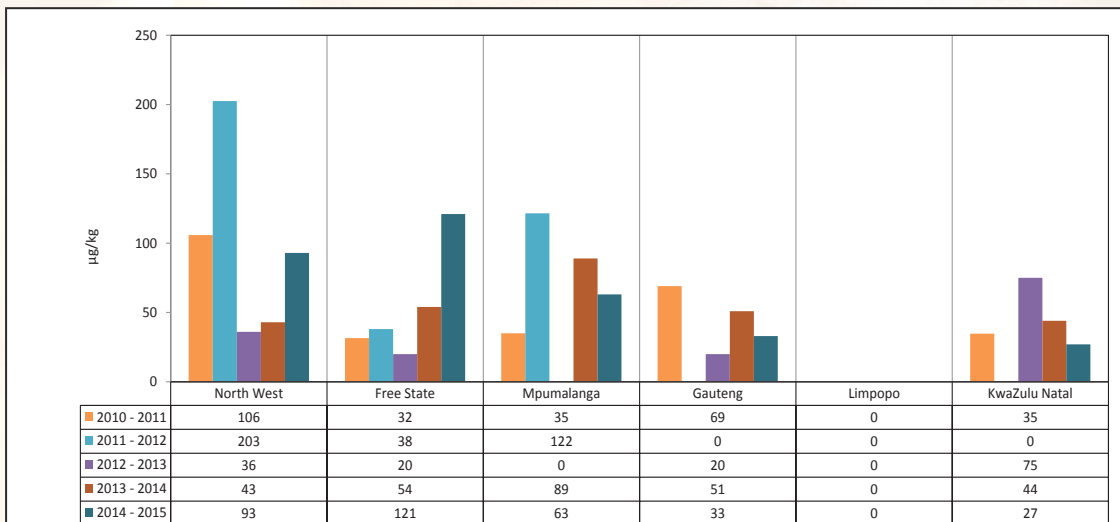


Graph 52: DON mean concentration in yellow maize per province over five seasons



ZON mean concentrations tend to show better correlation between white and yellow maize from the same region, than FUM and DON. Please see Graphs 53 and 54.

Graph 53: ZON mean concentration in white maize per province over five seasons



Graph 54: ZON mean concentration in yellow maize per province over five seasons

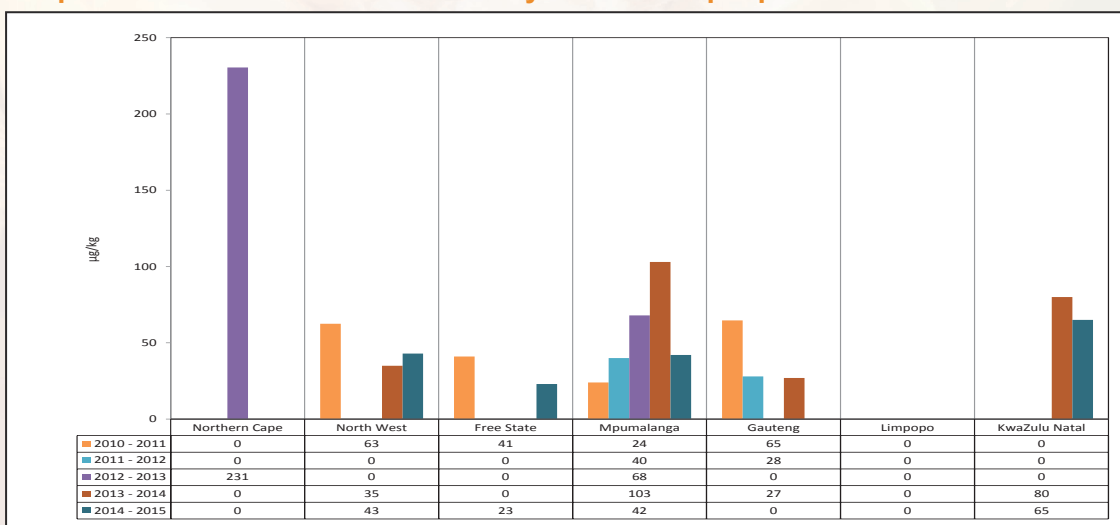


Table 22 on pages 74 to 85 provides the mycotoxin results of all 350 samples analysed for the 2014/2015 season. Table 23 on page 86 provides an overview of the mycotoxin results obtained from the 2003/2004 to 2014/2015 seasons.