

4 CONCLUSIONS

The film with oxygen scavengers was more effective than the control film against mould growth while the 73% CO₂ / 27% N₂ atmosphere resulted in the cheese with the best microbiological qualities of the 3 atmospheres. Thus the packaging combination that best maintained the microbiological quality of the shredded Cheddar cheese was the 73% CO₂ / 27% N₂ atmosphere in the oxygen scavenging film, because it resulted in shredded Cheddar cheese with the lowest mould counts. In addition, the shredded Cheddar cheese packaged in this treatment took 12 weeks to develop visible mould growth along with the cheese packaged in the 73% CO₂ / 27% N₂ atmosphere in the control and oxygen scavenging film and 80% CO₂ / 17% N₂ / 3% O₂ atmosphere in the oxygen scavenging film. Lastly, it had the fewest mould species causing spoilage indicating that the atmosphere was restrictive to the range of species causing spoilage.

The 3 modified atmospheres and the packaging film, influenced the mycoflora of South African shredded Cheddar cheese as the mould species isolated initially differed, from those isolated at 16 weeks in the 6 treatments. The species isolated at 16 weeks may have been adapted to growth in cheese and survival in the atmosphere in which they were stored while those isolated initially could have been contaminants or species not adapted to growth under the storage conditions. The number of species isolated from the shredded Cheddar cheese packaged in the film with oxygen scavengers were also fewer than in the cheese packaged in the control film in the 3 atmospheres at 16 weeks which indicated that the lower oxygen conditions further restricted the mould growth. This study demonstrated that only a small number of species are capable of causing spoilage of MAP and air packaged cheese after storage for 16 weeks at 5 ± 1 °C.

BISHOP, R., MARCY, J.E. AND MOLLER, T., 1996. Improved quality of shredded cheddar cheese, antimicrobials, oxygen scavengers and modified atmosphere packaging. *COA Annual report 92-93*.