

# Popular Abstract

Title of the thesis:

## Characterization of the postharvest changes in onion and their relation with storage time

This study has the purpose of investigating the internal changes in stored onion and attempt a correlation with the storage time.

Storage time is very important for industries because is during this time that the onion have the highest loss in terms of weight, nutritional substances and water and this results in an economic loss. This study focuses on finding an index or a compound that can predict the time that onions can stay stored before sprouting. The onions were stored during a phase called dormancy. In the dormancy phase onions are sleepy, so consumption of energy and respiration are at their lowest value. At the end of dormancy the onion has a life resumption and respiration rate as metabolic index start to grow and a new sprout begin to come out from the neck.

In my master degree thesis were analyzed onions from 4 different growing fields (A, B, C and D), 3 different storage time (4, 11 master and 17 weeks), each onion were divided in 3 layers (outer, middle and inner layer).

The results obtained in my thesis shows: the differences in the composition of onion in the different layers, specifically the soluble solids contents (sugars, acids...) have no correlations with the storage time. Water activity analysis show an increment during storage time and this increments can be used to predict the time for storage before onions start to sprout. The results of texture analysis shows no correlation between hardness of the samples and the storage time. The dry matter content in the bulbs have shown a correlation with the storage time, decreasing during the weeks of storage. During this experimentation also the content in fructane. Fructane is composed by a long chain of fructose molecules, fructose is the sugar more present in fruit, as the name suggest, the results of fructane investigation says that can be important to analyze this compound because is positive related with hormones that can regulated the growth and life cycle of the bulbs, anyway no correlations were shown between storage time and fructane content. Essentially is possible from the results of my thesis to conclude that dry matter, activity water are correlated with the storage time. A special attention need to be put on fructane because it is not correlated to the available storage time, but is correlated with abscisic acid, an hormones that can regulate the growth of the bulbs, so can be really important to use this value to understand in which vital phase the bulbs are. About the samples that I have analyzed, from the results is possible to speculate that the decrease of fructane concentration and dry matter in the bulbs and the subsequent increment of total soluble solids can be an indicator of the end of dormancy phase. This study can be useful as a start point for more studies aimed to deepening the general knowledge about process and molecules involved in: growth, resumption of life and sprouting of vegetables and more specifically of onions.