

Influence of ozone treatment on protein content of wheat (*Triticum aestivum*) during bulk storage.

SHINGALA A. (1), DABHI M. (1), RATHOD R. (1)

1 Department of Processing and Food Engineering, College of Agricultural Engineering and Technology, Junagadh Agricultural University, Junagadh, Junagadh, India

Title: Influence of ozone treatment on protein content of wheat (*Triticum aestivum*) during bulk storage.

The present study aimed to understand gaseous ozone exposure time and frequency of ozone cycle effect on protein content of wheat variety-GW 496 during storage. The bulk storage of wheat grain in metal silos has a major issue of insects and pests, which is controlled by gaseous ozone treatment. Because ozone leaves no residue and is environmentally friendly, ozone gas is the preferred and most practical method for treating grains while they are being stored in bulk. In this study, the ozone gas treatment was applied to wheat grain during bulk storage and its effect on wheat protein content was evaluated. A pilot-scale ozone disinfestation system for wheat grains was developed. 1000 ppm ozone gas concentration was fixed inside storage bin. The two-factorial experimental design on the influence of the parameters of ozone treatment on the protein content of stored wheat was carried out. Wheat grains were treated by gaseous ozone with various time durations (0 min, 30 min, 60 min, 90 min, and 120 min) and at various frequency cycles (7 days, 14 days, 21 days). The protein content of wheat during storage was significantly different after every 30 day interval up to 120 days of storage. A decrease from (10.40% to 9.13%) in protein content was observed for the control sample for the storage period up to 120 days, whereas 60 min of ozone exposure time and 14 days of ozone cycle increased the protein content from (10.40 to 10.58 %) in the ozone-treated sample for the storage period up to 120 days. On the other hand, excess ozone can also cause some negative effects on protein content. This study provided new insights into how stored wheat grain responds to ozone treatment and highlighted the role of treatment time durations and frequency of cycle for the protein content of stored wheat.

Keywords: Bulk storage, Ozone cycle, Ozone exposure time, Ozone, Protein content, Silo, Wheat.

*Corresponding author: abhisha794@gmail.com