



**University of Zabol**  
**Faculty of Agriculture**  
**Department of Animal Science**

Thesis for obtaining a master's degree in the field of animal nutrition

**Title:**

**Determining the nutritional value of irradiated cottonseed meal using  
the nylon bag method**

and gas production

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## **Abstract**

This research was done in order to determine the nutritional value of irradiated cottonseed meal using the nylon bag method and gas production. For this purpose, the samples from the farms of Sistan were systematically collected and after drying for irradiation, three samples of 750 grams of this food were packed in plastic bags and irradiated at three levels of 15, 30 and 45 kg. At first, after sampling, the samples were irradiated and their chemical compositions were calculated. The results showed that radiation had no effect on the amount of ash, organic matter, crude fat and crude protein at any level, but the amount of dry matter, NDF and ADF was affected by radiation and their amount decreased with increasing dose of radiation and there was a significant difference with the control treatment. Therefore, beam-electron irradiation on cottonseed flour improved its nutritional value compared to the unprocessed sample. In the second stage, the obtained results showed that the experimental treatments had a significant effect on the average percentage of potential degradability and effective degradability of dry matter, the degradability of dry matter of the studied treatments at different incubation times, and the treatment containing irradiated cottonseed meal. The dose of 45 kg had a significant difference with other treatments ( $P < 0.05$ ). The percentage of digestibility (digestibility of organic matter and digestibility of organic matter in dry matter) and metabolizable energy (MJ/kg) of the experimental treatments as well as the average volume of gas produced in the studied treatments at different times of incubation and the measurement of gas production under the influence of the treatments It was tested ( $P < 0.05$ ) and the treatment containing irradiated cottonseed meal at the level of 45 kg had a significant difference with other treatments. The gas production parameter  $c$  was not affected by the experimental treatments. According to the obtained results, it can be stated that the processing of cottonseed meal using electron beam at the level of 45 kg improves the nutritional value.

**Keywords:** cottonseed meal, radiation, nutritional value, dry matter degradability