



# Ultraviolet Radiation Ray Effects the Economical Production in Domestic Animals

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## Introduction

All living things on the world require solar energy. Climate change, global warming, gas emissions and the greenhouse effect have all altered the atmosphere, which acts as a barrier between the sun's rays and us. The ozone layer has been altered as a result of these changes, allowing more direct UV light to reach the Earth's surface. As a result, the ecosystems and animal species that get direct sun radiation have changed. Excessive exposure to sun radiation can induce skin lesions, ocular tumors, caloric stress, or even mortality in livestock species, resulting in significant financial losses for the business.

## Ultraviolet (UV) light

UV solar radiation is measured in (w/m<sup>2</sup>) and is defined as the power of UV solar energy per surface unit (UV) (11). UVA (315-400 nm), UVB (280-315 nm) and UVC (280-315 nm) are the three wavelength spectra (100-280 nm). The latter has the most energy, but it is absorbed by the ozone layer in the atmosphere as long as it is intact and hence has no harmful impact on life forms. UVC could begin to create adverse consequences if the ozone layer degrades even little.

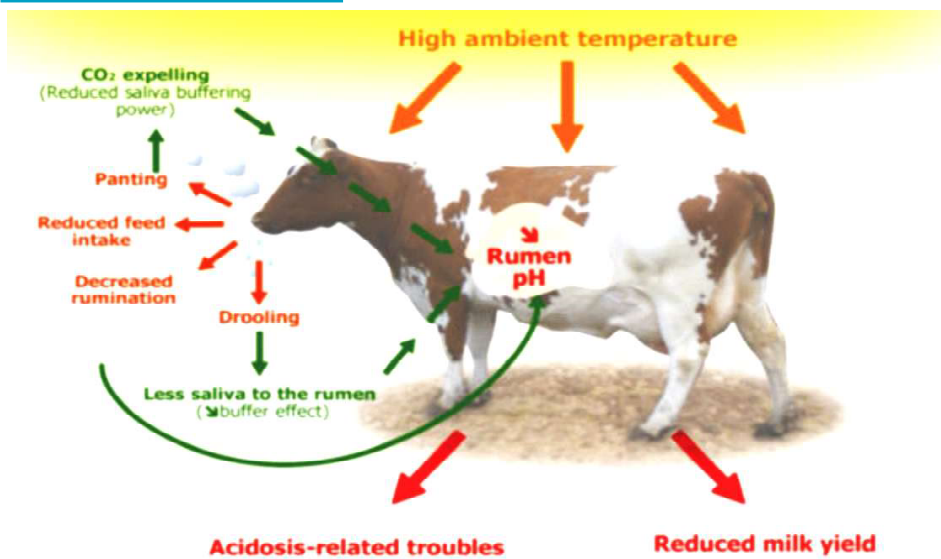
## Animal Skin Physiology

The skin of animals covers the organism's surface and is in direct contact with the outside world. It is divided into three strata, each of which contains additional components such as sweat glands and sebaceous glands. Hair, wool, feathers and keratinized tissues, as

well as nails and hooves, have evolved as additional types of protection in many species. The skin defends against environmental hazards such as mechanical, physical, and chemical assaults.

## Effect of Ultraviolet Radiation

Solar radiation is required for life on Earth to exist. Pollution contributes to global climate change by destroying the ozone layer in the atmosphere, which is critical for regulating the kind and amount of UV light reaching the surface. Domestic animals are continually exposed to direct sunlight and may suffer skin sores, eye tumors and heat stress, or even die as a result. The excessive synthesis of reactive oxygen species caused by UV light causes oxidative stress in the skin, which can damage cells and cause cell ageing or cancer. Animals living at high elevations and in the tropics who are exposed to sun radiation for long periods of time tend to lack pigment in the epidermis, have little or no hair and are more susceptible to skin illnesses. UV rays damage cell DNA, causing the cyclobutane pyrimidine dimers, pyrimidine and pyrimidine, to form, causing negative consequences such as replication and transcription inhibition, increased mutations, cell cycle pausing, and cell death. Squamous cell carcinoma also known as epidermis carcinoma, is a malignant tumor that affects keratinocytes of the epidermis and is linked to these causes.



### Conclusion

Domestic animals are almost always exposed to ultraviolet radiation, but climate change may increase UVB radiation exposure, thereby causing health problems. Exposure sensitivity differs between species and even

breeds within the same species. Many may acquire cutaneous illnesses, such as skin cancer, resulting in considerable financial losses in the agricultural sector, as well as compromising the quality and safety of animal products meant for human consumption.

### Reference

- Maricela Olarte Saucedo, Sergio Hugo Sánchez Rodríguez, Carlos Fernando Aréchiga Flores, Rómulo Bañuelos Valenzuela, María Argelia López Luna (2019). Effects of ultraviolet radiation (UV) in domestic animals. *Rev MexCienc Pecu*10 (2):416-432.

