

A guide to noxious plants as an educational resource of Veterinary Medicine students

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Introduction

The School of Veterinary UNRN is located in the town of Choele Choel (39° 17'S, 65° 39'W), in Northern Patagonia, Argentina. The climate is semi-arid with a historical average annual continental rainfall of 303 mm, with marked daily and seasonal temperature ranges. However, the type of vegetation that can be found in the area ranges from xerophytic shrubs to hydrophytic vegetation because the arid plateau is crossed by the broad valley of Río Negro. Due to the topographic distribution of agricultural and livestock farms, the toxic plants for livestock may be found in the irrigated valleys or arid shrubby camps.

“Agricultural Bases and Zootechny” is a second year course during the Veterinary Career at the National University of Río Negro (UNRN). Students are introduced to general agronomy practices in order to become familiar with land and livestock management. The basic principles of forage use and production are explained as a relation between soil, water and plants. One of the topics analysed during the course is livestock management and plant toxicity. The possibility of consumption of noxious plant material by livestock is more pronounced during drought, or after overgrazing, due to reduced opportunity for selective grazing.

Factors affecting plant toxicity include plant growth phase, the plant parts, environmental conditions, and livestock species sensitivity to certain plant species. A key to evade toxic effects is to be able to identify noxious plants and to know their growth habits and toxicology, the clinical signs they cause, the methods for treating the affected animals and the strategies to prevent poisonings.

During the university course, and without entering into more advanced subjects like toxicology and physiology, the presence and effect of toxic plants are described. In order to encourage the study of the theme by future veterinarians, a guide of the toxic plants found in lands zone near the Veterinary school was proposed as an additional investigation activity. Participation was free and this paper is presented by the professor in charge as first author with the co authorship of the collaborating students from two courses, years 2011 and 2012. The aim of this developing work is to prepare a booklet to be used by veterinarians and agronomist and to share with the zonal cattle managers.

Methods

During lectures, the toxicity of different plants are explained following the related bibliography (Gallo 1987; Marzocca 1976; Pamio 2010; Ragonese and Milano 1984.) and their harmful effects are described according to the action on different animal organs (Keeler *et al.* 1978; Villar and Ortiz Díaz 2006).

Later, the regional climate characteristics are described following previous studies (Klich 2005) and the data of the nearby weather stations, as this information assists with understanding when certain plants will be present in the field. Participating students select plants from a list of locally known toxic plants, and compile information from journals and the internet on each plant using investigative techniques taught in lectures.

A data sheet is completed for each plant containing the following information: Scientific Name, Common Names, Taxonomy (Family), Habitats and characteristics of the places where it can be found in the region (irrigated lands, xeric areas, plateau, valleys, others), plants characteristics, growth forms and phenology, toxic plant's parts and toxic principles, susceptible animals and clinical signs, recommendations, local antecedents. This data must be accompanied with the consulted bibliography and a glossary of botanical and veterinary words. The bibliographies and glossaries will be combined in the final booklet. Each data sheet must include photos taken by the students at different growth periods in the zone or of the plant characteristics used for identification.

Results

Currently 20 zonal toxic species have been identified and the data sheets of 10 have been finished and will be displayed in the poster at the conference; *Centaurea solstitialis*, *Xanthium spinosum*, *Xanthium cavanillesii*, *Cortaderia selloana*, *Euphorbia collina*, *Wedelia glauca*, *Conium maculatum*, *Nerium oleander*, *Solanum eleagnifolium* and *Asclepia mellodora*.

Conclusion

The participation aims to introduce students to literature research on a problem that surely will present during the exercise of the profession of veterinarians. Furthermore, as this is a Veterinary School created only three years ago and

no educational institutions in related careers existed previously in the area, all such research lays the groundwork for future projects. The initial work of the students could be supplemented with a description of the toxic effects of plants in different organs in a range of animals when students undertake relevant undergraduate courses. It is not easy to get veterinary students excited about projects that are about plants but is a way of showing that people's interests can be integrated into joint projects.

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