Towards “Clean, Green and Ethical” Animal Reproduction

The purpose of this symposium

Our animal industries are becoming increasingly influenced by societal constraints that are inevitably leading to changes in the marketplace: consumers worldwide are beginning to demand products that are “clean, green and ethical”. In Japan, for example, BSE, mouth-foot disease, and unscrupulous activities by a small part of Japanese butchers have led consumers to question the practices of all members of all animal industries at all stages of the supply chain.

With this symposium, we begin with the producers and we focus on dairy cattle and small ruminants. To be ‘clean’, the producers need to adopt practices that minimise the treatment of animals with hormones, drugs and chemicals. To be ‘green’, they need to ensure that their practices are environmentally sustainable. To be ‘ethical’, they need to avoid practices that compromise the welfare of their animals.

In many countries, regulatory authorities have already imposed these conditions on producers, importers and exporters. However, practices that are ‘clean, green and ethical’ need not be difficult or costly—they can be developed from a better understanding of the physiology and behaviour of the animals and they can improve productivity and profitability. To prepare for this future, our industries need a long-term vision with clear goals, supported by research and development programs that will lead to these goals. In this international seminar, we will be discussing new research that should promote the development of such a vision. There will be a focus on the management of reproduction because, to a large extent, the productivity and profitability of our meat and milk industries depend on reproductive performance.

The first paper (GB Martin) outlines the fundamental reasons for the quest for ‘clean, green, and ethical’ animal production and then develops a detailed case study based on the reproductive management of sheep and goats. The scheme that is developed is based on manipulation of the animal’s environment as a way to control the reproductive system. This paper also indicates areas in which basic and applied research are needed. The second paper (A Miyamoto) concentrates on the latest developments in ultrasound, particularly the use of colour doppler to observed blood flow in the ovary. Ultrasound may not seem to fit preconceived ideas of a green technology, but it is non-invasive (ethical) and non-hormonal (green). With respect to precise management of reproduction, ultrasound is essential for following the process of pregnancy. With respect to some of the more difficult issues inhibiting the use ‘clean’ systems to control reproduction, the extra power of colour ultrasound can help us to work out new ways to control the development of ovarian follicles. The third and fourth presentations are focused on nutrition, an integral part of animal management and often the biggest cost in animal production. H Kadokawa thus brings us up to date on the subject of leptin, a cytokine-hormone secreted by adipose tissue that affects reproductive function in sheep and dairy cows. In discussing leptin, this paper raises questions about the best way to measure body condition score and the use of such measurements in the management of postpartum dairy cows. Kadokawa’s paper also suggests that we need to consider extended lactation and that, in Japan, in particular, the genetic selection index needs to be revised so that it includes reproductive performance. J Thompson then discusses the impact of the nutrition of the oocyte and embryo on subsequent development.
in ruminants, and proposes that changes in glucose metabolism in these very early stages can have profound ‘programming’ effects on the productivity of the offspring. The next paper (K Nakada) in the series focuses specifically on the need to reduce the use of medicines in the management of dairy cattle in Japan. This view is discussed with respect to the relationships between changes in nutrition, immunology, and reproduction during late lactation and the drying-off periods, and subsequent postpartum reproductive performance. The final paper (S McDougall) offers a contrasting view of dairy farming, by describing issues in reproduction of dairy cattle that, in contrast with those in Japan, are managed on a seasonal, pasture-based production system in New Zealand. This allows us to compare the industries of the two countries in the context of the drive “towards clean, green and ethical animal production”.