

Preferences; do animals know what's good for them?

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Do animals know what is good for them? That is the first question that needs to be answered before we can use preference information to our advantage.

Preferences are the result of a complicated set of circumstances that ends when an animal finally takes a bite. Many factors influence that final decision.

Taste is the first step in a feedback mechanism which tells us about the food we eat. What our bodies need to know is the nutritional value of the food. Our brains interpret this information and, by linking our intake at previous meals with the current one, tend to balance our diet to meet requirements.

Animals work within the same set of guidelines. If something is lacking from the diet then animals tend to seek it out. An example of this is some groups of elephants in Africa seeking out caves where salt is abundant, when it is lacking from their normal diet. On a day to day basis this mechanism sees a variation in the diet chosen which tends to balance energy with protein intake.

We know that clover is a preferred pasture species, but when offered a free choice, dairy cows only select a diet of about 50% clover. Their feedback mechanism tells them to eat some grass to maintain the balance between energy and protein, and slowly and rapidly digested food.

When presented a choice in the morning, sheep will choose a highly digestible diet, but in the afternoon they eat a more slowly digested diet, which keeps their gut full, and generates more heat, as they go into the cooler part of the day.

Anti-quality factors are also very quickly detected by animals and avoided in the future. Goats browsing Blackbrush, a shrub with differing types and amounts of tannins, will, within 24 hours, target the older growth with lower tannin levels. On a second exposure nine months later, the goats remembered or

recognised the type of feed and still avoided the young growth.

A further example of these feedback mechanisms comes from sheep with internal parasites. When infected with internal parasites lambs will change their diet to include more protein. This helps them to meet their growth needs, which are compromised through low protein uptake when parasitised.

So present evidence suggests that animals do know what is good for them, and that they will stop, before getting too much of a good thing.

We all know of some times when this mechanism doesn't work. Animal examples include goats and rhododendron bushes, and dairy cows and too many kiwifruit. However, most of the time, when presented with feeds within their normal range, animals do tend to know what is best.

A key experiment that showed definite preferences in deer was done in the mid-1980's. It showed that red clover, chicory and Maku lotus were definitely preferred, while grasses were generally avoided. The work also showed that preferences changed with season, and between sexes.

Further research work since then has shown that these preferences are well aligned with actual performance. Weaning weights have been increased by using chicory, red clover and Maku lotus. Post-weaning growth in the autumn has also been increased with these options.

Growth in spring, however, is not greatly affected by using these high quality options, and the original preference work would also suggest that preferences are not as great during spring, when all pasture species are generally high quality.

This also raises the issue of different environments. If pasture species retain good quality throughout the year, then preferences are less likely. Work in Otago and Southland has shown that well controlled pasture continues to

produce good liveweight gains throughout summer, even on standard ryegrass pastures. This is because pasture quality remains high with cool temperatures and summer moisture.

Some preferences are related to other digestive requirements, for general gut health, rather than nutrition. One of the features of deer is their ability to closely control the rate of passage of feed through the gut. This control requires a healthy active gut with the right type of fibre. Cattle maintain this using grass fibre but some browsers, such as the moose, need fibre from trees and shrubs. When fed lucerne hay captive moose deteriorate in condition and die. This can

be turned around by adding willow branches which provide the animal with an appropriate source of indigestible fibre. This fibre keeps the gut moving and ensures that the moose can utilise the lucerne. So while not providing any nutrition, the indigestible fibre is important for the health of the animal.

The elk and the red deer are both intermediate grazers, who perform well on pasture diets most of the time. During summer, pasture quality can be an issue, especially in drier and warmer environments within New Zealand. In these environments the choice of legumes and herbs can improve animal performance