

'Healthiness and quality of beef produced from traditional and modern breeds reared on species-rich unimproved grassland' is the title of an important research project being undertaken by a joint group of research and conservation organisations.

Its main aim is to find out if beef from cattle reared on herb-rich unimproved pastures differs from that produced on improved grassland where the variety of plant species is less. The conservation partners include Natural England, which has provided land and cattle whilst the Rare Breeds Survival Trust has provided funding and advice on choice of breeds. On the research side, Bristol University and the Institute of Grassland and Environmental Research (IGER) have, between them, collected all the relevant data whilst hosting the trials involving the more intensive production systems. GAP too has been involved with the project in an advisory role, both during its conceptual stages and at follow-up meetings, the latest of which I attended in November 2006. The purpose of this short article is to summarize the initial findings now that the work is into the third of its four-year run.

### **Objectives of the Research.**

The study aims to examine the following issues:

1. How the quality and composition of meat from 'commercial' steers varies when reared on improved and unimproved pasture
2. How tissue composition and quality of meat from traditional steers varies between different grazing situations and in comparison with commercial breeds.
3. How the welfare, behaviour and health status of commercial and traditional breeds vary when reared on different pasture types
4. How meat characteristics and animal performance are affected by grazing compared with indoor concentrate feeding in both a traditional and a modern breed
5. How eating quality differs within the commercial context by comparing traditional and modern steers obtained from small abattoirs servicing the Traditional Breeds Meat Marketing Company

This multi-faceted research programme is being conducted across a complex network of sites and using facilities located throughout England and Wales

### **Results so Far:**

Periodic review meetings are held to update the partners on ongoing findings. The latest of these was held in November 2006 at the Meat Research facility at Bristol, where the following results were offered:

- The commercial breed steers (Charolais x Holstein) grew considerably faster than the traditional ones (Longhorn) on unimproved pastures (up to 25% faster)

although they were much leaner at slaughter. This may indicate their need for inclusion of cereals in the diet.

- Physical performance, perhaps unsurprisingly, was consistently better on improved grassland. Beef Shorthorns grew faster, attained heavier final weights, better conformation and fat cover under these conditions than their counterparts reared entirely on unimproved limestone grassland.
- The within-breed variation in performance amongst native breeds in the unimproved situation was striking. About a third of the Beef Shorthorns that were restricted to the unimproved grassland attained a size, conformation and degree of finish that was the equal of those reared on improved pastures. Unfortunately a similar proportion performed much less favourably, producing only undersized and underfinished carcasses.
- This clearly highlights the importance of individual genetics, especially in a breed like the Beef Shorthorn, which has been developed from a dual-purpose animal originally. Furthermore it has been out-crossed with larger and probably less hardy continental breeds that may have reduced its efficiency as a converter of native grassland. It will be important therefore to be able to select and secure specific bloodlines that have demonstrated their ability to perform well in low-input systems and unimproved situations.
- Following a standardized period of carcass maturation, the meat from the Longhorns was judged by a trained taste panel to be tastier and more tender than that from the Charolais crosses.
- Further tests on meat samples taken from the commercial food chain seemed to confirm the enhanced eating qualities of the traditional breeds compared with the Charolais crosses, although differences between the systems that produced these animals may have also contributed to the differences observed.
- The method of maturation, post-slaughter, was found to have a big influence on eating quality of the meat, with improved assessments for taste, tenderness and juiciness when the meat had been hung on the bone rather than sealed in a vacuum pack.
- The health and welfare of all the cattle was assessed by a vet during the course of their first and final grazing seasons as well as the intervening winter. Few problems were recorded, other than infestations of lice in some of the housed animals and a tendency towards hoof overgrowth in some of the breeds.
- Botanical surveys showed that the unimproved grasslands were considerably richer in herbs, typically containing between 20 and 30 species, compared with the improved ones, which contained between 6 and 15. This may not, however, reflect either the overall abundance of herb species or the amount being consumed by the cattle. Such questions will need to be tackled in follow-up studies.
- We are currently awaiting results showing the nutritional characteristics of the various pastures in terms of the availability of protein and energy and the range of fatty acids and anti-oxidants that they contain.
- This information on fatty acid and anti-oxidant content lies at the core of the study since these chemicals are known to play a big part in determining the meat's shelf-life and eating quality. Some of them, the omega-3 polyunsaturated fatty acids are also thought to help maintain human health when supplied as a regular dietary component.

**Conclusion:**

Although all the results are still not in, this study is already demonstrating a range of benefits from grazing unimproved pastures with cattle. This sits neatly alongside the results reported in the last edition of GAP News showing enhanced eating qualities and healthier fatty acid composition for sheep meat originating from herb-rich grazing. This cattle study also suggests that there are additional advantages in using breeds that are native to Britain, something that perhaps should not surprise us as these have been developed over the generations specifically to produce meat from such situations. This narrative combines benefits for human health with conservation of rare breeds and wildlife habitats and could, if properly told, provide a tremendous boost for local grazing schemes looking to develop better financial returns on the marketing of their products. We'll keep you posted as further results come in.