11. Session IV. Farm management and economics

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Points of discussion:
1) Direct costs of resowing
2) Cost/Benefit of resowing
3) Legislation

Re 1: Direct costs of resowing

To compare costs between countries an overview has been made as shown in Table 1. Only the main costs are presented.

Table 1. Main costs of resowing permanent grassland.

	Belgium	Ireland	The Netherlands
Soil analysis			57
Chemical destruction + spraying	55	60	56
Lime + spreading		83	
Rotary tilling	56		68
Ploughing	63	56	73
Levelling		16	
Seedbed preparation	50	48	41
Sowing	41	25	54
Seed	100	95	127
Herbicides + spraying		32	63
Fertiliser + spreading		77	84
Rolling		20	
Total costs	365	512	623

Denmark is not mentioned in Table 1 because there is predominantly crop rotation, and almost no permanent grassland. The differences in costs of resowing between countries depend primarily on the inputs included (Table 1); for example the inclusion of soil analysis by the Netherlands. It could be argued that soil analysis and the application of lime and fertiliser are an integral part of nutrient management and maintenance of soil fertility on the farm and perhaps should not be attributed directly to the costs of resowing. On the other hand, soil analysis during resowing is highly recommended because of turning down the sward. The nutrient status of the deeper layers is unknown. Otherwise, when comparing the costs of individual operations across countries, the differences are not striking. It is possible that Dutch farmers, in particular, use more seed than is strictly necessary. There is a need for examination of the possibilities of reduced tillage operations or the adoption of new technologies that might contribute to the reduction of resowing costs.

Re 2: Cost/benefit of resowing

The advantages and disadvantages associated with three main general scenarios that need to be assessed:

- Permanent grass
- Regular grass to grass resowing (*i.e.* every five years)
- Grass and maize rotation

The relative costs and benefits associated with each of the above three scenarios depend on factors such as climatic differences etc. within each country that have an impact on the costs of production and also on factors that have an impact on the saleability and value of the product. For example, in Ireland a long grazing season is favoured by a relatively mild wet climate that is not particularly conducive to maize production with existing cultivars. This offers the possibility of relatively low costs of milk production based primarily on grazing virtually permanent grassland. However, maximising dependence on grazed grass involves highly seasonal production and a concomitantly lower milk price. In contrast, the relatively long and harsh winter and summer drought in Denmark and Northern Germany necessitates the provision of substantial quantities of conserved feed. Access to markets offering high prices for year-round supply of milk requires the provision of forage of high nutritive value. Corn and maize silage meets these requirements and hence is an integral component of the system of dairy production commonly practised in these regions. Furthermore, the experience in Denmark is the relatively rapid deterioration of swards over a period of three or four years, especially under cutting management. This rapid deterioration may be due, to a large extent, to the relatively long cold winter and the prevalence of summer drought conditions experienced in Denmark. Therefore, in Denmark and Northern Germany milk production tends to be based on rotation of short-term grass leys (of about three years duration) and corn and maize production.

The situation in Belgium, Germany and the Netherlands is between the Irish grazing system and the Danish system of high nutritive forage. In the grazing season grass is supplemented with maize silage. In general, grassland is not rotated with maize or other crops. Depending on soil type and intensity of use, the sward deteriorates more or less rapidly. Crop rotation is only common practice in organic farming in order to try to retain soil fertility. Maize silage is generally an integral component of dairy production systems because of the high intensity of production and the relatively high nutritive value of maize silage. The production of maize makes better use of soil moisture, more efficient use of fertiliser N on a whole-farm basis and is a practical crop for fields that are at an inconvenient distance from the milking parlour.

In systems of dairy production that are primarily grass-based, i.e. grazed grass and grass silage, the benefit of resowing is dependent on the increased productivity associated with the sown sward exceeding the costs associated with reseeding. The increased productivity is dependent on the survival and longevity of the sown sward. As pointed out above, climate has an important influence on the rate at which a sward declines, *i.e.* the impact of harsh frosty conditions during the winter in Denmark. In the Netherlands and Belgium sward deterioration can occur within four or five years on sandy soils that are prone to drought. Grassland management also influences the rate of deterioration with intensive cutting management tending to increase the rate of decline. Under such circumstances periodic renovation of grassland is necessary.

In order to properly assess the cost/benefit of grass to grass resowing it is necessary to have reliable data on the increased productivity (forage yield and nutritive value) that is directly attributable to resowing in the years following resowing. These issues would have to be assessed under a range of different scenarios relevant to production systems in different regions. Detailed knowledge on the reasons for the deterioration of swards would be an important aspect of this.

Main questions

- Possibilities of shallow tillage?
- Are there alternatives for reseeding operations?
- What is the effect of grassland renovation on DM yield, herbage quality, net uptake and the economic perspective for farmers?

Re 3: Legislation

In general, farmers undertake resowing for economic reasons. However, there are environmental implications associated with resowing of grassland and probably the most important of these is the large increase in mineralisation and release of soil organic matter N. This can contribute to losses of N to the wider environment, especially via losses of nitrate to surface and ground- water. In the Netherlands ploughing of grassland is prohibited between mid-September and the end of January. Generally this legislation does not have a strong impact on general grassland management, although this legislation is opposed by the bulb-growing sector for agronomic reasons. Also in the Netherlands there may be requirements to further reduce N thresholds on dairy farms. This would tend to increase the proportion of land area devoted to maize production on such farms. In Ireland, agriculture is the source of approximately one third of greenhouse gas emissions. It is the source of most methane and nitrous oxide emissions, which are gasses of high global warming potential. Since contributing substantially to emissions and accounting for only 5% of Gross Domestic Product, reduction in both ruminant livestock numbers and fertiliser N use is being both promoted and imposed by a range of measures. This is likely to result in a shift towards more extensive low cost grazed-grass-based systems of production. In Belgium a change in timing of resowing is expected due to changes in the way subsidies are paid. These issues are likely to have an impact on the cost/benefit of the grassland resowing and on grass arable rotations.

Main questions

- What are the economic effects of N losses caused by grassland renovation?
- Which practical support can we give to farmers facing grassland renovation?