

# Chapter Four

## **4. Non-technical study: the use of high dry matter silage in England and Wales – a survey of dairy farmers**

### **4.1 Introduction**

This work was performed in fulfilment of the requirements of the Total Technology Studentship for a non-technical study. For the study, a survey of both the current trends in ensilage and the future requirements of farmers was undertaken as part of an assessment of the future for novel silage inoculants.

High Dry Matter (HDM) silage is produced from crops with a low water content. In common usage, it specifically refers to silage made from grass which has been wilted for a long period (48 hours or more), so as to reduce its water content. The production of HDM silage has become increasingly popular over recent years, and a variety of reasons are cited for this. Commonly stated beliefs are that the resultant silage has a better feed quality, or that HDM ensilage is more likely to produce a satisfactory fermentation without the use of an inoculant. On the other hand, experimental evidence shows that HDM silage is more susceptible to aerobic spoilage (Section 1.7).

This trend towards the production of HDM silage will affect sales of commercial inoculants. Many farmers believe that, with a drier starting material, inoculants are less useful, and these farmers are especially unlikely to purchase a product designed for the production of low dry matter silage. To sell to these farmers, a product would need to be specifically designed for the HDM market, and would have to target the perceived drawbacks of HDM silage.

The subject of this thesis, an inoculant designed to minimise aerobic spoilage, is potentially very attractive to farmers making HDM silage, and so a survey was initiated with the aim of identifying and characterising the market for such an inoculant. The first objective was to discover what awareness there is of HDM silage around the country, and what type of farmer is making HDM silage. The second was to find out whether aerobic spoilage really is considered to be a problem with HDM silage, and what type of farmers are most concerned about it. To do this, the method given in Section 3.11 was used to conduct a phone survey of dairy farmers in England and Wales. The farms surveyed were categorised according to their region, use or non-use of a contractor, additive usage, and the size of farm. The effect of these categories on opinions towards HDM silage and aerobic spoilage was then analysed.

## **4.2 Results**

In total, 125 farmers responded to the survey, categorised as shown in Table 4.1.

**Table 4.1.** Categorisation of farms that responded to the survey (total=125).

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<b>Region:</b>	Wales.....	28
	North-West and Midlands .....	51
	South-West.....	33
	South-East and North-East.....	13
<b>Farm size:</b>	Big.....	72
	Small.....	53
<b>Additive:</b>	Use .....	46
	Do not use .....	45
	Unknown .....	34
<b>Contractor:</b>	Use .....	61
	Do not use .....	54
	Unknown .....	10
<b>Current practice:</b>	Make.....	64
	Plan to make .....	15
	Do not make .....	46

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#### **4.2.1 Awareness of a trend towards the production of High Dry Matter silage.**

In total, 73% of those questioned felt that there was a trend in their area towards the production of HDM silage, and the effect of the various farm categories on this awareness is shown in Figure 4.1. Most categories have little effect on trend awareness, the important exception being those farms that are making or which plan to make HDM silage. These farms are almost twice as likely to believe there is a trend towards the production of HDM silage in their neighbourhood, when compared to those that have no plan to make it. This suggests that farmers either tend to follow trends established in their area, or that a farmer's opinions regarding the practices of those around him are prejudiced by his own practice. It is likely that both these alternatives play a role in forming a farmer's opinion.

#### **4.2.2 Production of High Dry Matter Silage.**

51% of those questioned currently make HDM silage, whilst 12% plan to make it. The influence of the various farm categories on this decision are displayed in Figure 4.2.

As stated in Section 4.2.1. there is a tendency, amongst those farms that have observed a trend towards HDM silage production in their area, to produce HDM silage themselves. There also is a degree of regional influence, with Welsh farms the least likely to be currently making HDM silage (probably for climactic reasons). It is interesting that when the farms currently making HDM, and those that are planning to, are added together, this regional variation disappears. If all the farms planning to make HDM actually do, then a situation will arise where there are no regional differences.

Farm size has no influence on current practice regarding silage dry matter, although it appears that big farms are more likely to be planning to move into HDM silage production.

It is the use of an additive that has the greatest influence on farming practice. Those who use an additive are far less likely to be making HDM silage, but far more likely to be planning to. One reason for this may be a belief that HDM silage does not require an additive for satisfactory fermentation, although this was actually only cited once by an interviewee.

Farms that contract out their silage manufacture are more likely to make or be planning to make it dry. This is probably because efficient drying requires a high capital investment, making it cost effective only for large scale production such as can be undertaken by contractors who will use their machinery on many farms in one season.

#### **4.2.3 Factors involved in the decision to make High Dry Matter silage.**

In the survey sample as a whole, there were three decision factors which were consistently rated as being the most important elements in the decision to make HDM silage. These were the beliefs that HDM silage is a better food, that it produces less effluent, and that adverse weather conditions often preclude its production. Somewhat less important was its susceptibility to aerobic spoilage and that it is easier to handle because of its reduced bulk. Other factors were relatively insignificant, being identified by less than 20% of the sample. As might be expected, the various categories of farm in the survey have markedly different opinions as to the relative importance of the factors involved in the decision making process, and the influence of individual farm categories is discussed below, as well as being shown in Figure 4.3(A–E).

##### **A) Effect of location.**

Farms were categorised into five regions (Wales, North West and Midlands, South West, North East and South East) but, of these, only 12 of the farms surveyed were in the South East or North East. This is an accurate reflection of the fact that few dairy farms are located in these regions but, because of the small sample size, it was decided to exclude these areas from an analysis of regional effects.

Welsh farmers gave, on average, the fewest reasons for making a decision on HDM silage production (an average of 2 reasons, compared with an average of 2.4 for farmers elsewhere in the country). Although Welsh farmers are just as likely to be aware of a trend towards the production of HDM silage, and are very likely to be planning to make HDM silage, fewer of them are actually engaged in its production, and it may be this lack of direct experience that

causes them to identify fewer factors. This explanation is contradicted by the national data, where farmers planning a change to HDM silage tend to identify more factors than those already producing it (2.8 as opposed to 2.7), which suggests that the lower number of responses given by Welsh farms reflects some other, unidentified, cause.

This effect becomes very apparent in the appraisal of HDM silage feed quality, with Welsh farms only half as likely as others to think that it provides a better feed quality. Other factors are less influenced by location – farms in the South West are more likely to identify a decrease in effluent as important, and they are less likely to be impressed by the decreased bulk, but the effect is small.

#### **B) Effect of farm size.**

Big farms identified more factors than small farms (an average of 2.4 compared with 2.1 for small farms). Big farms were generally more likely to state that HDM silage is a better food and is more easily handled, and they were also more concerned about the weather (presumably because, with a greater acreage, grass collection takes longer, and so is more vulnerable to changes in the weather).

#### **C) Effect of additive usage.**

Farms using additives all or some of the time identify more factors than those managing without (2.6 versus 2.1). The principal reasons for this are that farms using additives are much more likely to be concerned with aerobic spoilage, and with the extra time and expense of HDM silage manufacture. The concern with aerobic spoilage amongst those farms using additives is perhaps to be expected, since inoculated silage is generally considered to be more prone to heating and aerobic losses (Section 1.8). The concern with costs (*i.e.* the extra wilting time, and the need to use specialised machinery to dry the crop effectively), is less easily explicable, but may be due to the higher cost already incurred with additive usage.

**D) Effect of contractor usage.**

Farms that use a contractor are less concerned with aerobic spoilage and the ease of handling the finished product, but are more concerned with the weather. The concern with the weather is presumably due to the difficulties caused by having to book contractors some time in advance of the actual harvesting.

**E) Effect of current practice.**

These categories have the greatest impact on the factors identified by the respondents. It can be clearly seen that the most important reason for the production of HDM silage is the perception that it provides a better food, with farms that make or plan to make it identifying this factor over three times as often. Those who do not make HDM silage are much more likely to identify HDM silage as a worse food.

Although decreased effluent was identified by a majority (61%) of those already making HDM silage, only a minority (40%) of those who plan to make it see it as an important factor. There could be two reasons for this. It may be that the benefits of a reduced effluent are only apparent with experience, but a more likely explanation is that, because the reduced effluent from HDM silage was recognised as an important benefit some years ago, those who felt they would gain have already switched to its production.

**4.3 Conclusions.****4.3.1 Who is making High Dry Matter silage?**

Farms making HDM silage are primarily those which do not use additives, but also those using a contractor and/or those situated in the South West. Farms planning to make HDM silage are those situated in Wales, those currently using additives and the bigger farms.

This breakdown raises important considerations for future sales of silage inoculants. This survey confirms the prior assumption that the move towards HDM silage is, in part, driven by the desire to reduce the use of inoculants. (Of those planning to make HDM silage, 82% use additives. Of those already making it, only 37% use additives). To maintain sales volume then, the ideal stratagem would be to foster those groups manufacturing low dry matter silage, by extolling what are perceived to be its relative virtues (primarily its insensitivity to changeable weather, and its resistance to aerobic spoilage). If the trend towards HDM silage persists, then development of an inoculant specifically tailored to the requirements of the farmers producing it may allow the total market to be sustained to some extent, whilst also providing a unique selling point which will help to increase market share.

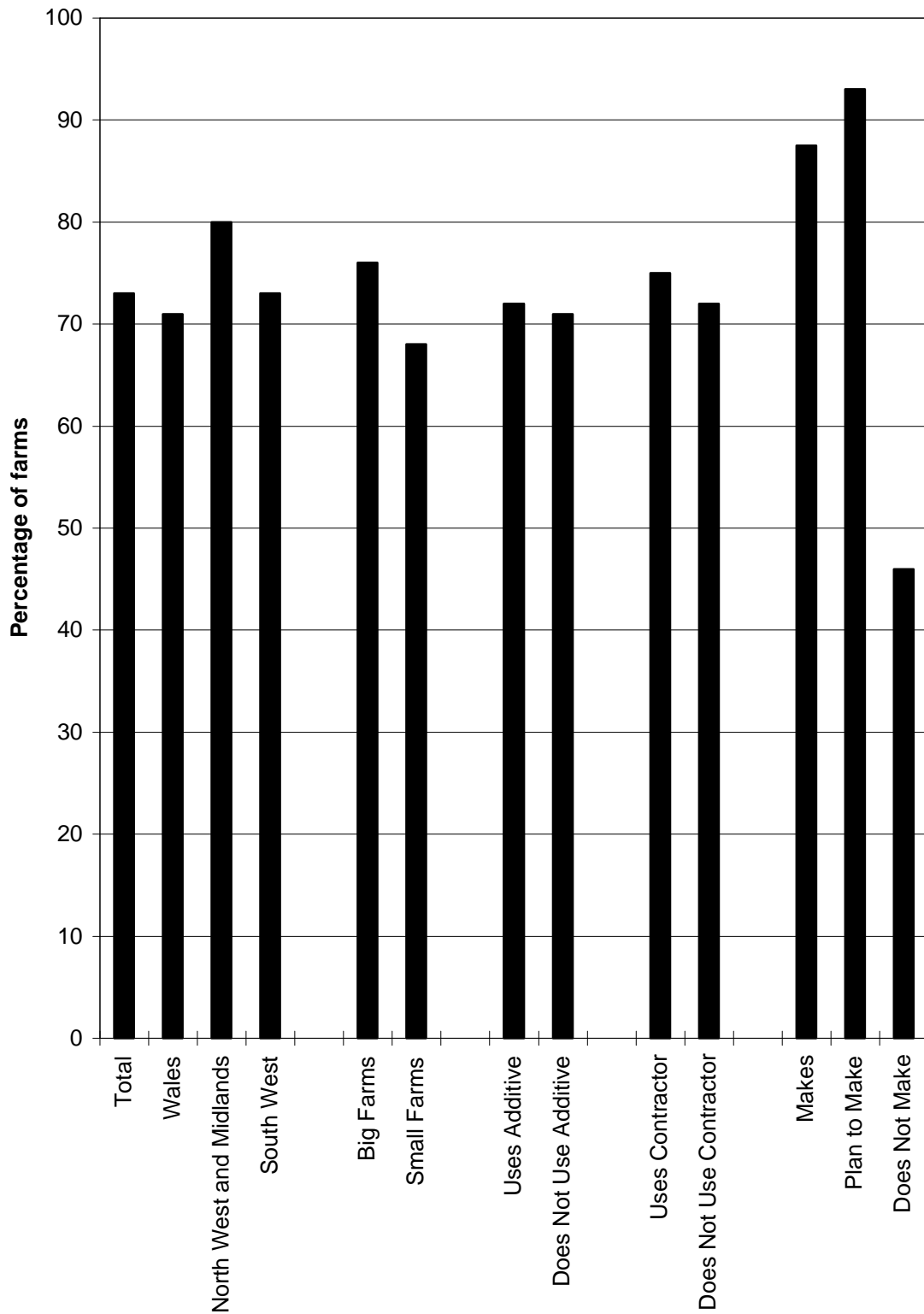
#### **4.3.2 Who perceives aerobic spoilage to be a problem with High Dry Matter silage?**

Aerobic spoilage is identified as a problem by, in order of importance, farms using additives, those not using a contractor, those who already make HDM silage, and larger farms (Figure 4.4).

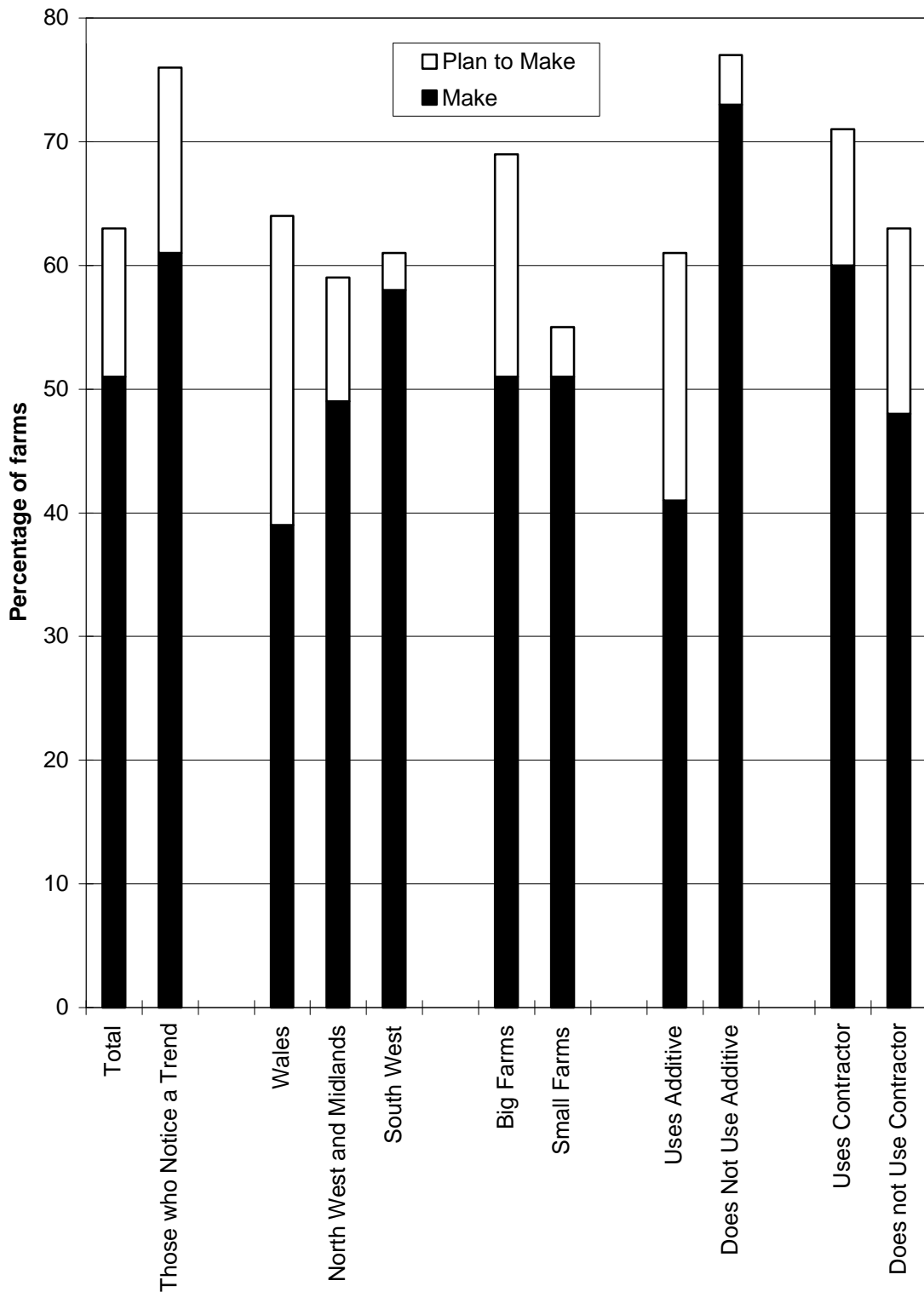
This is, on the whole, encouraging data for the marketing prospects of an inoculant designed to inhibit aerobic spoilage. That the problem is primarily identified by those who already make HDM silage suggests that it is real, and that the lack of awareness of it may be simply due to insufficient publicity. Greater publicity would give the dual benefits of encouraging current producers of HDM silage to take up an anti-spoilage inoculant, and of encouraging farms to stay with inoculant-intensive low dry matter silage.

It is generally easier to persuade a consumer to change brands than it is to persuade them to take up a product for the first time, especially in a saturated market such as the inoculants market. For this reason, the fact that farms already using additives are very aware of the spoilage problem is also encouraging news for the future of an anti-spoilage inoculant, because they will provide a ready market for such a product.

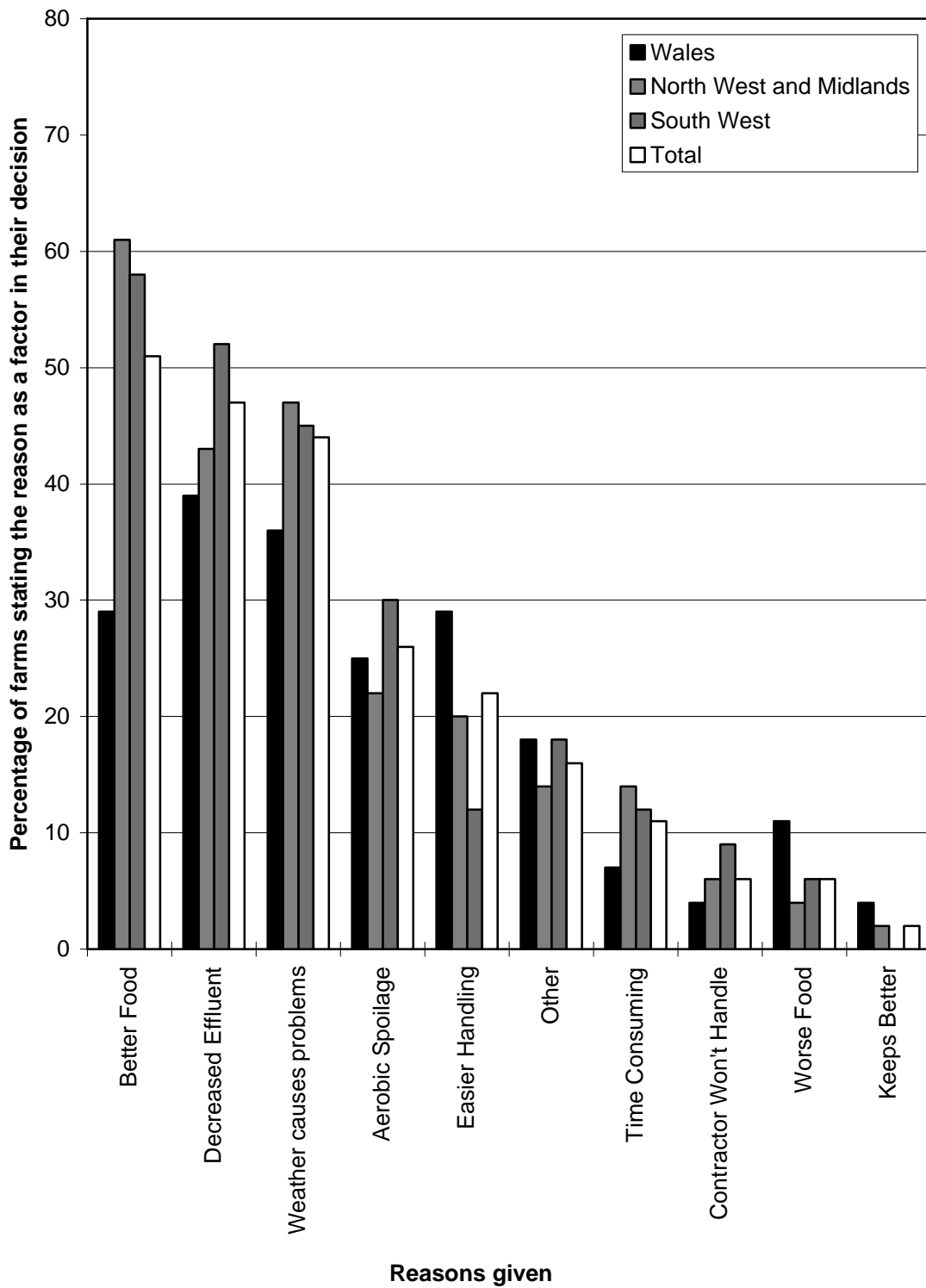
Farms using a contractor are far less concerned by aerobic spoilage, and this is unfortunate, since greater sales are achieved more easily by selling to a few high capacity contractors. Persuading contractors to push the problem of aerobic spoilage would be useful in promoting the benefits of an anti-spoilage inoculant. The other large target area, big farms, is more concerned with aerobic spoilage and so may, ultimately, provide the largest market.



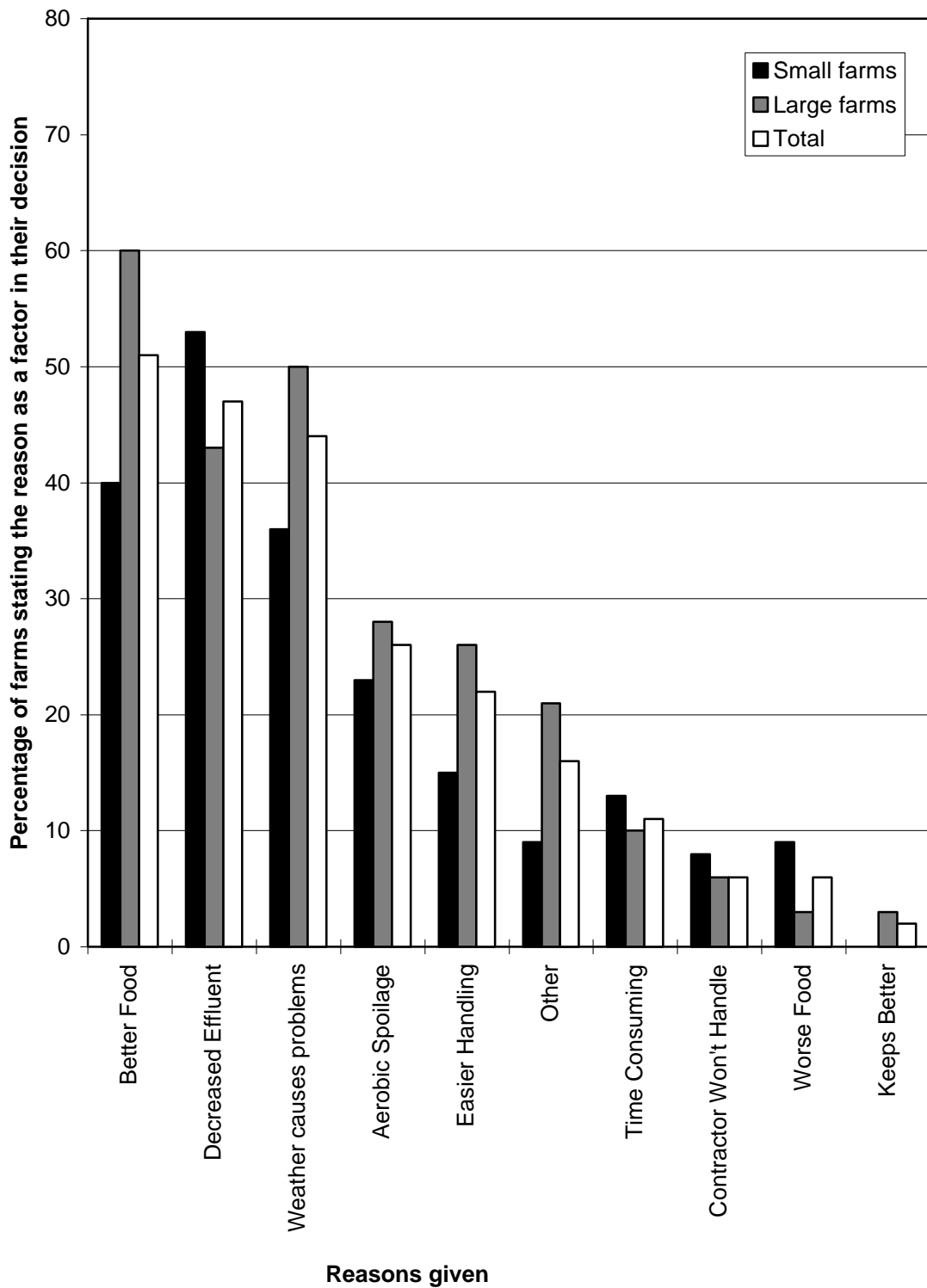
**Figure 4.1.** Farms which believe that there is a trend towards the production of HDM silage. They are categorised as discussed in Section 4.1.



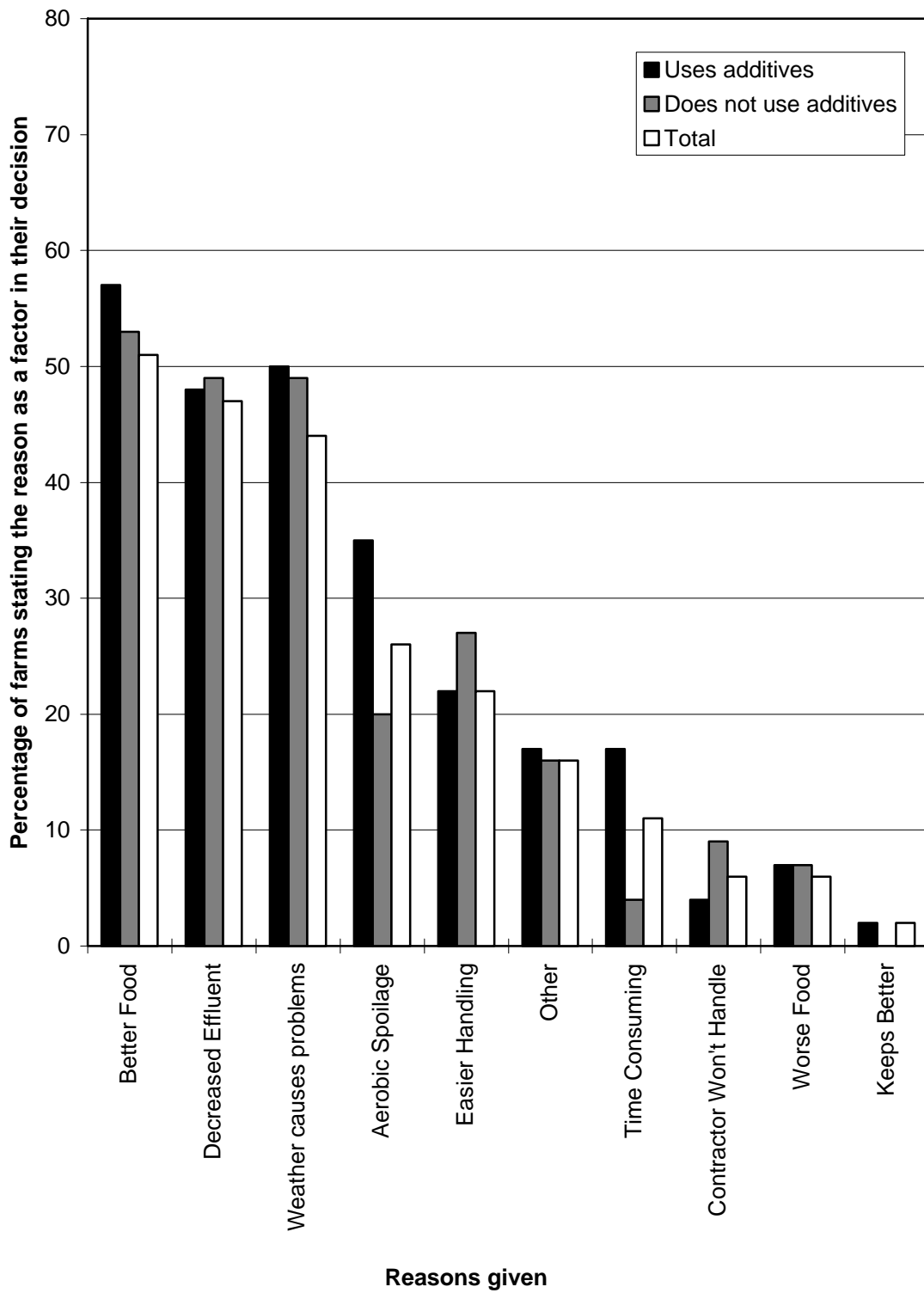
**Figure 4.2.** Farms which make, or plan to make, HDM silage. The responses are shown divided according to location, size, usage of additives, and usage of contractors, as discussed in Section 4.1.



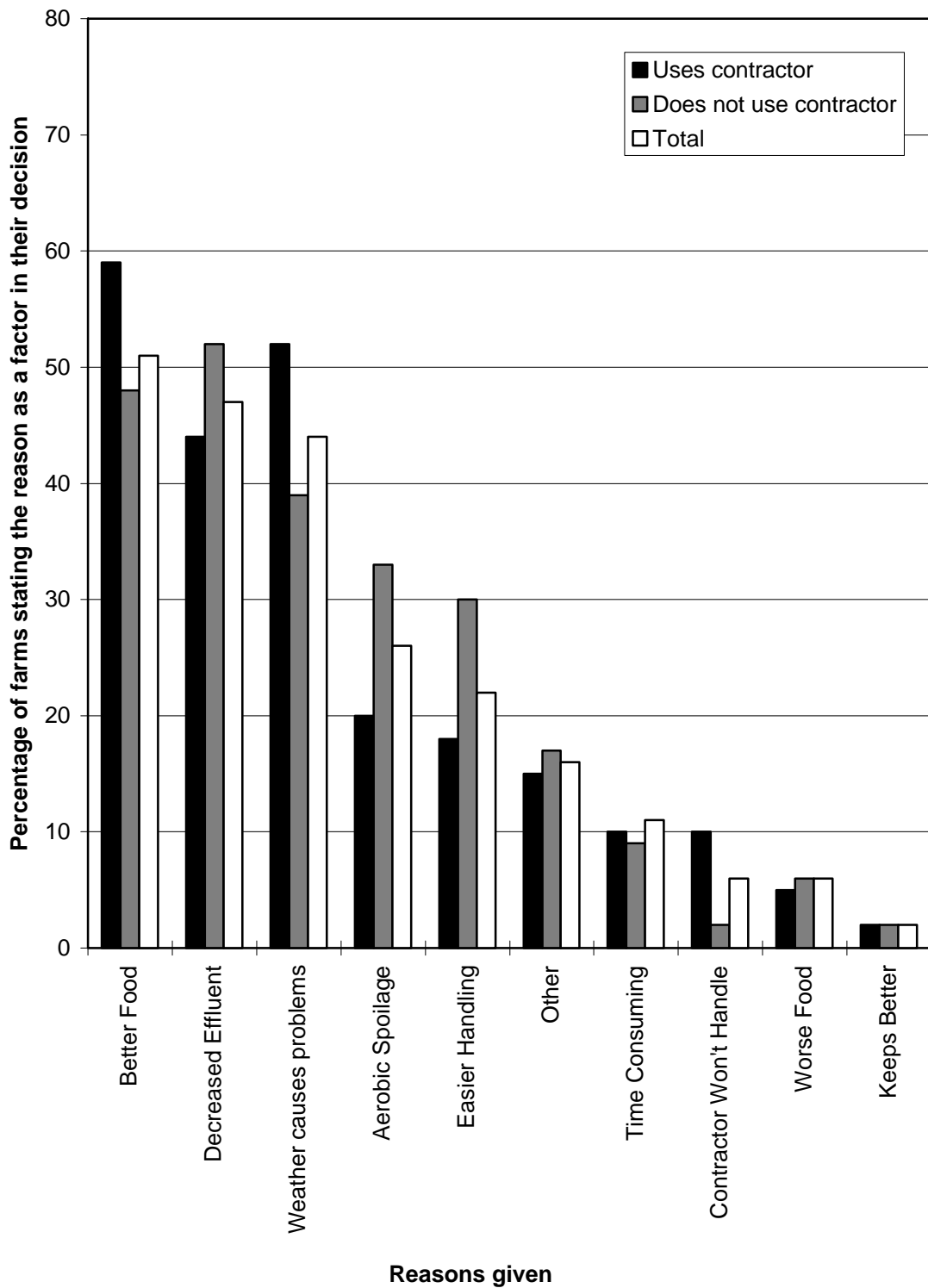
**Figure 4.3.** Factors involved in the decision to make HDM silage. (A) The effect of location.



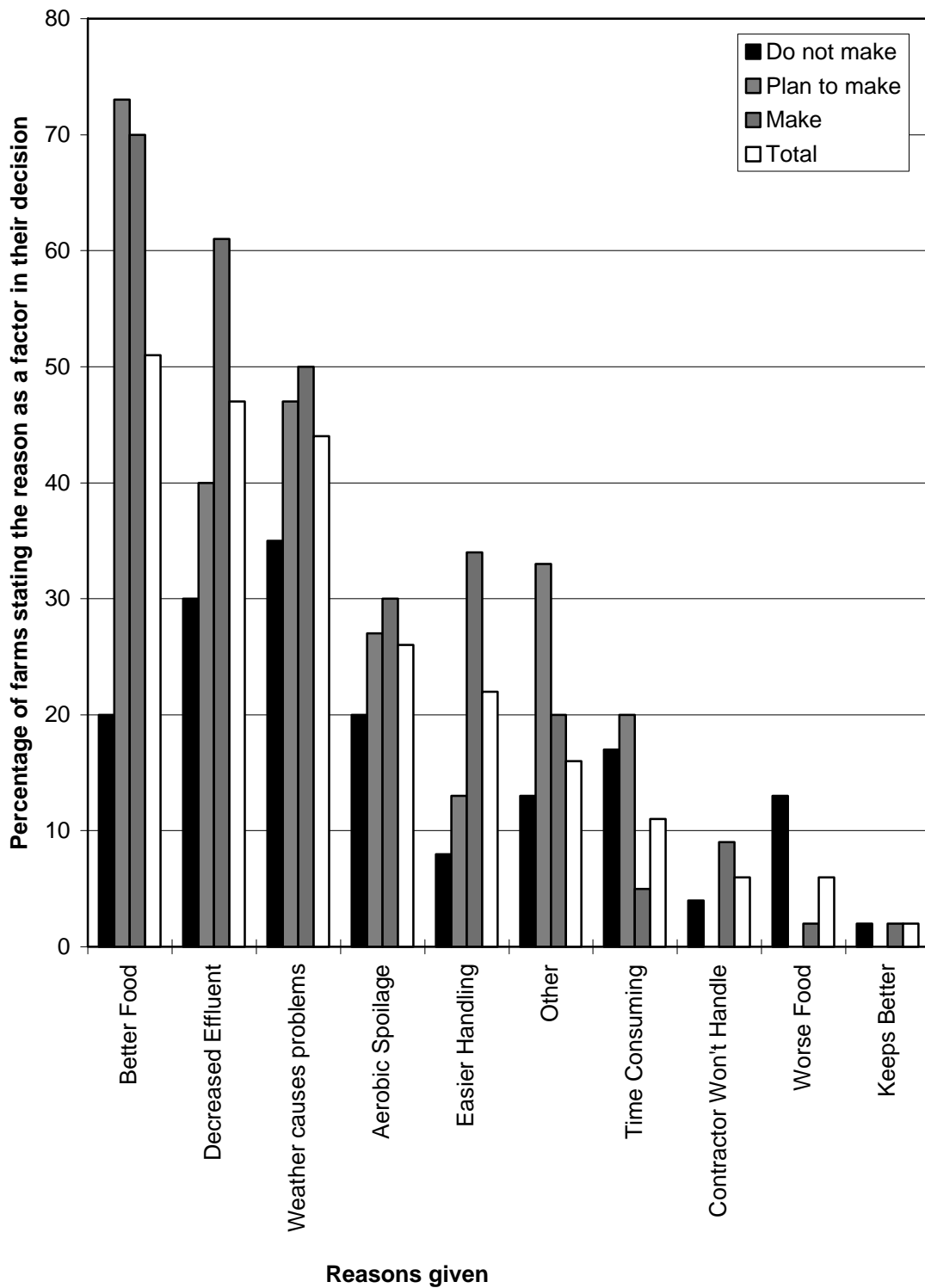
**Figure 4.3(Cont.).** Factors involved in the decision to make HDM silage. **(B)** The effect of farm size.



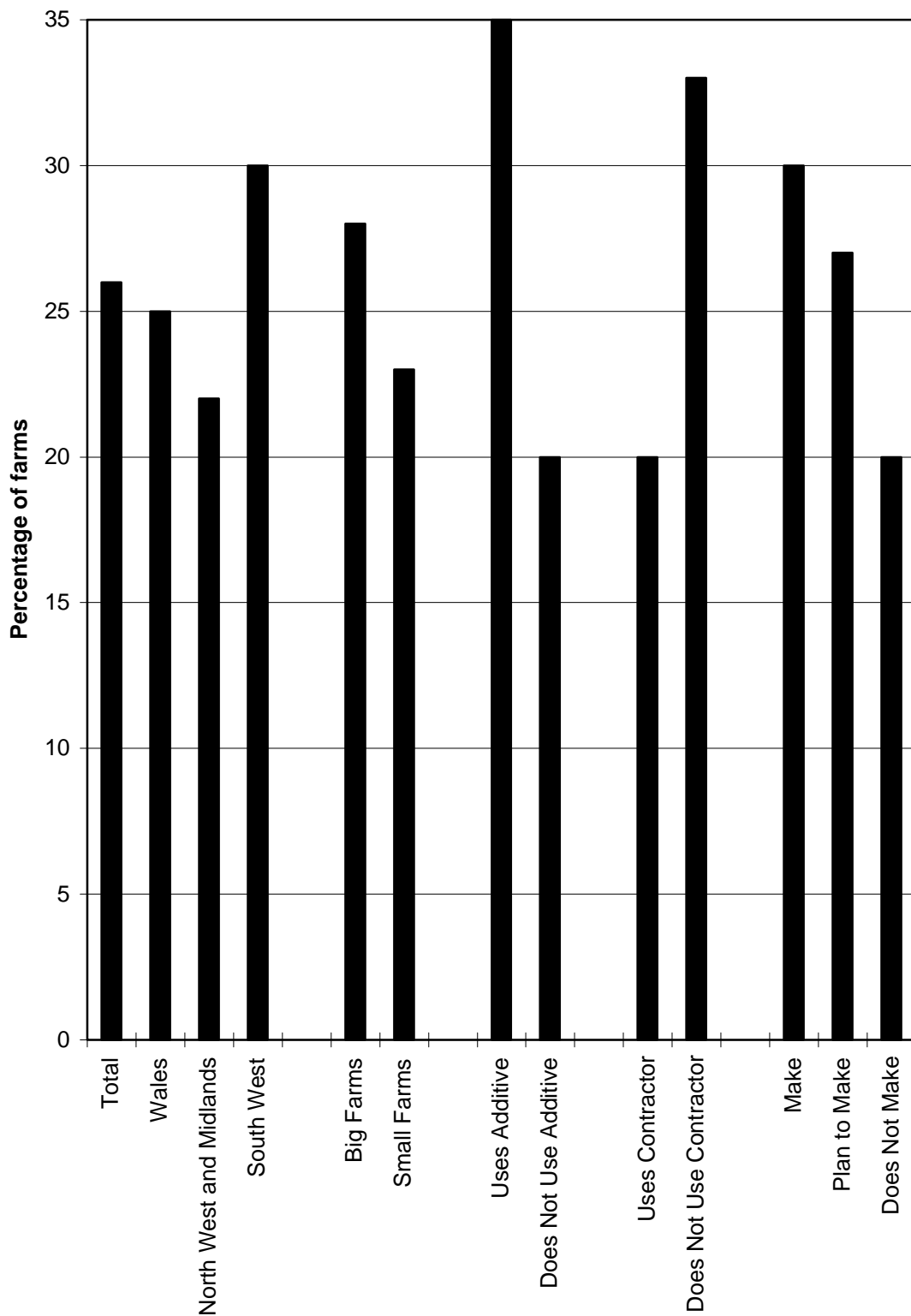
**Figure 4.3(Cont.).** Factors involved in the decision to make HDM silage. (C) The effect of additive usage.



**Figure 4.3(Cont.).** Factors involved in the decision to make HDM silage. **(D)** The effect of contractor usage.



**Figure 4.3(Cont.).** Factors involved in the decision to make HDM silage. (E) The effect of current practice, *i.e.* whether the farm currently makes HDM silage.



**Figure 4.4.** Farms which believe aerobic spoilage to be a problem with HDM silage. The responses are shown divided according to location, size, usage of additives, and usage of contractors, as discussed in Section 4.1.