PAYMENT OF SUGAR BEET ACCORDING TO QUALITY

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SUMMARY.

The Dutch sugar beet growers are paid according to the quality of the delivered beet. Important parameters are sugar content, extractability index and dirt tare percentage. In this way the farmers are encouraged to pay attention to the different agricultural factors which influence the quality of the beet.

INTRODUCTION.

For sugar beet growers and the processing industry it is important to have beets of the best quality. Therefore the sugar industry encourages farmers to cencentration quality by advice, a quality control system at the factory reception and by paying for the sugar beet according to the quality.

In The Netherlands there is a network of research and extension services provided by the government, the farmers and the industry.
The farmer has many sources of information about how to grow and to deliver profitably beets. A very important factor in the profitability of sugar beet growing and processing is the internal and external quality.

Payment system.

In The Netherlands sugar beet payments are based on tonnage, sugar percentage, internal quality and dirt tare percentage. The different factors are measured at the factory gate according to rules and agreements made in collaboration with delegates of sugar beet growers. The whole system is controlled by independent specialists from the Institute for Sugar Beet Research, by trusted representatives of the farmers and by specialists of the sugar companies. The different factories interchange data collected during sampling of sugar beets. In this respect the grower is disinterested in where he delivers his beet.

Quality components.

a. **The tonnage of beet**

The amount of beet is weighed at the gate of the factory.

b. **Sugar content**

The sugar content is measured by polarisation from a sample of about 40 kg of beet taken from a random site within the lorry. The beet are paid for on the basis of sugar content. Today the sugar industry pays a premium of 9% per tonne per % of sugar higher than 16%, and a similar substraction for beet with a sugar percentage below 16%.
In the near future the system will change a little. The industry is trying to encourage the farmer to deliver beets with a reasonable sugar content. Therefore a system has been developed in which the price deduction gets larger as the sugar content gets lower. Proposals for the 1993-campaign are as follows:

Table 1. Payment for sugar beet in relation to the sugar content.

Sugar content	Premium/Deduction
> 16% and higher	+ 9% per tonne and percent
14 - 16 %	- 9%
13½- 14 %	- 10%
13 - 13½%	- 12%
< 13%	- 15%

c. **Extractability**

As you all know, it is impossible to extract 100% of the sugar from sugar beet. The extractability is influenced by a number of factors. The industry likes to process beets with high extractability. In this way some of sugar is removed with the molasses product. Moreover the processor prefers to have an even extractability for the different lots of delivered sugarbeets. Big differences between the quality of different lots have a serious influence on the daily slicing capacity and hence on the production costs.
For assessing extractability, different European countries use slightly different formulae. In The Netherlands the formula of Van Geijn is used. This says

for sugarbeet with an αN-content greater than 17%:
WI = 100 - { 0,342 x (K+Na) + 0,513 (α-amino N 14-17) } *)

For sugarbeet with an α-amino N content lower than 17% the formula is
WI = 100 - 0,342 x (K+Na)

In the payment-system of the Dutch sugar industry the extractability is a very important component. Neglecting the small differences between two Dutch sugar companies the farmer gets a bonus or a malus above or below 87% extractability with a factor of 8% of the sugar content payment. This means 8% of 9% of the sugar beet price or short: 0,72% of the sugar beet price.

*) In the formule the K/Na and α-amino contents are expressed in mm/l KG gr. of sugar

In The Netherlands discussions have started about the bonus/malus system for the extractability index. In future, farmers will have to consider that sugar beet with a low extractability index will get a larger malus than at the moment.

d. **Relation sugar content/extractability**

In the Van Geijn formula, Na, K and α-amino N content are expressed in mmol per 100 gr of sugar. This means that there is a strong relation between the sugar content and the extractability index. With the same amount of Na, K and α-amino N per kg of sugarbeet you can have a different index with different sugar contents and hence the financial result per ha of sugarbeet differs.

Table 2. Relation between extractability index and sugar content.

Sugar content	K50 Na 10 αN30		K50 Na 10 αN50	
	E.I.	F.y	E.I.	F.y
13	81,1	3983	73,2	3639
14	83,1	4613	75,7	4294
15	84,8	5253	77,9	4934
16	86,3	5842	79,9	5562
17	87,3	6444	81,6	6181
18	88,6	7032	83,1	6792
19	89,2	7602	84,4	7394

e. **Dirt tare.**

In The Netherlands top and dirt tare percentages are rather high.

Table 3. Dirt tare % of Dutch sugarbeet (5-year rolling average)

1958	15,9	1976	20,2
1959	15,8	1977	20,5
1960	16,2	1978	20,3
1961	16,8	1979	21,0
1962	16,8	1980	20,8
1963	17,8	1981	21,4
1964	17,4	1982	21,1
1965	18,1	1983	20,7
1966	18,1	1984	20,0
1967	18,6	1985	20,3
1968	19,1	1986	19,9
1969	19,3	1987	20,1
1970	19,3	1988	19,9
1971	19,0	1989	19,3
1972	19,1	1990	19,0
1973	19,3	1991	18,7
1974	20,5	1992	18,8
1975	20,5		

Every year a tremendous amount of soil is delivered to the factories. Transport costs of the dirt tare to the factory, cleaning the beets, handling and storage of the soil at the factory site and removing the soil, takes about 35 to 45 million Dutch guilders per year. This is almost D.fl. 300,- per ha of sugarbeet. Due to this high and rising cost, Dutch sugar industries are trying to encourage the farmers and contractors to deliver clean beets. One of the measurements to attain this is that farmers have to pay for every tonne of dirt tare.

Table 4. Dirt tare payment system in The Netherlands in D.fl. per ha

Tare %	
10	4 °)
15	120
20	210
30	430
40	720
50	1120

°) Yield 55 ton/ha
°) D.fl. 22/tonne; exeption 50 kg/tonne nett beet

In future the dirt tare penalty will be on a higher level.

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