THE EFFECT OF HARVESTER TYPE (SELF PROPELLED, TRAILED OR FORAGE WAGON) AND STORAGE METHOD (BUNKER OR DRIVE OVER PILE) ON THE FORAGE DENSITY OF GRASS SILAGE ACROSS FINLAND

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INTRODUCTION

Density and pore spaces of ensiled forages have direct correlation to dry matter (DM) loss through fermentation and storage, by affecting the degree to which air can penetrate into and behind the face of the bunker or the drive over pile.

OBJECTIVE

Determine the effect of harvester type and storage method on the forage density of grass silage in Finland

MATERIAL & METHODS

Forage : Primarily Timothy grass (mean DM 28.4% ± SD 8.3%)

Survey : 300 commercial farms across Finland

Measurements :
- Density of silage
- DM content of silage
- Height and type of silo
- Harvester type

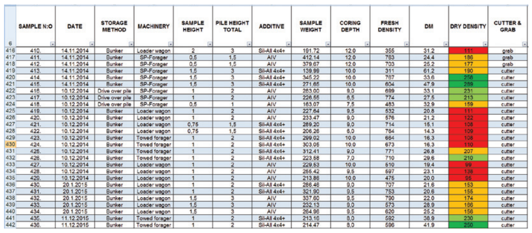

Figure 1. Example of data collected during survey

RESULTS & DISCUSSION

A. SILO TYPE

- Density of the grass silage in **walled silo**s was statistically significantly greater than that in the **drive over piles** ($P<0.05$) **(Table 1)**

Table 1. Description of storage system, method of harvesting and density analysis

Storage System	n	Harvesting System	n	Density Kg/m³ DM	Density Kg/m³ DM Mean	SD	Min	Max
Walled Silos	323	Self Propelled	139	183.91 a b	193.7 a b	37.7	82.8	289.1
		Trailed Forager	74		184.3 a b	42.6	90.5	279.9
		Loader Wagon	110		168.9 b	31.8	95.0	250.0
Drive Over Pile	64	Self Propelled	29	161.52 b	162.8 b	34.8	103.0	231.3
		Trailed Forager	8		162.9	23.2	127.7	196.6
		Loader Wagon	27		148.5 b	37.1	79.4	211.3

a b *Means with a different suffix are statistically different at 95%.*
SD=standard deviation

B. HARVESTER TYPE

- **Self propelled forager** and **trailed forager** silos had significantly higher density than the silos produced with **loader wagon** harvested forage ($P<0.05$) **(Figure 1)**

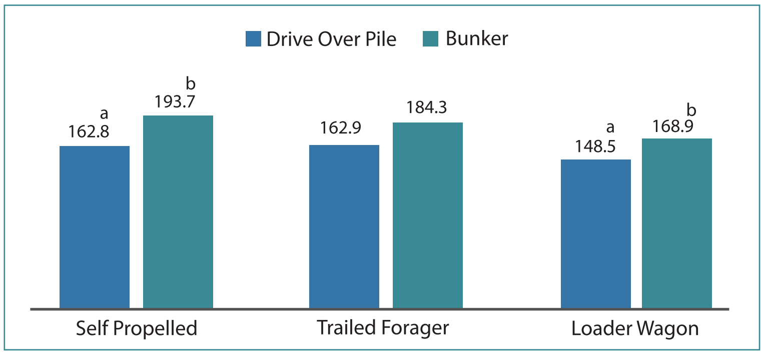

Figure 1. Comparative density of walled silos and drive over piles made with the same foraging equipment
a b *Means with a different suffix are statistically significantly different at 95%.*

CONCLUSION

This survey has shown that:

- **Walled silos are more efficient at protecting DM through storage than drive over piles due to the statistically higher density achieved ($P<0.05$).**
- **Grass silage produced with a loader wagon is expected to be subject to higher DM losses through storage and feed out than grass silage produced with a self propelled or trailed forager.**