

Effect of Ensiling Time on Sorghum Silage – Final Report

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Starch concentration and digestibility are an important driver of forage quality for dairy diets, with increases in both starch concentration and digestibility contributing to the improved metabolizable energy of a forage (ME; MJ ME/kg DM). This project, funded by the Subtropical Dairy South-east Queensland Regional Group, investigated the potential increase in starch digestibility of sorghum silages with extended ensiling time over 6, 12, 18 and 24 months. It is well established that ensiling corn silage for a period of at least 3 – 6 months has a positive impact on corn silage starch digestibility. A previous Subtropical Dairy project that collected on-farm corn silage samples from fresh forage to 13-month ensiled corn silage showed that corn silage digestibility increased by approximately 5.25% units/month then plateaued out after 6 months of ensiling (Figure 1).

This project collected fresh samples of White Sorghum (variety Liberty), Red Sorghum (variety A62) and forage sorghum (variety Megasweet) at harvest time (February 2023) from 2 commercial dairy farms in southeast Queensland and ensiled them in 10kg plastic buckets for 6, 12, 18 and 24-months. A fresh sample was tested for starch concentration and digestibility as a base line. An additional 22 samples varying in ensiling time were also collected on commercial farms in Queensland and tested for 7-hr starch digestibility through Forage Lab Australia.

Key Results

- All sorghum silage types increased in starch digestibility over 24 months of ensiling (Figure 2, Page 13) at a similar rate.
- The degradability of the white sorghum silage is slightly lower as the fresh white sorghum silage was lost by the lab, so the trendline may be skewed by the 3-month sample sent as its replacement.
- All varieties showed a positive effect of ensiling time on starch digestibility when all samples were included (Figure 3, Page 13).
- The variability in starch digestibility of the white grain sorghum silage over time is due to level of processing as there is only one variety of white grain sorghum available commercially (Figure 3).
- Variability in the forage sorghum and red sorghum values is due to variety and extent of processing at harvest.
- Forage sorghum showed the lowest overall starch digestibility but had a similar starch concentration (14.1%) compared to the white (17.9%) and red (12.1%) grain silages.



Figure 1. Effect of ensiling time on corn silage starch digestibility.

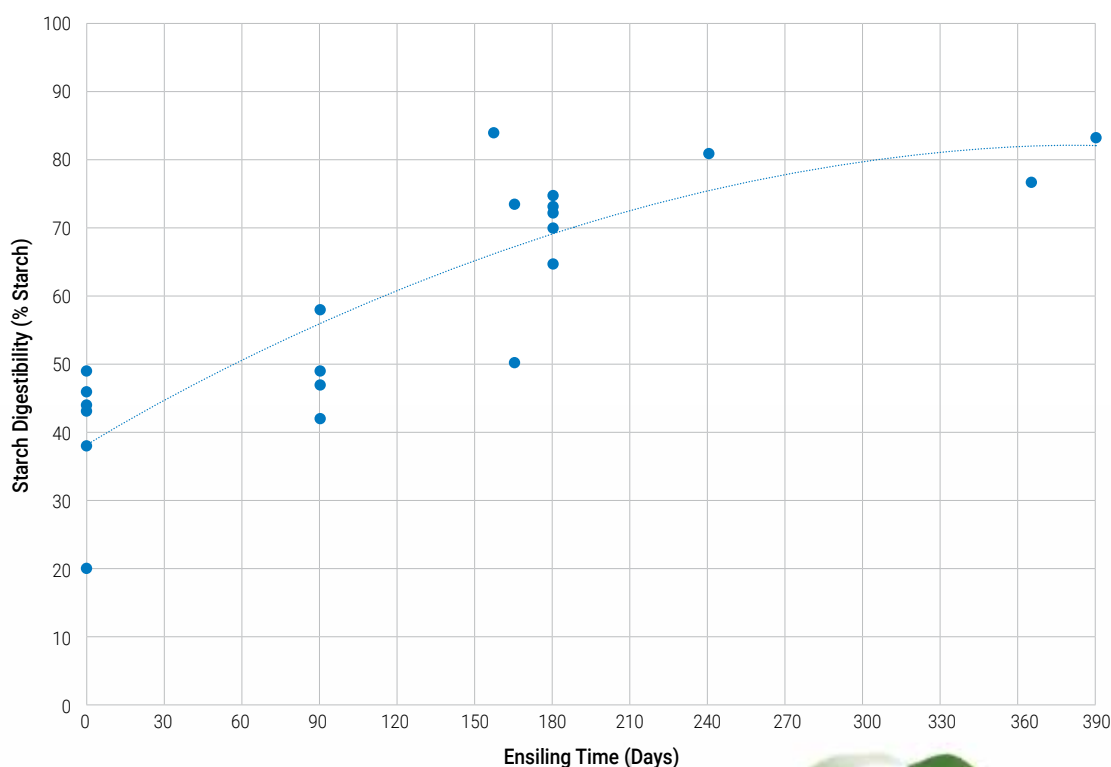


Figure 2. Effect of ensiling time on white grain, red grain and forage sorghum silage starch digestibility over 24-months of ensiling in plastic buckets.

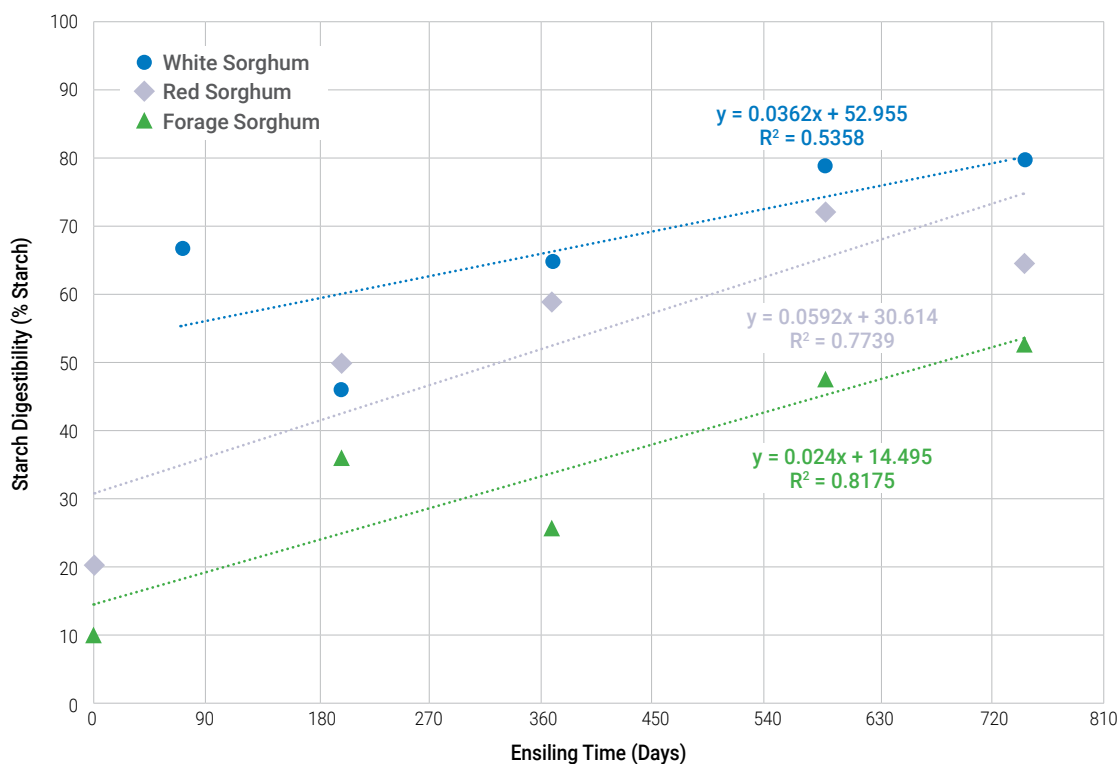


Figure 3. Effect of ensiling time on white grain, red grain and forage sorghum silage starch digestibility over 36-months of ensiling.

