

Most crops and pastures are wilted before harvest to increase the dry matter (DM) content of the forage being ensiled. Good silage fermentation and effective preservation depends on the forage being harvested within a target DM range.

Plants respire from the time of mowing until the forage is effectively sealed. During this time the forage loses DM and quality. Minimise these losses by wilting the forage as quickly as possible to the desired DM content. Aim to harvest within 48 hours of mowing, within 24 hours is better.

The length of the wilting period depends on the original DM content and yield of the crop, the target DM content, time of day of mowing, weather conditions, ground surface moisture and the mechanical operations after mowing.

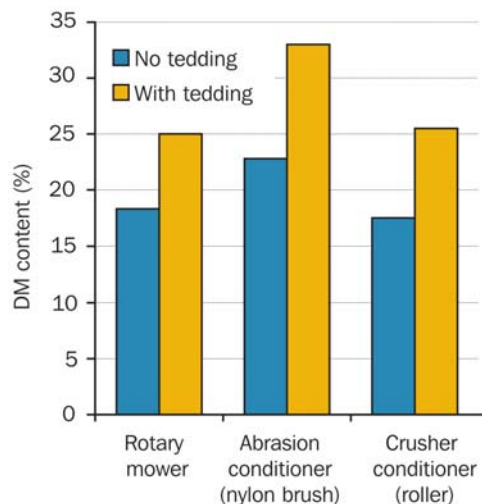
Silage Note 4 provides target DM ranges for various parent forages at harvest. Silage Note 7 describes methods for estimating forage DM contents.

### Timing the cut

The ideal growth stage to cut the parent forage is usually a compromise between quality and yield. The digestibility of most parent forages is highest during the vegetative growth stage, before maximum yield is reached (see Silage notes 4 and 5)

It is often tempting to delay mowing until later in the season when wilting conditions are more favourable

**Figure 1. Effect of drying treatments on dry matter content of pastures.**



Source: Wilkinson(1995)

### Goals for Successful Silage

- Avoid delays during mowing. Ensure machinery is well-maintained, adjusted correctly and that tractor power will maximise mower output.
- Wilt to the target dry matter content as quickly as possible.
- Avoid harvest delays to reduce the risk of quality and DM losses.

and yields are higher. However, in most situations more mature crops produce lower quality silage.

The time of day to cut impacts on wilting rates. There is argument that the WSC content of the forage should be considered. WSC content is usually higher in the afternoon, as a result of the plant's sunlight-driven photosynthetic activity. However, maximising wilting rate, not WSC content, will have greater impact on silage quality, so should always dictate the time of day for mowing.

Consider the following when deciding mowing time:

- Mow after dew has lifted;
- Forages, such as legumes and young, leafy plants require shorter wilting periods. Time the mowing of these to minimise over-drying and excessive mechanical damage and leaf loss in subsequent field operations;
- During hot, dry and windy weather delay mowing until mid to late afternoon to reduce the risk of over-drying the forage; and
- If there is a real risk of over-drying, stagger mowing and narrow the swath width. Mowing and harvesting operations should be matched so that mown material is not left unharvested for lengthy periods.

### Mowing

Mowing efficiency has a major impact on the speed and effectiveness of the wilting process. Avoid any factors that may extend the mowing period, such as small or poorly adjusted mowers, blunt mower blades or using under-powered tractors. Consider using contractors with large capacity, up-to-date machinery.

Mower-conditioners increase the rate that moisture is lost from the plant by damaging the plants' outer, waxy layer and stems. Figure 1 highlights the benefits of using mower-conditioners and the additional impact of tedding on wilting rate.

### Increasing the speed of wilting

Wilt to the target DM content as quickly as possible to minimise field losses. There are several strategies that can increase wilting rates:

- Mow lighter crops (i.e. earlier growth stage);
- Use a mower-conditioner;
- Leave the swath of the conditioned forage as wide as possible (moisture evaporates relatively quickly from thin, wide swaths); and
- Spread the swath with a tedder or tedder-rake for more effective drying by the sun and wind.

Plants' leaf stomata remain open for 30 minutes to 2 hours after mowing. Following the mower with a tedder to spread the forage takes advantage of potential for greater moisture loss in this short period.

The benefits of tedding are clear from the figure on the previous page, with the tedder/mower-conditioner combination producing the fastest wilting rates.

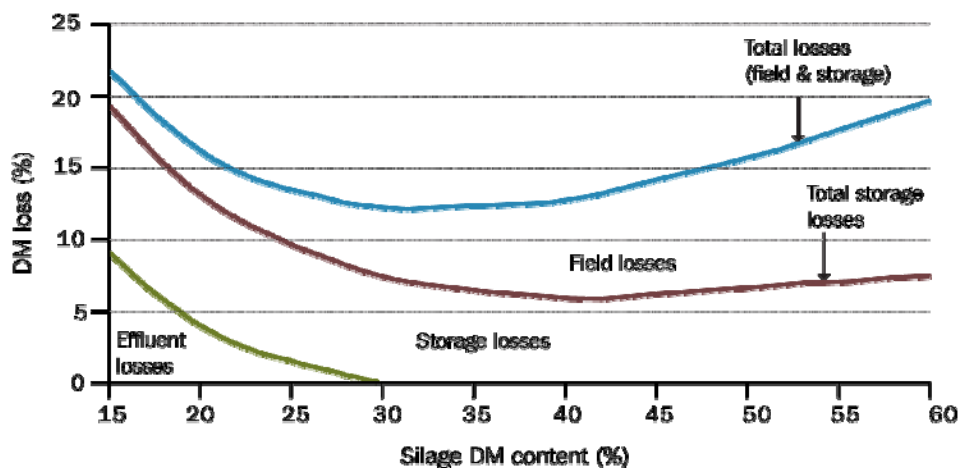
### Silage Field Losses

Plant respiration, weather damage and mechanical damage are the three sources of silage field losses. The following factors affect field losses:

- A rapid wilt minimises losses;
- Wilting is delayed and losses increase with the amount, frequency and intensity of rainfall;
- Rainfall late in the wilting process, when the forage DM is high, results in higher losses;
- The higher the DM content at harvest, the higher the field losses;
- The type of machinery used (and operator proficiency) will affect mechanical losses; and
- Losses increase with the number of mechanical operations (e.g. tedding and raking).

The graph below demonstrates the importance of wilting to the target DM content. Effluent flow from forage harvested at <30% DM results in DM and quality losses. Field losses increase when forage is harvested at DM contents >45%.

**Figure 2. Estimated DM losses during harvesting and storage of pasture silage under Australian condition, with good management**



Source: Hoglund (1964); Wilkinson (1981, 1988); Jarrige *et al.* (1982); McDonald *et al.* (1991); Wilkins *et al.* (1999)

The information in this silage note is taken from the *Successful Silage* manual.

**Disclaimer:** The information contained in this publication is based on knowledge and understanding at the time of writing (May 2008). However, because of advances in knowledge, users are reminded of the need to ensure that information upon which they rely is up to date and to check currency of the information with the appropriate officer of New South Wales Department of Primary Industries or the user's independent adviser.

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