

Silage can be produced either from crops grown specifically to harvest as silage or from pastures or forage crops when there is a genuine surplus of forage that cannot be grazed.

Selecting the most suitable pasture or crop for silage production is dictated by both climatic and agronomic constraints and by the silage system to be used, eg. maize and grain sorghum crops are not recommended for baled silage.

From paddock to successful silage

Maximising the production potential of silage begins with the choice and management of the parent forage.

- Select pasture or crops that produce high quality forage and have high yield potential.
- Harvest at the recommended growth stage.
- Wilt to the target dry matter range as quickly as possible

Selecting pastures and crops for silage production

Pastures and crops more commonly used for silage production are included in the accompanying tables. Because it is impossible to list all pasture and crop species that can be successfully ensiled a simple guideline to follow is that all non-'grass' species should be treated as for legumes, and wilted accordingly, to promote a good silage fermentation.

Production potential, management requirements and suitability of pasture and forage crops for silage production.									
Crop	Perennial ryegrass & clover	Forage ryegrass	Other temperate perennial grasses & clover	Pasture legumes & legume dominant pastures ¹	Lucerne	Kikuyu & other tropical grasses	Forage sorghum	Millet (several types)	Cowpea & lablab
Growth stage at harvest	1st head emerge on ryegrass	10-20% head emergence	Stem elongation of grass component	Early to mid flowering	Very early (<10% flower)	25-35 days growth	1 m high	Pennisetums: 1 m high Japanese: pre-boot	Flowering
Potential yield ² (t DM/ha/cut)	2.5-4	2.5-4.5	2-4	2-3.5 ¹	1.5-3.2	2-3.5	2-5	2-5	1.5-6
Potential number of cuts per year ²	1-2	1-2	1	1-2	4-7	1-3	1-4	1-3	1
Wilt requirement	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Target range DM content (%)									
Chopped	30-40	30-40	30-40	35-40	35-40	35-40	30-40	30-40	35-40
Baled	35-50	35-50	35-50	35-50	35-50	35-50	35-50	35-50	35-50 ⁶
ME ³ (MJ/kg DM)	9.5-11	9.5-11	9.5-10.5	9.5-11.5	9-10.5	8.5-10	9-9.5	9-10	8.5-10.5
Crude protein ³ (% DM)	12-22	12-20	12-16	14-26	18-24	12-18	7-17	10-18	14-18
Ensilability ⁴	**	**	**	*	*	*	**	**	*
Suitable for chopped bulk silage	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Suitable for baled silage	Yes	Yes	Yes	Yes	Yes	Yes	Yes ⁵	Yes ⁵	Yes ⁶
Notes:									
1. High-density legumes have potential to produce higher yields (3.5-7.0 t/ha) than pasture legumes sown at the usual rates. Management requirements for silage production and potential forage quality are as for pasture legumes.									
2. Yields and potential number of cuts are for crops cut at the optimum growth stage. Yields at the higher end of the range can be obtained with irrigated crops or crops grown under ideal growing conditions.									
3. The ME (metabolisable energy) and crude protein values shown are in the range that is achievable with good management.									
4. Ensilability: likelihood of achieving a good silage fermentation without wilting or additives. (* Low ** Medium *** High)									
5. Baling is not recommended for tall, rank crops unless the baler is fitted with knives.									
6. Although cowpeas and lablab may be made into baled silage, it is not the preferred option.									

Consider the following when selecting the most suitable pastures and crops for silage production:

- What best fits into my whole-farm program – a pasture or forage crop with potential for grazing before and after harvest or a crop that will produce a one-off silage cut? Is buying a neighbour's standing crop or pasture an option?
- What are my yield and quality targets?
- Is my present silage system suited to the forage type chosen? Am I prepared to change my silage system?

Good agronomic management of the parent crop or pasture is important in achieving high forage yields of

high nutritive value. Poor quality forage will never become good quality silage.

Growth stage at harvest has a major impact on forage quality and yield.

Wilt to the target dry matter range as quickly as possible. The forage dry matter and quality losses are minimised if dry matter targets are reached, ideally within 24 hours but certainly within 48 hours.

When forage is stored at dry matter levels below 30% there is a risk of quality loss through effluent production.

Good compaction in storage becomes difficult when the dry matter content is at the higher end of the range.

Yield and quality potential of crops grown for silage production, identifying requirements to ensure quality silage.							
Crop characteristics	Maize	Whole crop winter cereal		Whole crop winter cereal /legume mixtures	Grain sorghum	Sweet sorghum	Soybeans
		Oats	Wheat & Barley				
Growth stage at harvest	milk line score 2-3	boot to flowering	boot or mid-dough	boot to dough of cereal component	milky dough (middle of head)	head emergence to dough	65% pod fill
Potential yield ¹ (t DM/ha/cut)	12-25	5-15		5-15	4-10	10-25	4-10
Potential number of cuts/year	1	1		1	1	1	1
Wilting requirement	no	boot yes/dough no		yes	no	no	yes
Target range DM content (%)							
Chopped	33-38	35-40		35-40	30-35	25-35	35-40
Baled	NR	35-50		35-50	NR	NR	35-50 ⁴
ME ² (MJ/kg DM)	10-11	9-10.5		9.5-11	9.5-10.5	9-10	8-9.5
Crude protein ² (% DM)	4.5-8.5	6-16		8-18	6-9.5	4-8	15-20
Ensilibility ³	***	boot **/dough ***		**	***	***	*
Suitable for chopped bulk silage	yes	yes		yes	yes	yes	yes
Suitable for baled silage	no	yes		yes	no	no	yes ⁴
1. Yields at the higher end of the range can be obtained with irrigated crops or crops grown under ideal growing conditions. 2. These ME (metabolisable energy) and crude protein levels are achievable with good management. 3. Ensilibility is the likelihood of achieving a good silage fermentation without wilting or a silage additive. (* Low, ** Medium or *** High). 4. Baled silage is not the preferred option for soybeans.							

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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