

ALFALFA GRAZING SYSTEMS IN ARGENTINA

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Why to graze?



Advantages *(compared to confined systems)*

1. Lower operational costs;
2. Better use of alfalfa quality;
3. Healthier animal products (cholesterol, fat, $\Omega 3/\Omega 6$)



Disadvantages

1. Risk of **bloat**;
2. Longer **fattening period**;
3. Lower **milk production on individual cow basis**.



High animal production
High alfalfa yield
High alfalfa persistence
Alfalfa growing pattern (stem lots)

Good
management
system

ROTATIONAL GRAZING

Rotational system must combine



Adequate grazing intensity



Appropriate resting time

**Alfalfa can tolerate intensive but not frequent use
(respect dynamics of carbohydrates reserves)**

Forage quality

Impacts on animal performance

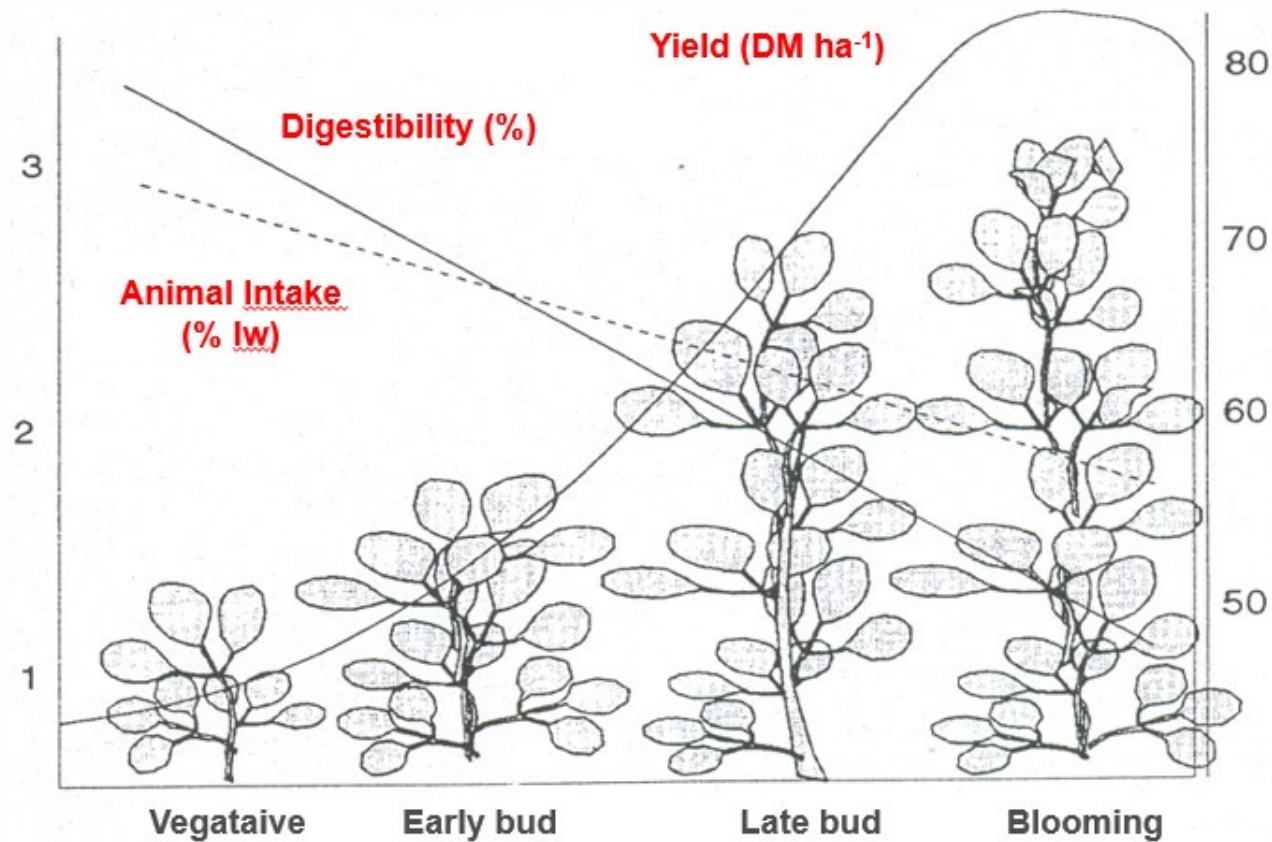
Stage of maturity

Strata in the canopy

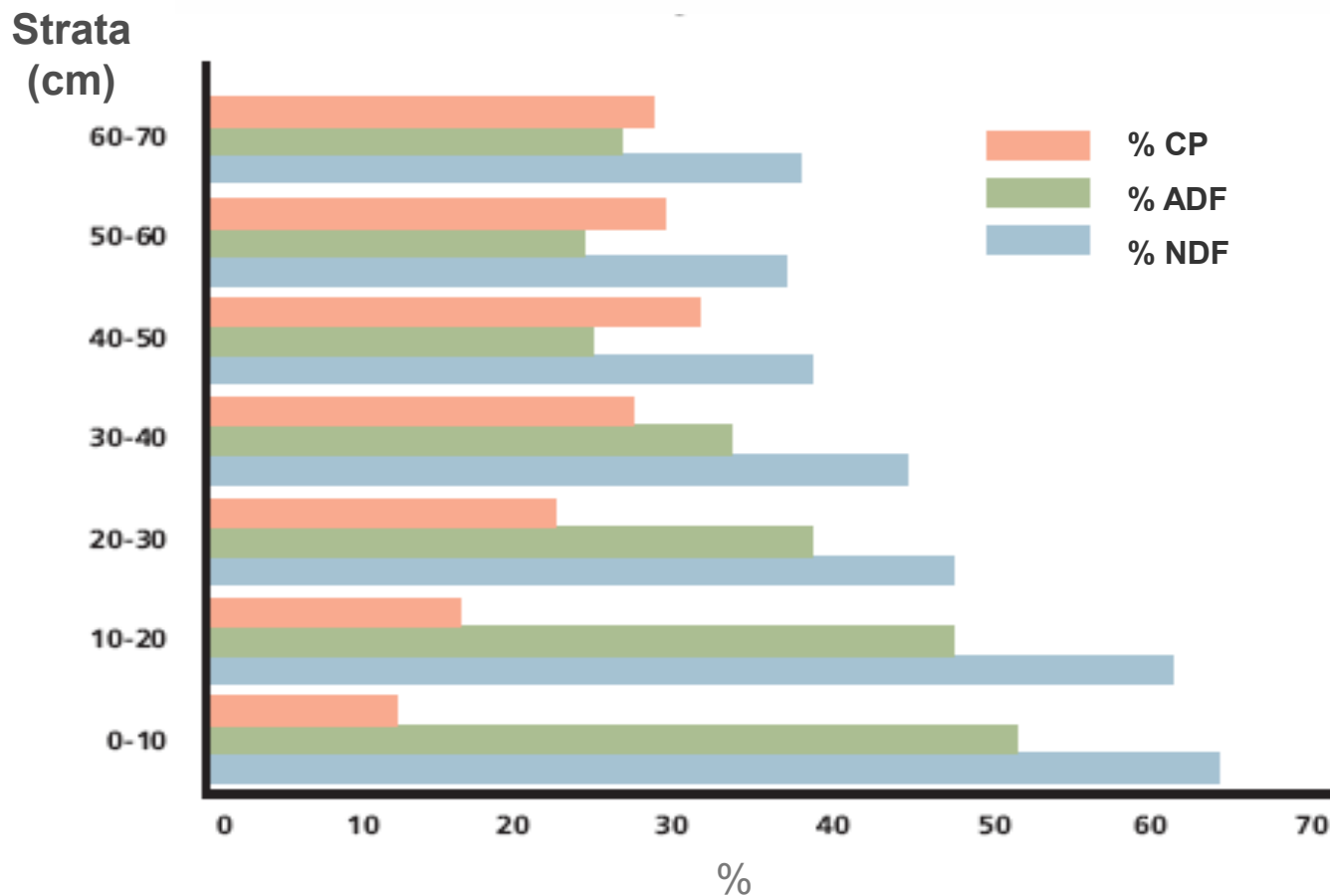
Day of grazing



Forage quality by maturity



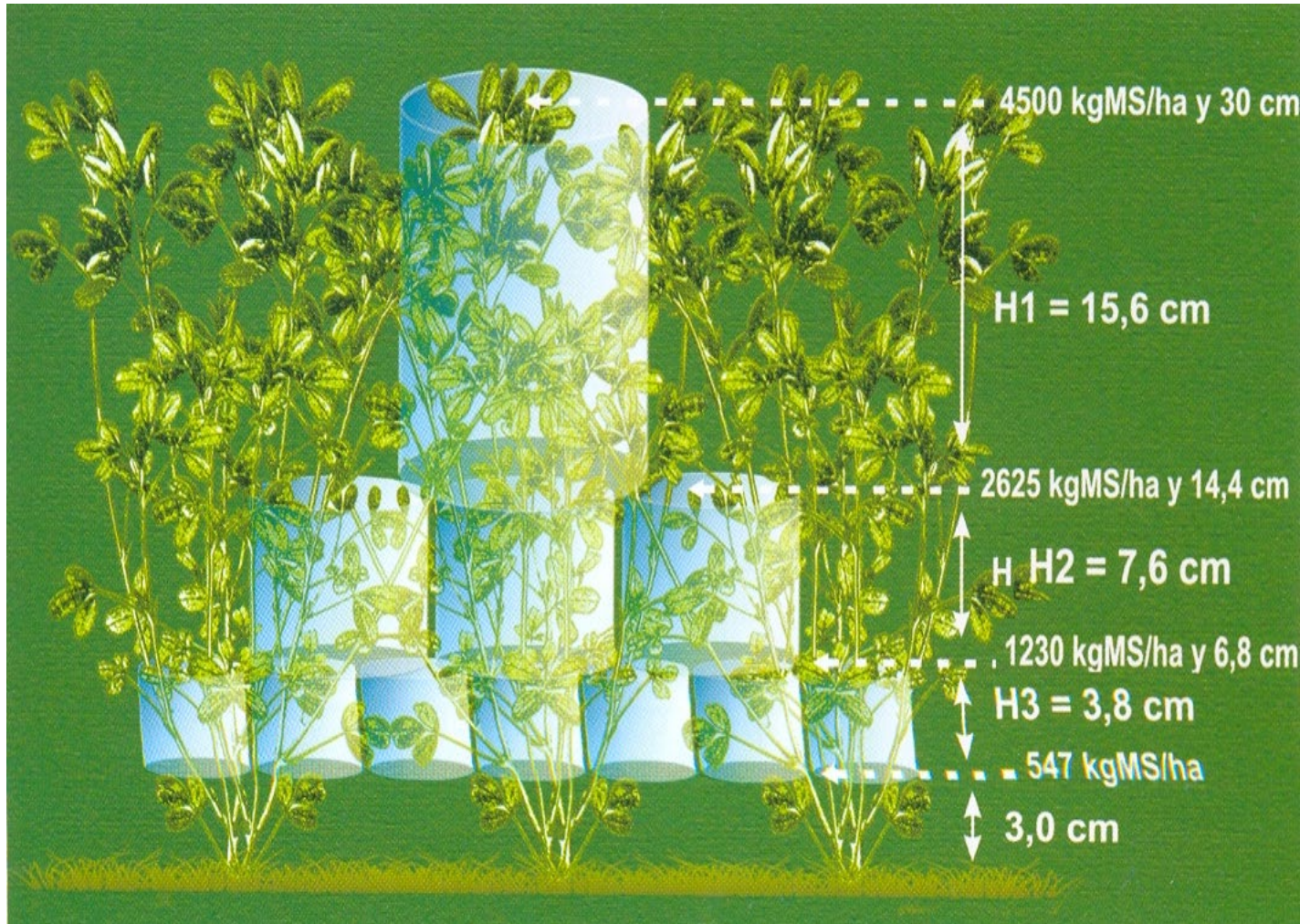
Forage quality by strata



Variation of forage quality (whole plant) of a non-dormant alfalfa cultivar in day 1 and day 7 of the grazing period. Values are expressed as % on a DM basis.

Variable	Day 1	Day 7
<i>In Vitro</i> Digestibility	63.2	45.1
Crude Protein	19.7	11.7
Cell Wall	23.0	29.1

Variation of bite size as grazing is progressing



Rotational systems are based on 3 concepts:

GRAZING FREQUENCY (GF) (resting period)

Range: 23 (FD 7-10/spring–summer) to 42 d (FD 4-6/winter)

GRAZING PERIOD (GP) (number of grazing days)

Range: 1 (dairy/FD 7-10) to 7 d (beef/FD 4-6)

PASTURE UTILIZATION (PU) (grazing pressure)

$PU = \text{Animal Intake} / \text{Forage Allowance}$

When to start grazing?

Same criteria as cutting: first blooming (10%) or regrowth from the crown 5-cm tall.

Number of nodes in main stem (8)

°Cd (400-500 °Cd)

Compromise among yield, persistence, acceptable quality and good animal intake.



Grazing Systems

1. BEEF PRODUCTION



Most popular: 7 GD x 35 GF

Total grazing cycle = **42 d**

Subdivide pasture into **6 paddocks**

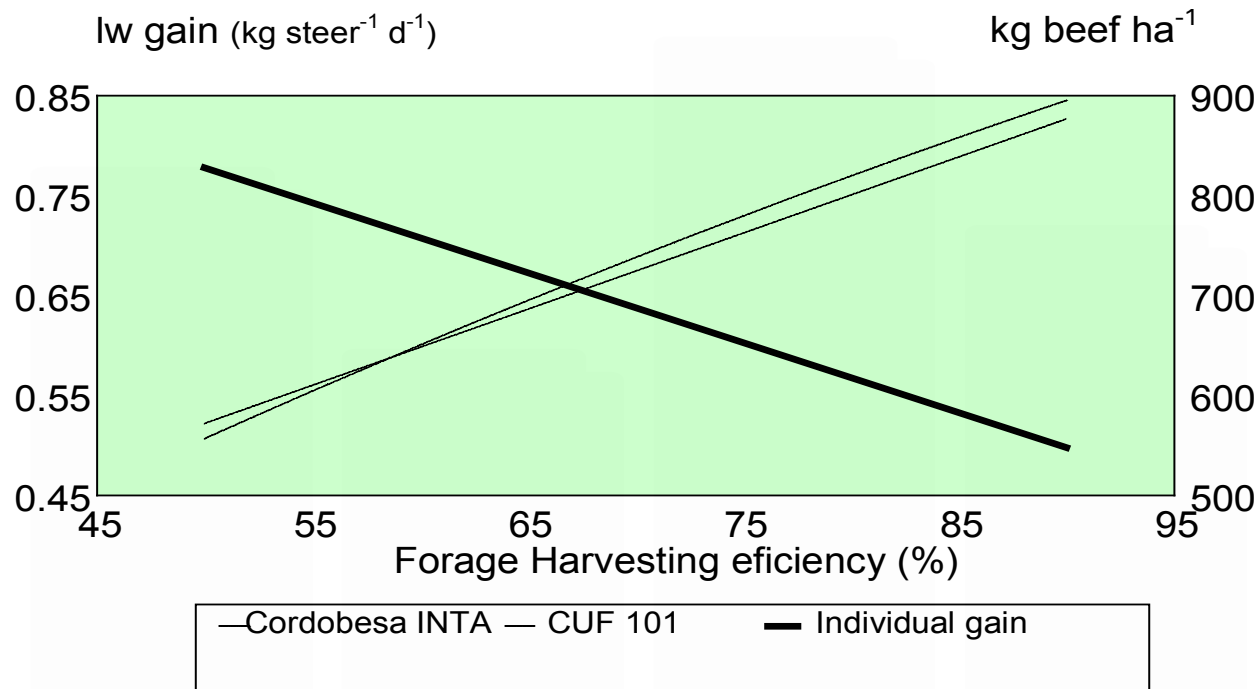
Calculate **stocking rate** as a function of **forage availability**

Define **PU** (harvesting efficiency, animal intake, etc.)



Impact on individual gain along the year

Whatever the GF and GP combination, the goal is to reach high PU through adequate grazing pressure



Grazing Systems

2- DAIRY PRODUCTION

FA has direct effect on milk production and on addition/substitution of supplement



Forage Allowance is related to Animal Intake:

$$FA = 1.75 \times MEI \text{ (Maximum Expected Intake = kg DM cow}^{-1} \text{ d}^{-1}\text{)}$$

$$\text{where: } MEI = (0.025 \times lw) + (0.2 \times lm \text{ cow}^{-1})$$

Example: a cow of 550 kg and 28 l has a MEI = 19.35 kg DM d⁻¹ and a FA = 1.75 * 19.35 = 33.86 kg DM d⁻¹

If the goal is to **maximize milk production per cow: options**



- a) Under **grazing alone**: use **high FA** (low stocking rate), which implies low PUE and low milk ha⁻¹
- b) Use **high PU with supplements**.

In the Pampas, combining individual and per unit area production:

FA: 20-22 kg DM cow⁻¹ d⁻¹ + PU: 70% + supplementation (corn silage, concentrates, etc).

Combining direct grazing (standing plants) and supplementation it is possible to obtain

> 10,000 liters of milk $\text{ha}^{-1} \text{y}^{-1}$,
with individual levels of
7,000-7,500 l $\text{cow}^{-1} \text{lactation}^{-1}$
and stocking rates of
> 1.7 cows ha^{-1}



Comparison between grazing and confined systems

1. Management and environmental issues

	<i>Grazing</i>	<i>Confined</i>
Control on production variables	Fair	High
Milk production	Medium	High
Milk quality	High	Medium
Seasonal variation	Strong	Weak
Infrastructure requirements	Very low	High
Climate susceptibility	Very high	Low
Environmental pollution	Low	High
Sanitary risks	Heat-Cold Mastitis	Infections-Flies Foot problems Mastitis

Comparison between grazing and confined systems

2. Feed characteristics

	Grazing	Confined
Quality	Variable	Stable
Diet selection by cows	High	Low
Use of supplementation	Strategic	Permanent
Nutrient balance	Variable	Controlled
Intake	Fair & variable	High & stable
Economic costs	Medium/Low	High/very high
Sanitary risks	Bloat-Mineral Deficiencies	Metabolic disorders Mad cow disease



Thank you very much !!!



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Ministerio de Agricultura,
Ganadería y Pesca
Presidencia de la Nación