FEEDING THE GROWING SPORT OR LEISURE HORSES WITH HAYS OR SILAGES BASED DIETS

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1. Growth strategy

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1 Growth strategy

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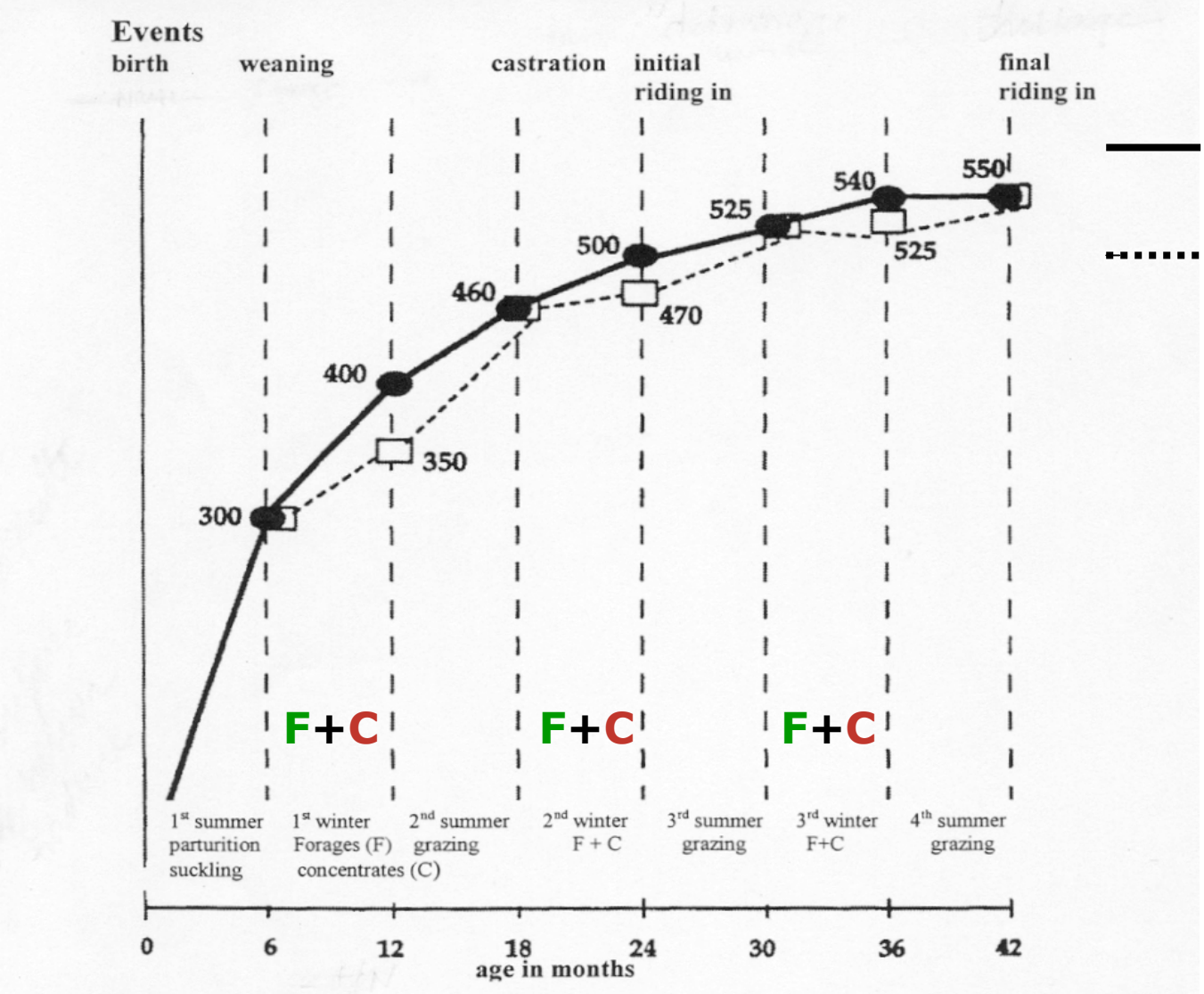
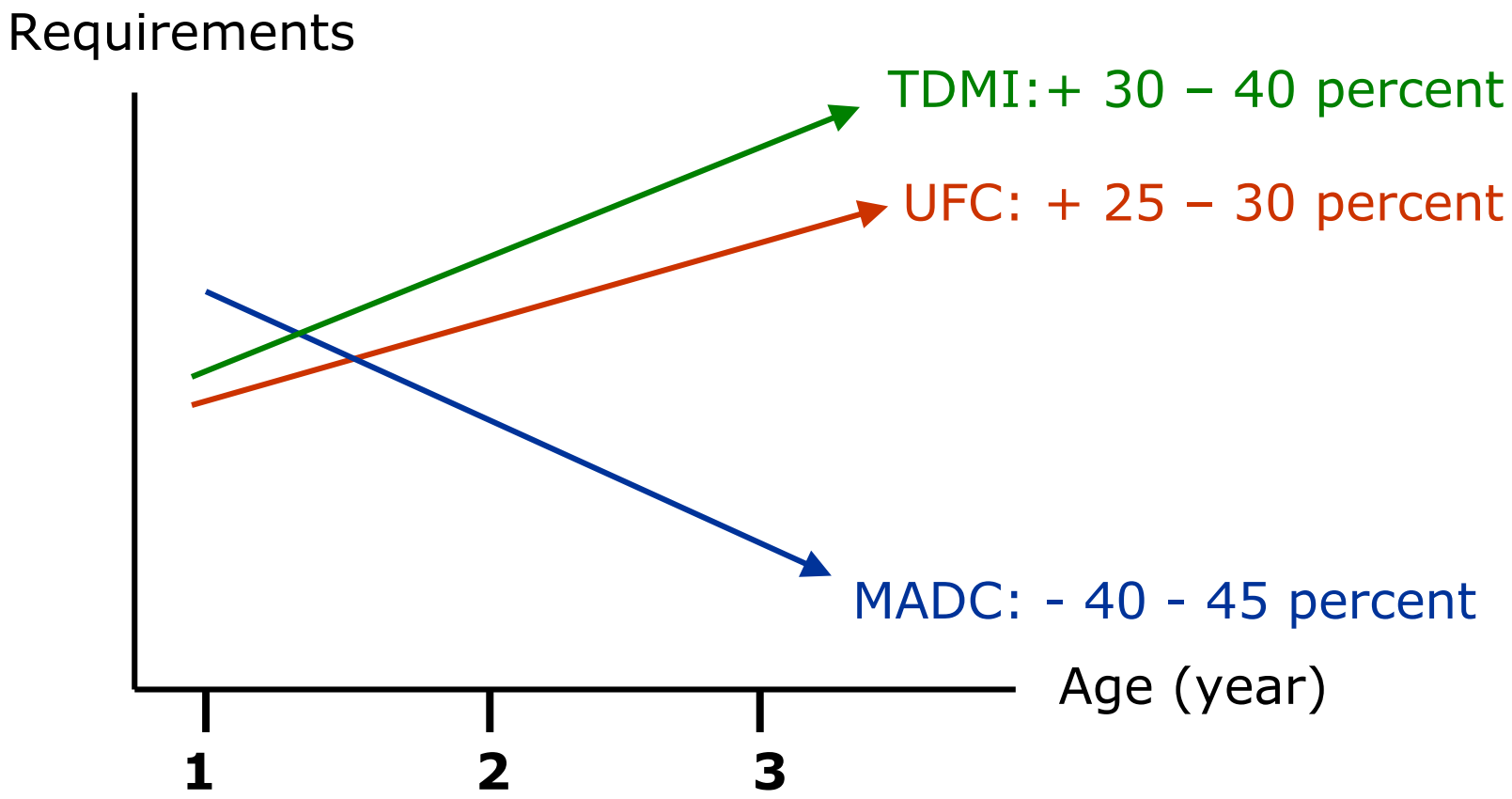
GROWTH CURVE



Variation of the requirements in growing sport horse with age (from INRA 1990)



Variation of the requirements in growing sport horse with age (from INRA 1990)

- The requirements depends on:

1. Metabolic body weight($BW^{0.75}$)= maintenance
2. Average daily gain (G)= growth
3. Body composition (1.4)= fat content of G

- **ENERGY = a $BW^{0.75}$ + b BW0.75 $ADG^{1.4}$**

- **PROTEIN = a $BW^{0.75}$ +b ADG**

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What are the preserved forage based diets that can be fed to growing horses ?

- **Hays**
- **Silages**
- **Haylages**

Grasses species and grassland

- **Maize silages (whole plant)**

and what are the matters to take care :

1. the nutritive value
2. and the main factors of its variation

…….to make relevant choice according to the age and the growth of the young horse to match the expected breeding goal : competition vs leisure

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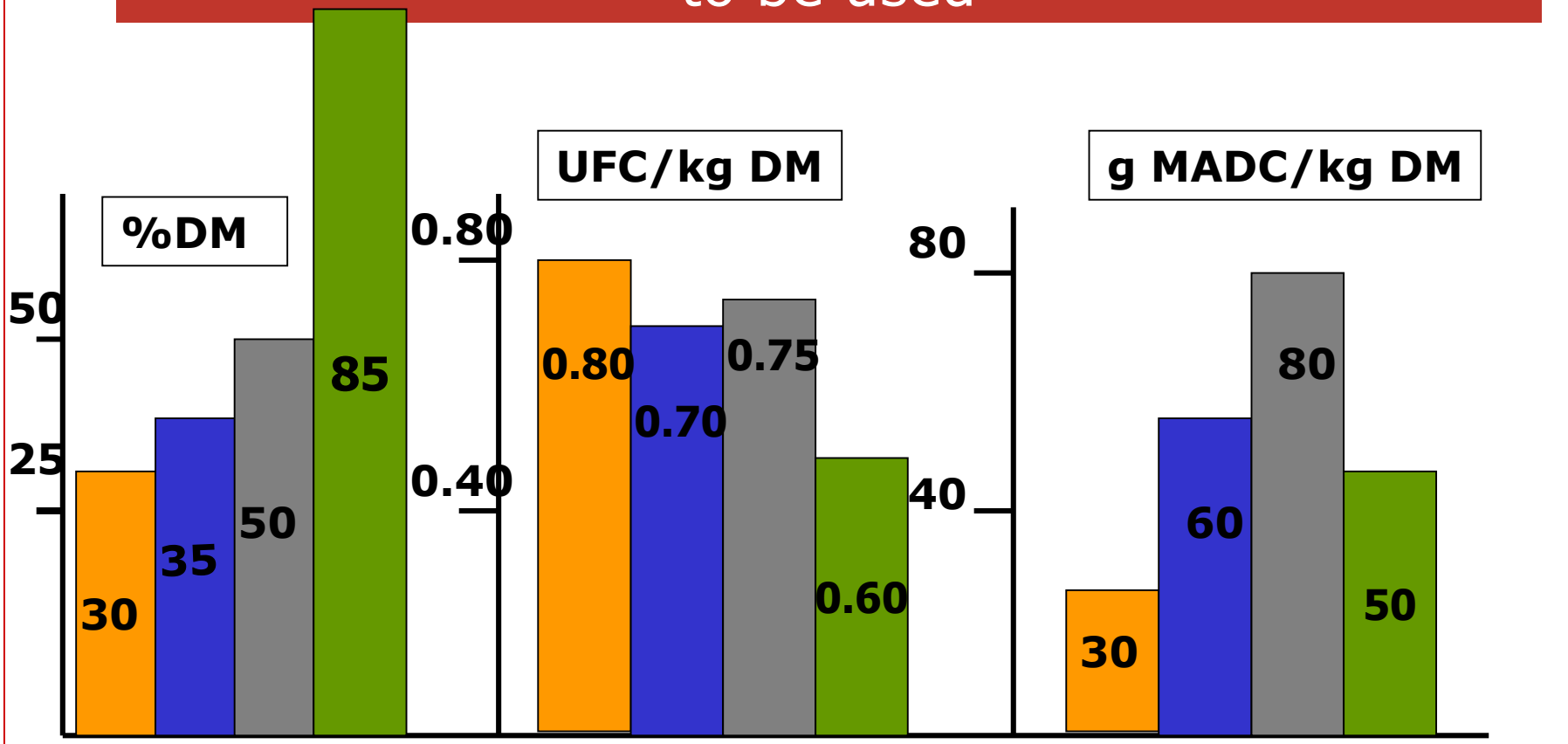
FORAGE BASED – DIETS: comparison of the characteristics of the different forages to be used



Quality of preservation of silages (INRA analytical scale)

Class	Volatile fatty acids	acid acetic	acid butyric	N-NH3		soluble N
	mmole/kgDM	g/kgDM	g/kgDM	% total N		% total N
				Maize	*Grasses*	
Excellent	**<330**	**<20**	**0**	**<5**	**<7**	**<50**
Average	330-660	20-40	<5	10-15	10 -15	60-70
Poor	1000-1330	55-75	>5	15-20	15 -20	>65
Very poor	>1330	>75	>5	>20	>20	>75

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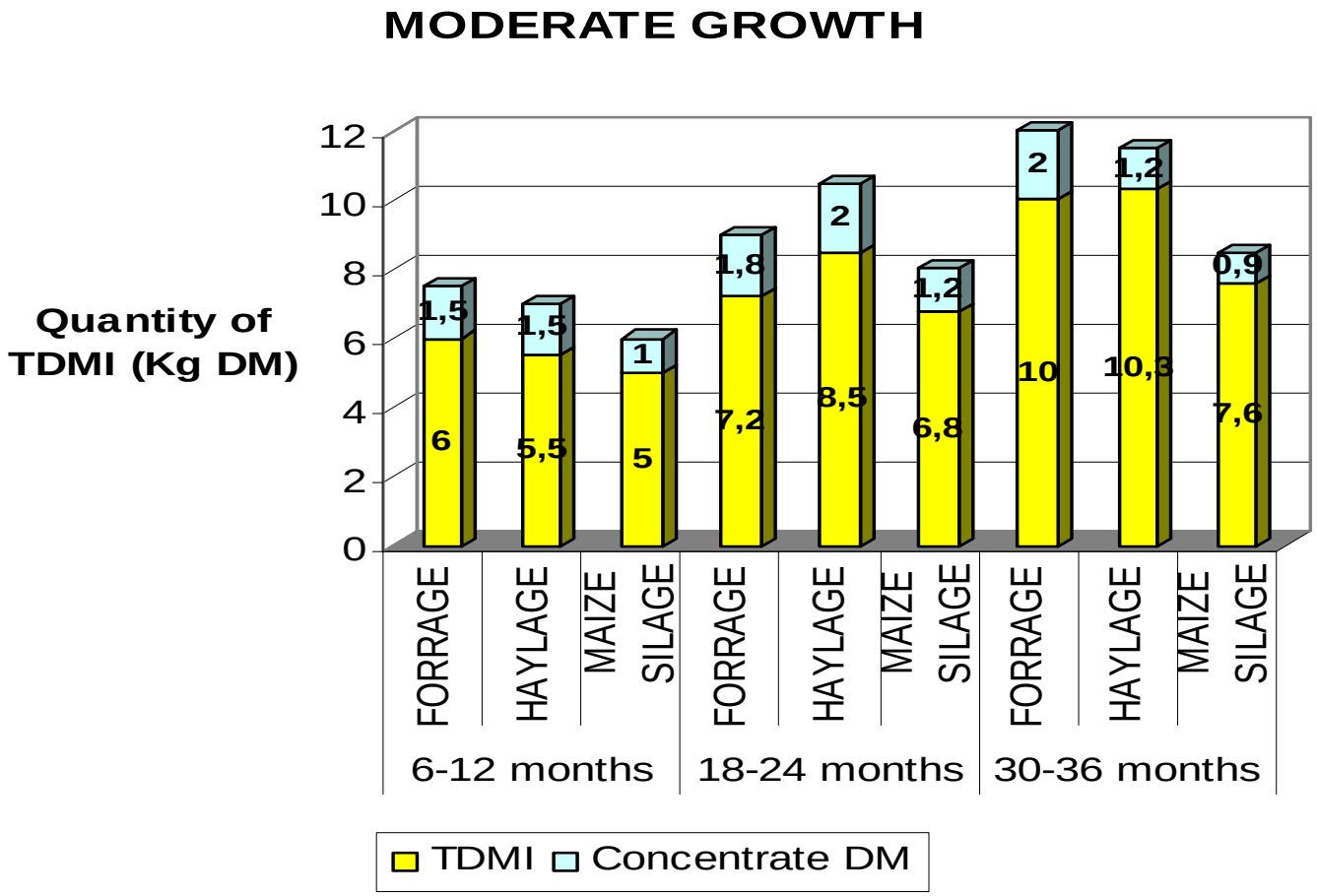
Winter feeding with forage based diets

DIETS *(Trillaud-Geyl and Martin-Rosset 2005)*



DIETS AND RELATED GROWTH

(Trillaud-Geyl and Martin-Rosset 2005)

Average daily gain: moderate growth

	Hay	Haylage	Maize silage
1 year	400	500	680
2 years	200	390	310
3 years	20	50	280

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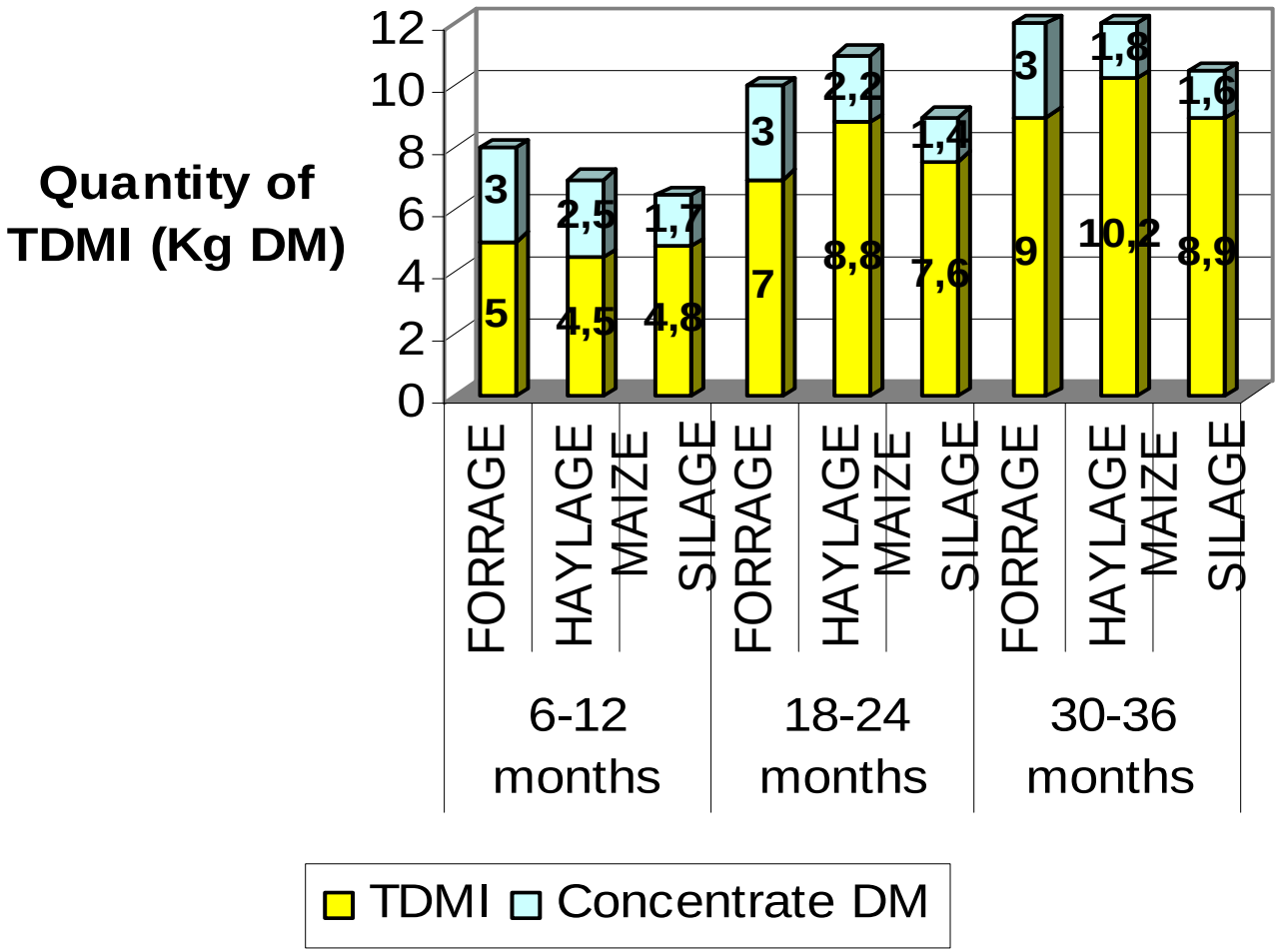
DIETS

(Trillaud-Geyl and Martin-Rosset 2005)

OPTIMAL GROWTH



DIETS AND RELATED GROWTH

(Trillaud-Geyl and Martin-Rosset 2005)

Average daily gain: optimal growth

	Hay	Haylage	Maize silage
1 year	580	750	840
2 years	365	480	570
3 years	50	260	450

DIETS AND RELATED GROWTH

Total Dry Mater Intake varies with :

- Characteristics of different types of forages:
  - Nature
  - Nutritive Value
  - Chemical composition
  - Quality of preservation
  - = ingestibility ranges from 1.9 to 2.4 kg DM / 100 kg BW
- Characteristics of animals : age and Body Weight

  = intake capacity ranges from 1.7 to 2.5 Kg DM / 100kg BW
- Proportion of concentrate in the diet
  - Type of forages: % for hay >for haylage > for maize silage
  - Age of animals: % for 1 year > 2 years > 3 years old

PROPORTION OF CONCENTRATE IN THE DIET: SUBSTITUTION RATE

- Forage intake is depending on the proportion of concentrate in the diet *(when the forage is offered ad libitum)*
- Intake of forage decreases as far as intake of concentrate increases = Substitution Rate

PROPORTION OF CONCENTRATE IN THE DIET: SUBSTITUTION RATE

- SUBSTITUTION RATE (SR)

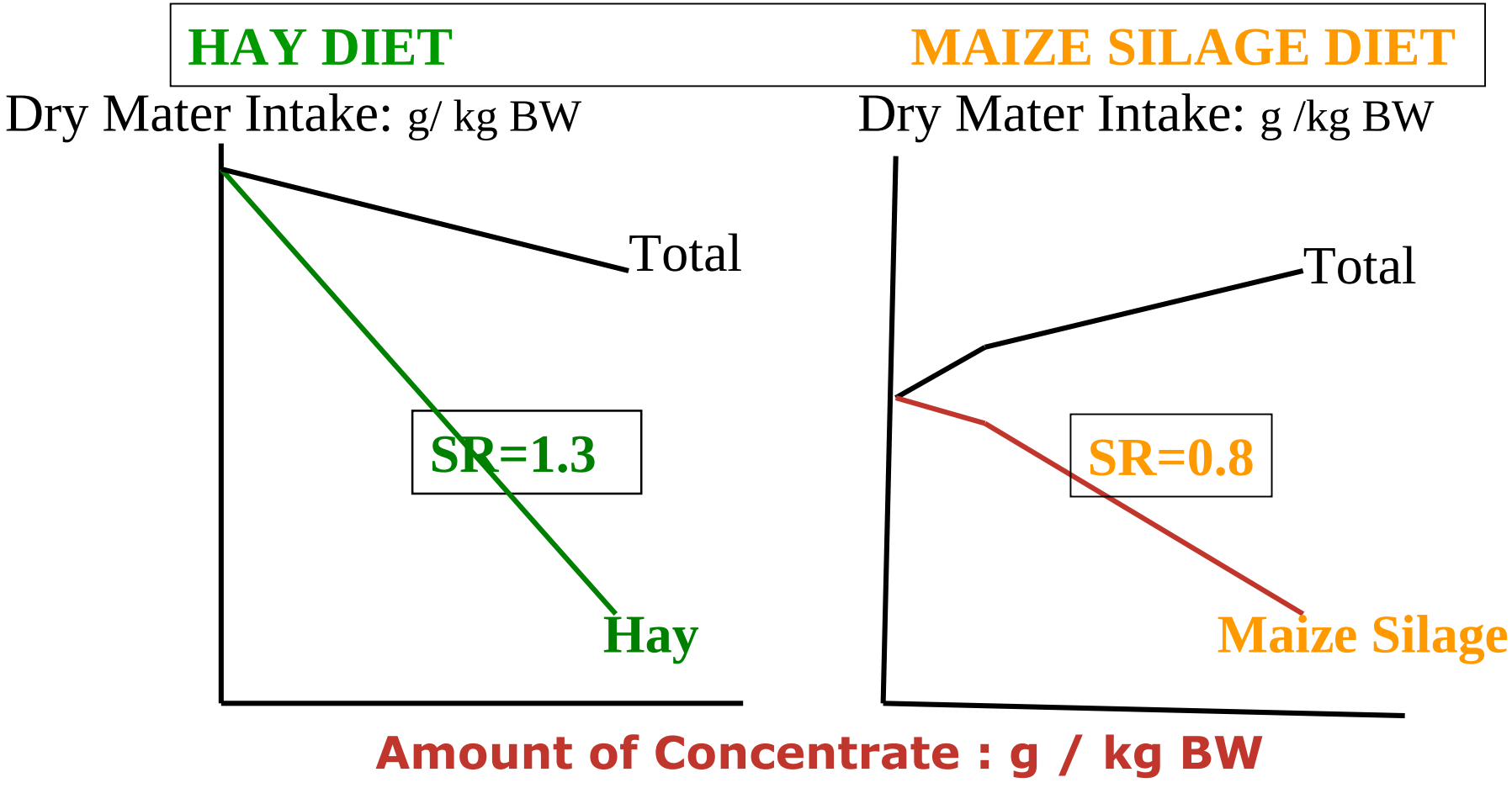
  =SR is the ratio between the decrease in forage intake in respect of each one additional Kg of concentrate in the diet:

SR = N kg DMI Forage/kg DMI Concentrate

Depends on:

- Nature of forage
- Level of Concentrate in the Diet

PROPORTION OF CONCENTRATE IN THE DIET: SUBSTITUTION RATE(INRA 1990)



***SR = Substitution Rate** Forage/concentrate

CHARACTERISTICS OF CONCENTRATE

- Concentrate may be composed of a mixture of :
  - Grains (Barley, Corn, Oat, Maize…
  - Cakes, peas, Faba bean, Lupine seed
  - Dehydrated alfalfa
  - Minerals and Vitamins Supplement
- Percentage of protein sources is as much high as diet is composed of:
  - Maize silage based diets
  - Young animals (6-12months)

CONCLUSIONS **1** - 2

- Hays (85%DM) and prewilted silages (DM>30%)
  - Well adapted to meet moderate nutritional requirements (moderate growth….)
- Haylage (DM ≥50-60%)
  - Better to match high nutritional requirements (optimal growth…)
- Maize silage (DM>30%)
  - Very well adapted to match optimal, even maximum performances *using a concentrate with high protein source and Mineral Vitamin Supplement (see tables INRA 1990)*

CONCLUSIONS 1 - **2**

For all the silage based diets:

- Chemical composition and preservation characteristics must be carried out to check quality of preservation and the nutritive value;

- Adaptation period

  should be absolutely implemented according to age of animals:

  - 3 - 4 weeks for weanings
  - 2 – 3 weeks for yearlings and long yearlings