EFFICIENCY OF USING ENSILED SEMI-LATE CORN HYBRIDS IN DIETS FOR FATTENING STEERS

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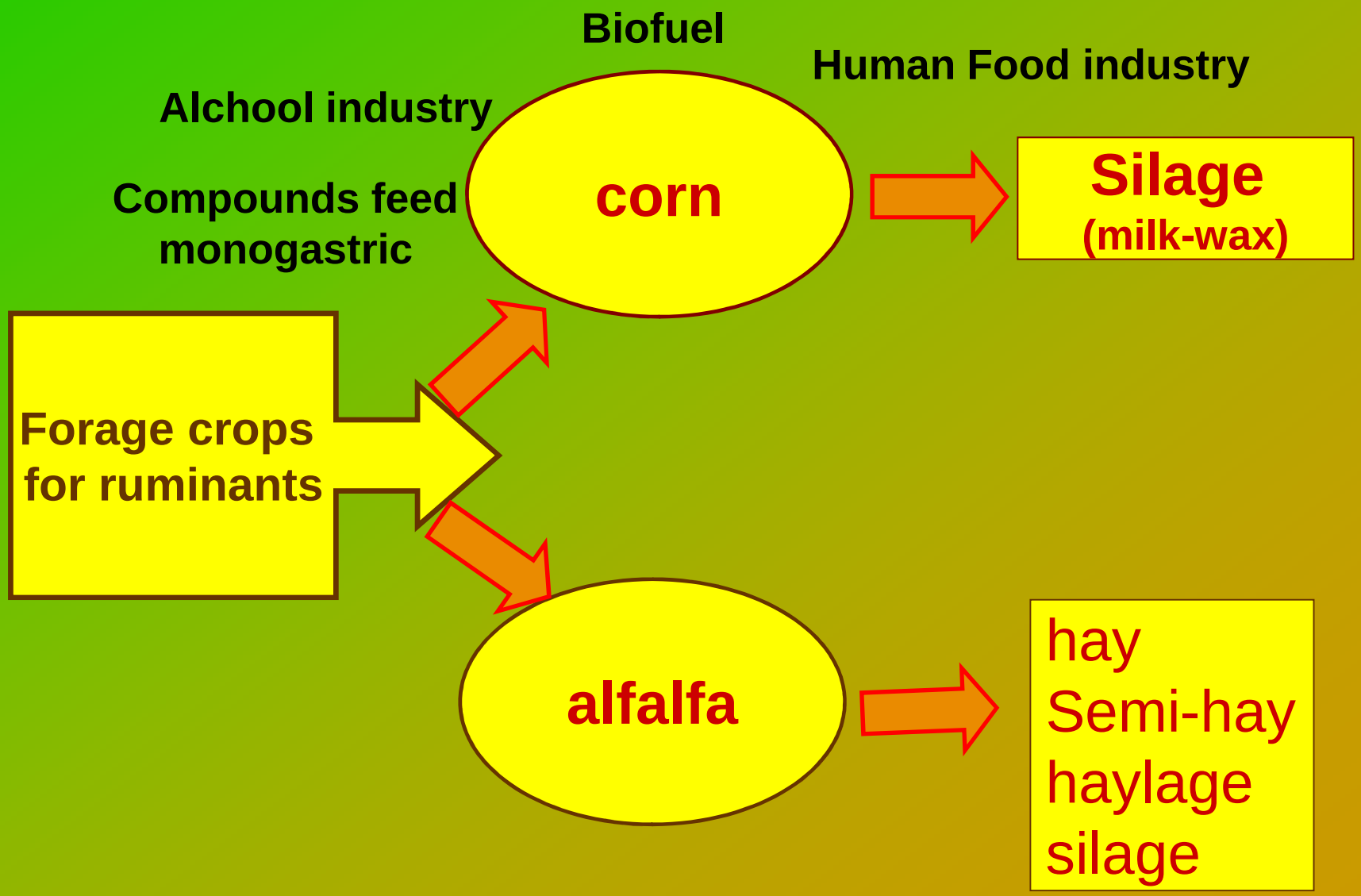
Introduction



CORN

Few countries cultivate corn specialized for silage production

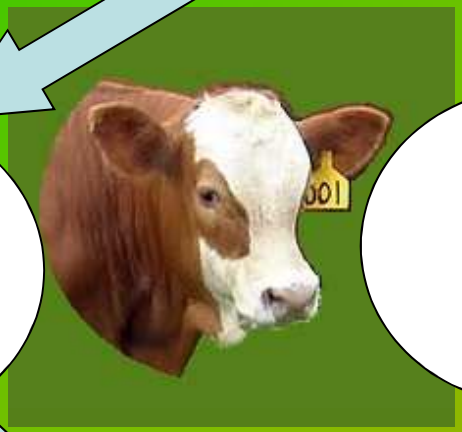
We use the same corn hybrids like in grain production

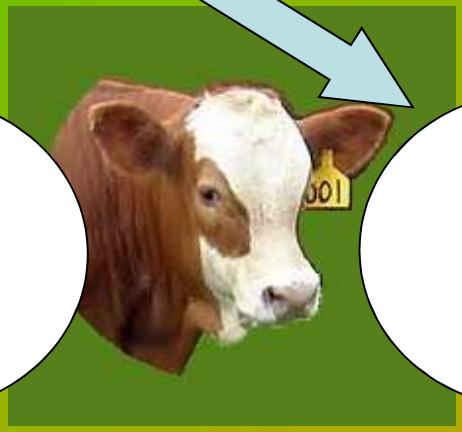
Institute of Agricultural Research, Fundulea, Romania has many types of corn hybrids: **early, semi early, late, semilate**

Aridization and lack of irrigation systems

Select and use the best suited hybrids for the South Romanian Plain, for ensiling and feeding to ruminants

Experimental designe
SEMI LATE CORN HYBRIDS





H_{365}

H_{376}

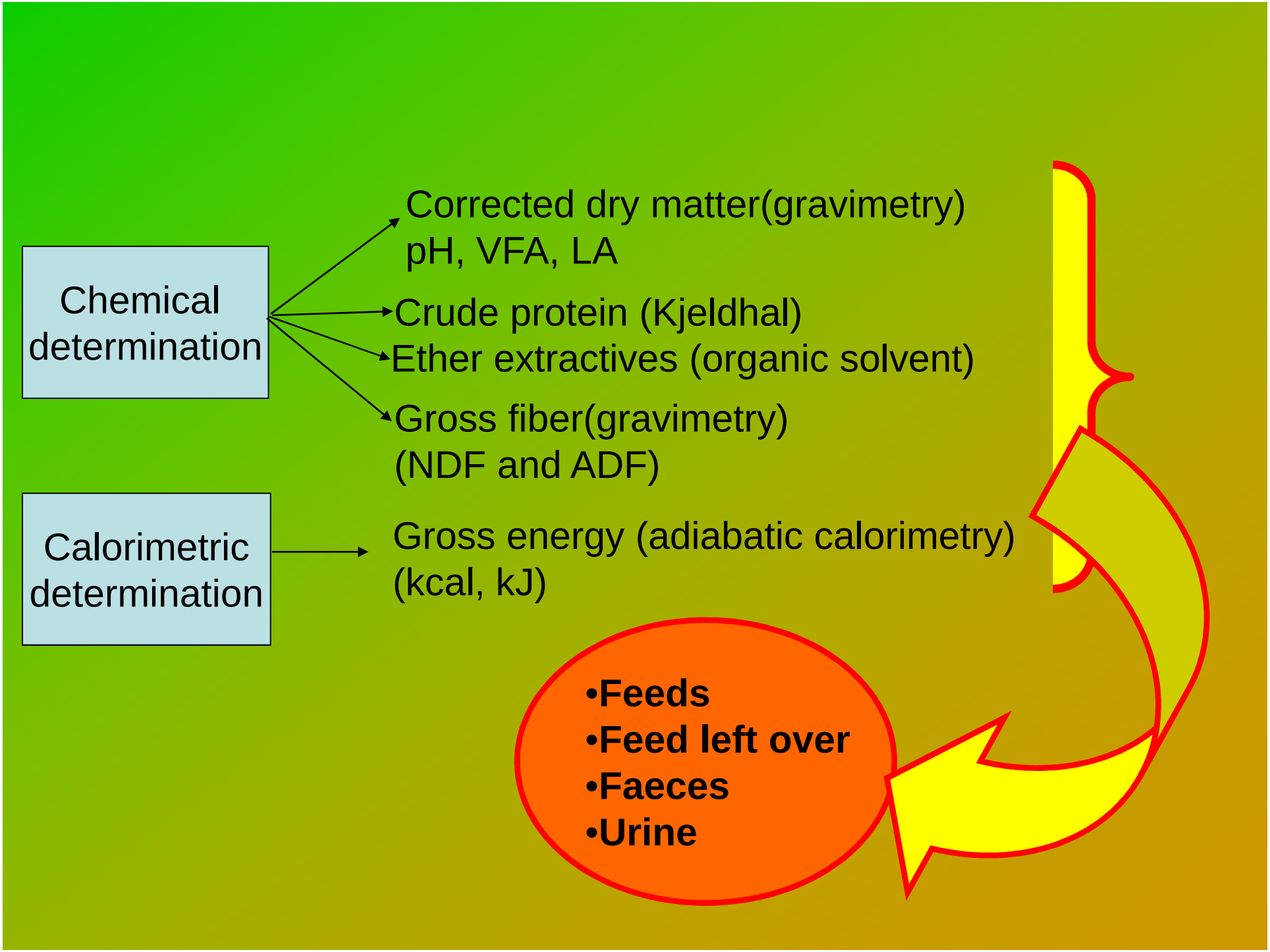
OLT

321-451 kg

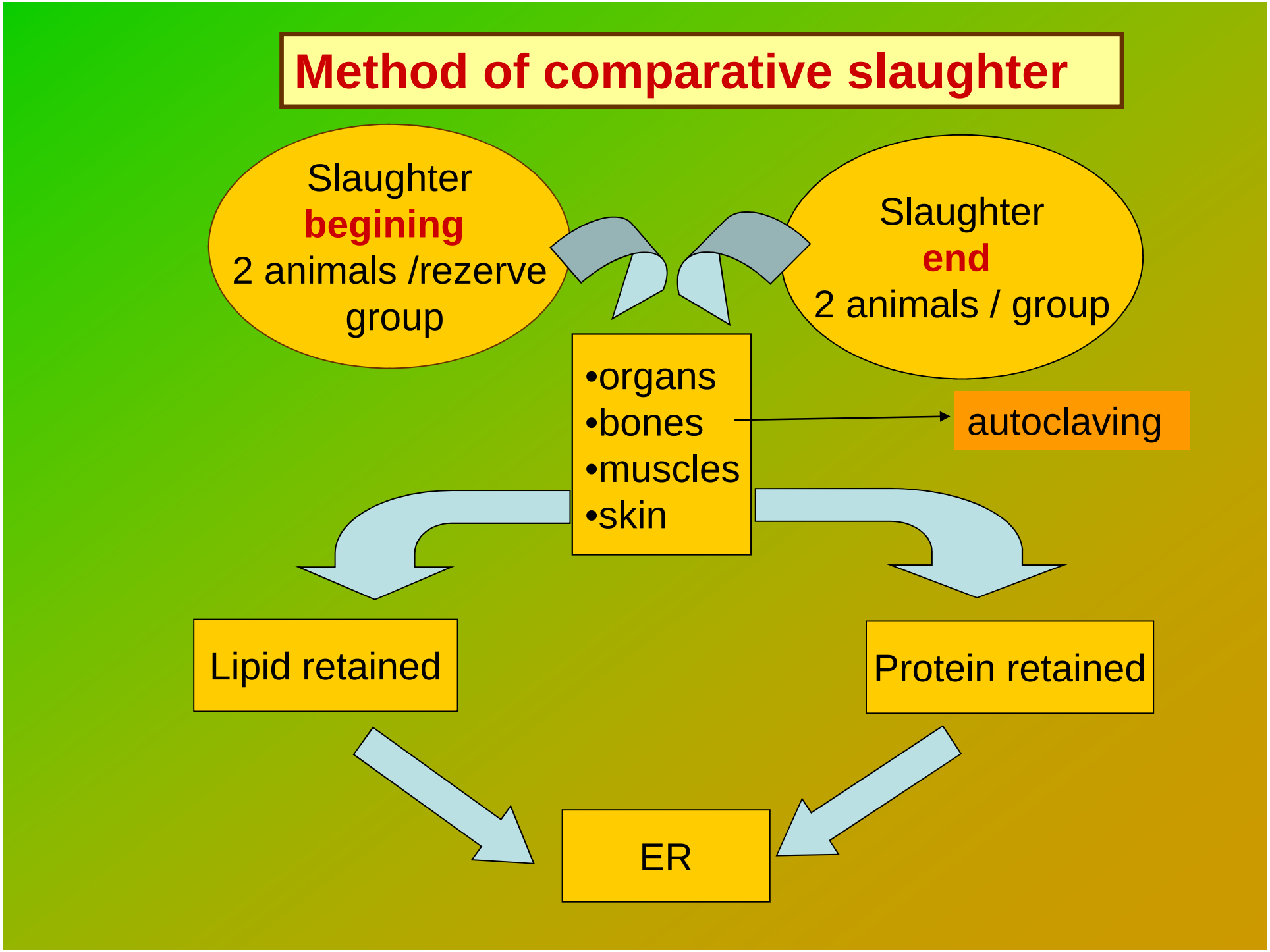
279-429 kg

330-437 kg

8 steers (half brothers)
3 months
6 balances(2 weekly/month)
Corn silage (specific to the hybrid) +
CF (barley + sunflower)


Chemical determination
Corrected dry matter(gravimetry)
pH, VFA, LA
Crude protein (Kjeldhal)
Ether extractives (organic solvent)
Gross fiber(gravimetry)
(NDF and ADF)
Calorimetric determination
Gross energy (adiabatic calorimetry)
(kcal, kJ)
•Feeds
•Feed left over
•Faeces
•Urine

Method of comparative slaughter



Nutrient and energy digestibility

Administered feed

Ing. matter– faeces= dig. matter (% dig)

GE – EF = DE (kj)

Digestibility
8 stands
(6 monthly balances
2 balaces/month)
collected

Faeces

Left over

Urine

Chemical composition and digestibility of the 3 corn hybrids

Item	DM (g)	OM (g)	CP (g)	CF (g)	GE (MJ)
Corn silage, F 365	328 1000	304 927 (71)	27 82 (56)	75 229 (63)	6.08 18.54 (69)
Corn silage, F 376	269 1000	250 929 (73)	21 78 (54)	63 240 (66)	4.96 18.44 (71)
Corn silage, OLT	287 1000	266 927 (69)	22 77 (53)	69 240 (63)	5.21 18.15 (68)

PRODUCTIVE POTENTIAL OF CORN HYBRIDS

Item	DM	FUmilk	FUmeat	IDPN	IDPE
Corn silage F 365	328	1.04	1.02	49.06	65.81
Corn silage F 376	287	1.07	1.06	46.07	63.47
Corn silage F Olt	269	1.02	1.01	46.67	63.92

GE, DE, ME (Burlacu,1996)

ME x Kmp = NEmeat (q=ME/GE) APL = 1.5, meat prod. FU meat=6.16 MJ

ME x Kmilk = NEmilk FU milk=6.07MJ

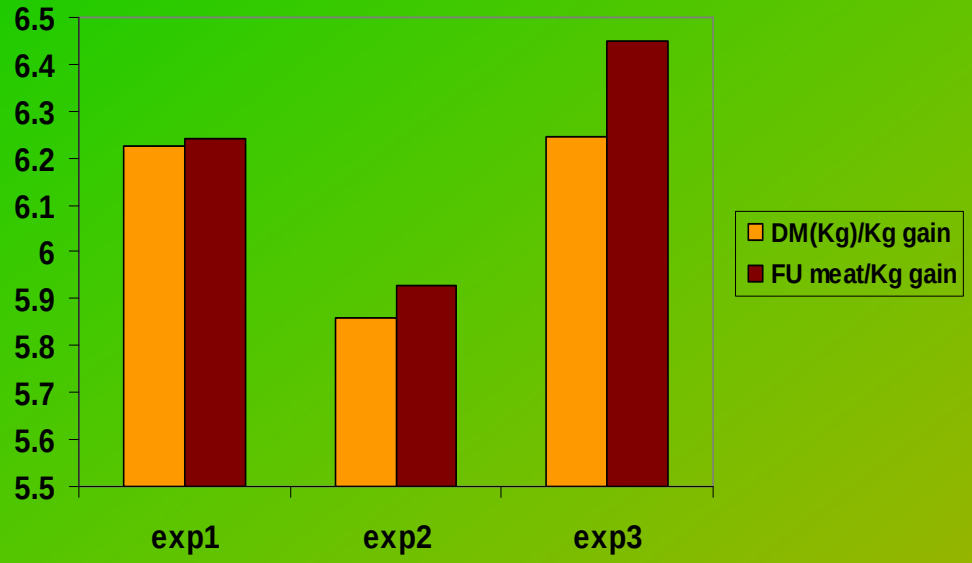
IDPN=CP(1-Dg)xdr+0.576xCPxDg (Vérité et al. 1987)

IDPE=CP(1-Dg)xdr+0.093xFOM (Dg : 1-4,5 Alderman , 1993)

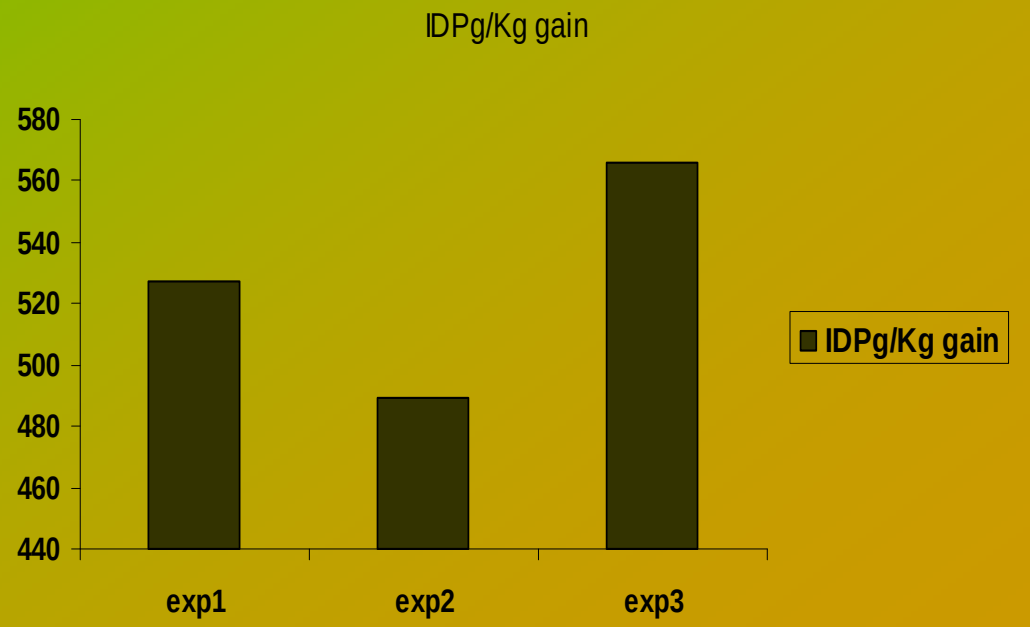
STEERS PERFORMANCES

Experiment	Exp. days	Weight			
		Initial (kg)	Final (kg)	Total gain (kg)	Average daily gain (g)
Experiment I, hybrid F 365	106	321±8.00	451±9.25	130±6.75	1226.38±63.72
Experiment II, hybrid F 376	115	279±10.50	429±12.00	150±7.25	1304.25±63.00^{x}
Experiment III, hybrid Olt	95	330±6.50	437±8.75	107±8.00	1126.38±84.22^{xx}

x – statistically significant (P<0.001)
xx – statistically significant (P<0.05)

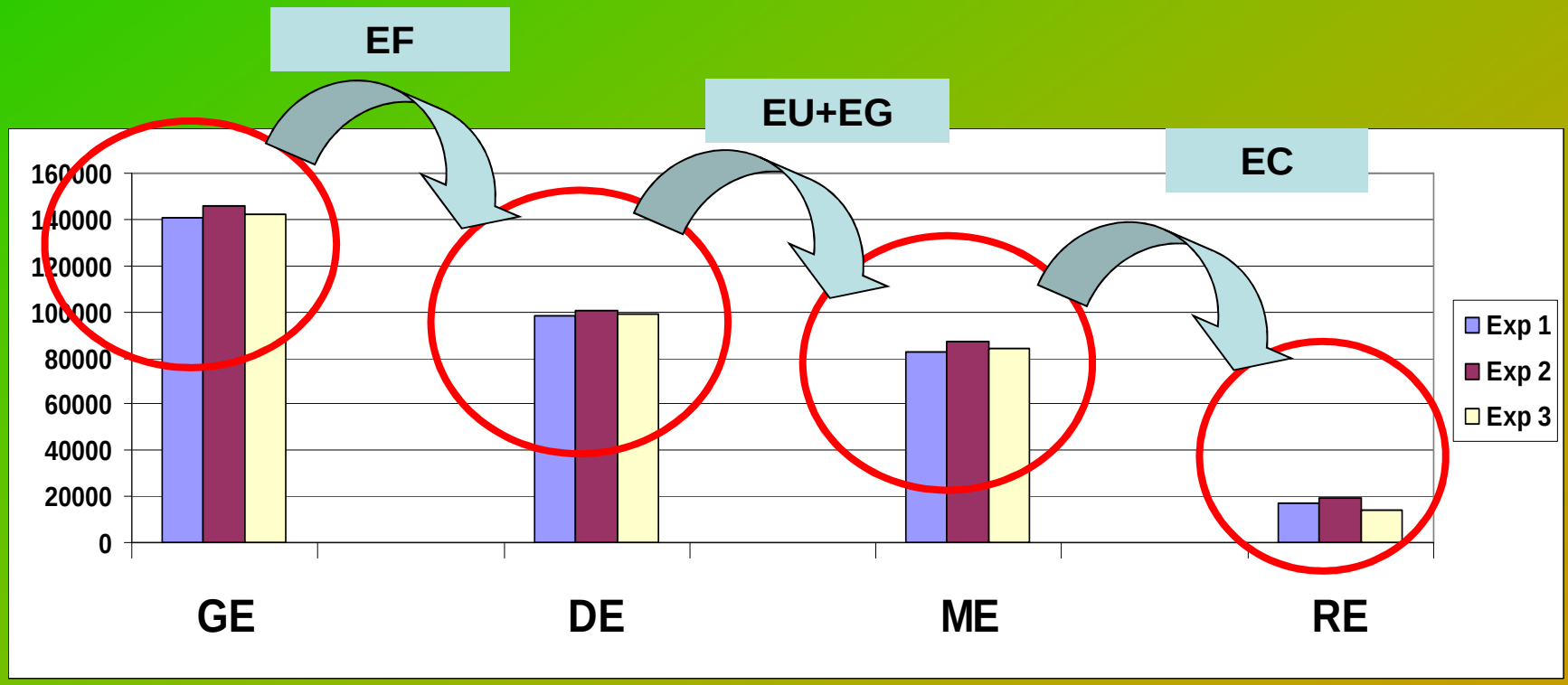


Feed conversion ratio for the dry matter and the net energy (average values)



Feed conversion ratio for digestible protein (average values)

ENERGY BALANCE (kj)



RE = Lr + Pr

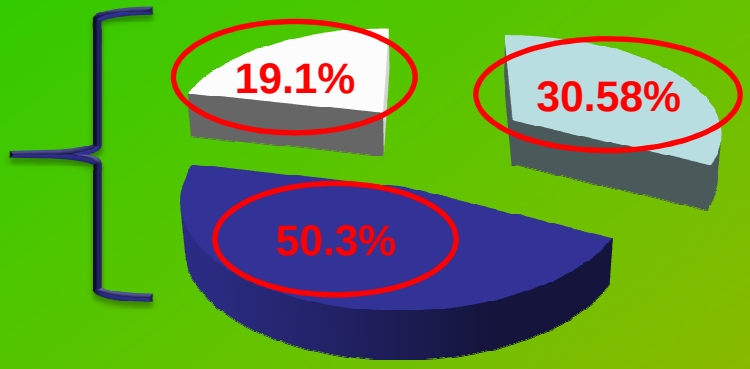
(RE/ME) was 21% in F 365, 22% in F 376 and 17% in Olt

q=ME/GE

NITROGEN BALANCE (%)

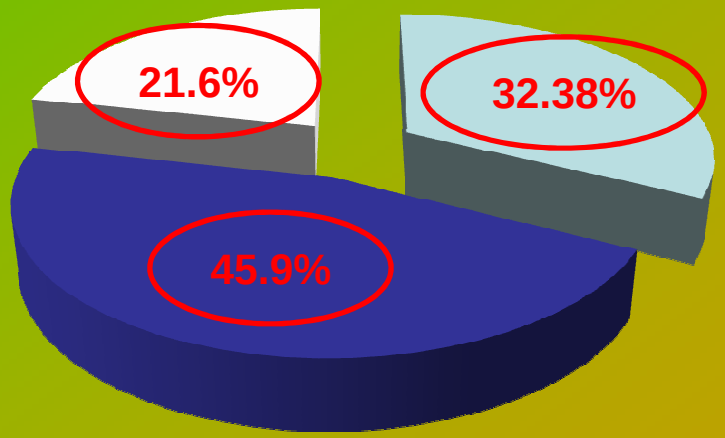
N digested

exp 1

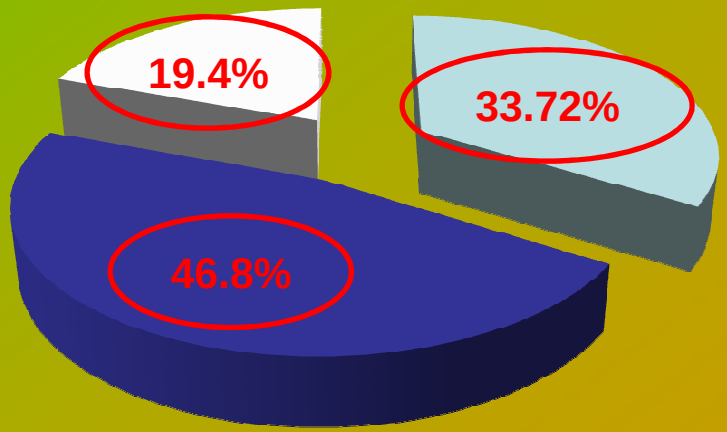


N faces
N urine
N retained

exp 2



exp 3



CONCLUSIONS:

- the energy potential expressed in feed units for milk or meat production was the highest in the semi-late hybrid F 376 with 1.07 FUmilk and 1.06 FUmeat;

- although the IDP potential expressed as IDPN and IDPE was highest in hybrid F 365, with values of 49.06 g and 65.92 g, it didn't have a positive influence on animal performance;

- organic matter digestibility was 73% in F 376, compared to 71% and 69% in the other two hybrids;

- the use of the dietary energy correlated with the nutritive value of the dietary ingredients and implicitly with organic matter digestibility produced daily gross weight gains of 1226 g for hybrid F 365, 1306 g for hybrid F 376 and 1126 g/steer/day for hybrid Olt;

- the use of protein, as determined by the nitrogen balance, produced higher values in experiment II (hybrid F 376), 38.71 g, compared with the other two experiments, 29.98 and 28.39 g respectively;

- the nutritive value, steer performance and the efficiency of the dietary energy utilization showed that the ensiled semi-late corn hybrid F 376 produced the best results when fed to fattening steers.

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