

Nutritive value of an olive cake, extracted from a continuous string method, for the rabbit



Dorbane Z., Kadi S.A., Boudouma D., Gidenne T.

Olive cake/pomace : by-product of olive oil extraction => mixture of skins, pulp, woody endocarps and seeds available in large quantities in Algeria

Three main types according to the oil extraction method:

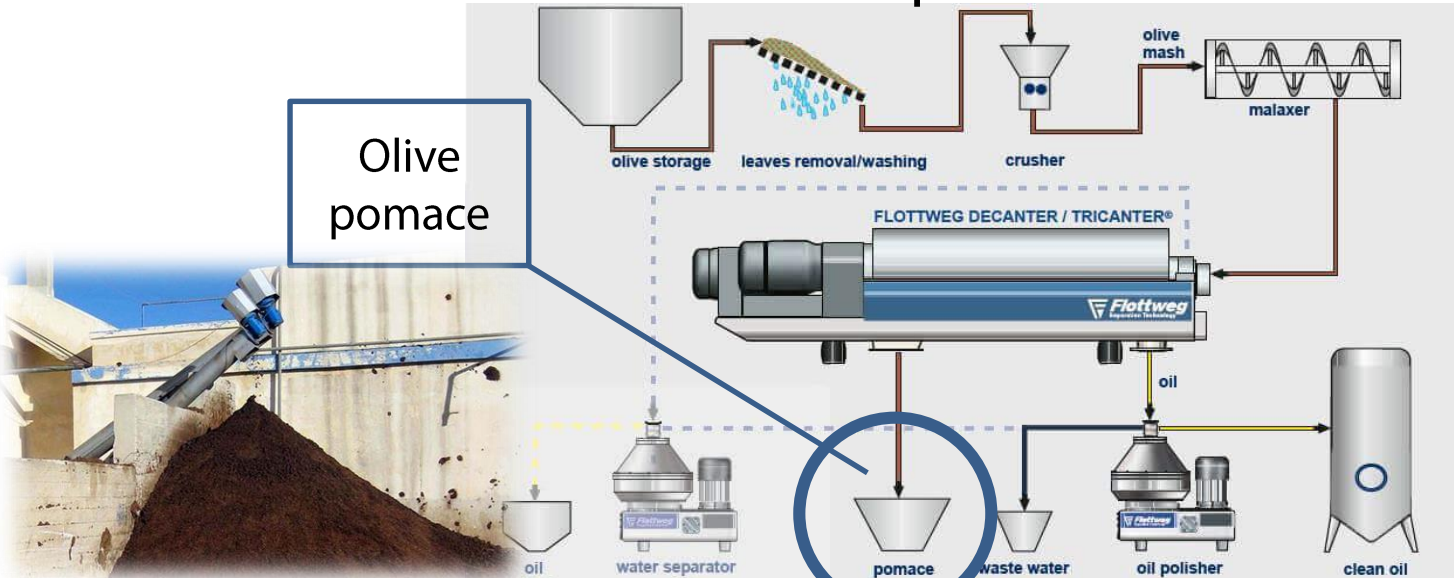


Crude olive cake
One stage of extraction with hydraulic press

Exhausted olive oil cake : press + solvent extraction



Continuous string extraction process "CSEP"



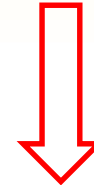
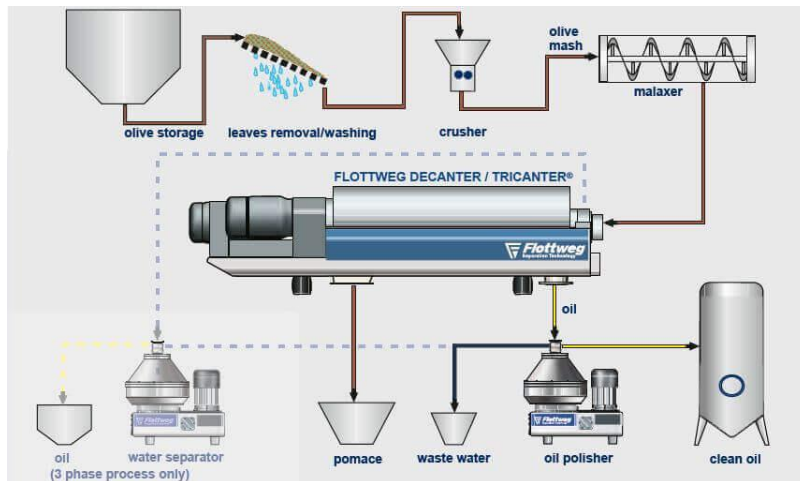
According to product with CSEP :

➤ **2 centrifugation stages => olive cake with water = 2 stage**

olive cake + oil

➤ **3 centrifugation stages => olive cake +**

vegetation waters + oil = **three stage olive cake TSOC**



rabbit feeding

OBJECTIVE

For the growing rabbit : nutritive value of a sun-dried olive cake extracted from a continuous string "three stage" method **TSOC**.

Trial in a private rabbit breeding unit (Tizi-Ouzou, Algeria)

At weaning (35d): 3 groups of 12 rabbits individually housed in metabolism cage, fed with:

- **3 diets**
 - **Control** diet without TSOC
 - Diet with 10% TSOC (TSOC10)
 - Diet with 20% TSOC (TSOC20)

Ad libitum, from 35 to 46 d old.

Measures

- weekly= live weight and feed intake
 - Daily: health status
 - Fecal digestibility :

One period of 4 days total collection of feces (42-46 d. old)



Experimental diets



Ingredients	TSOC0	TSOC10	TSOC20
Olive Cake "TSOC"	-	10.0	20.0
Alfalfa dehydrated	37.2	33.4	29.6
Barley	8.8	7.9	7.0
Soybean meal	9.8	8.8	7.8
Wheat bran	42.1	37.8	33.5
Premix	2.0	2.0	2.0

Recall : diets are formulated for a nutritive value trial => **not balanced for nutrients** (not "iso")

Results

Chemical composition TSOC and diets

g/kg DM	TSOC	Control	TSOC10	TSOC20
Dry matter	870	883	890	889
Crude protein	60	191	174	166
Crude fat	74			
NDFom	787	337	390	416
ADFom	554	173	217	241
ADL	243	44	72	78

TSOC = low protein & fibre and lignins source product

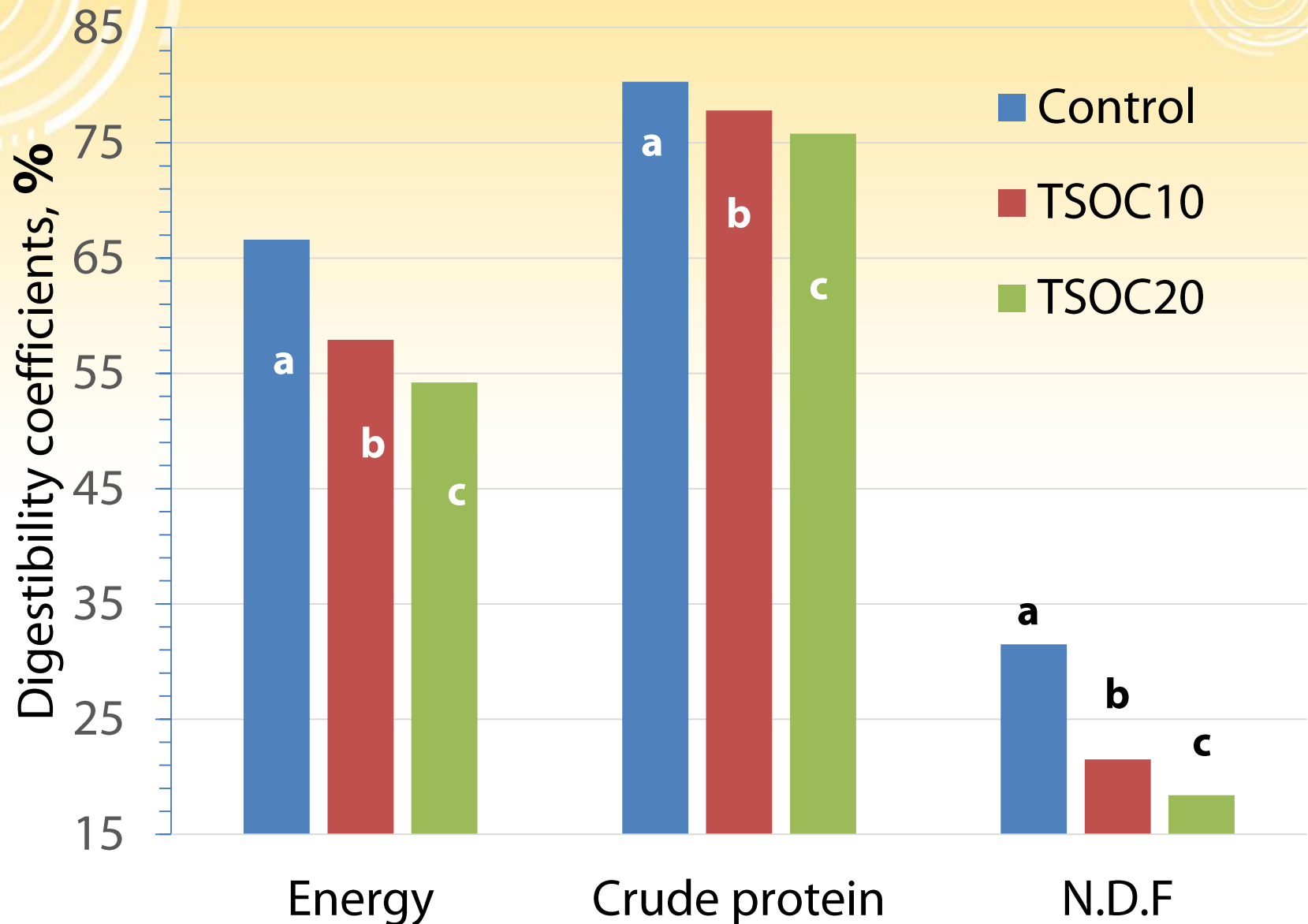
Recall: diets formulated for a nutritive value trial=> **not balanced for nutrients**

Results

Period 35-46 d	Control	TSOC10	TSOC20	<i>P level</i>
Live weight, 35d	716	694	696	0.78
Live weight, 46d	1049	971	932	0.18
Weigh gain, g/d	38.1	32.3	33.5	0.34
Daily intake, g/d	76.3	74.6	75.0	0.73
Feed conversion	2.03 ^a	2.30 ^{ab}	2.47 ^b	0.043

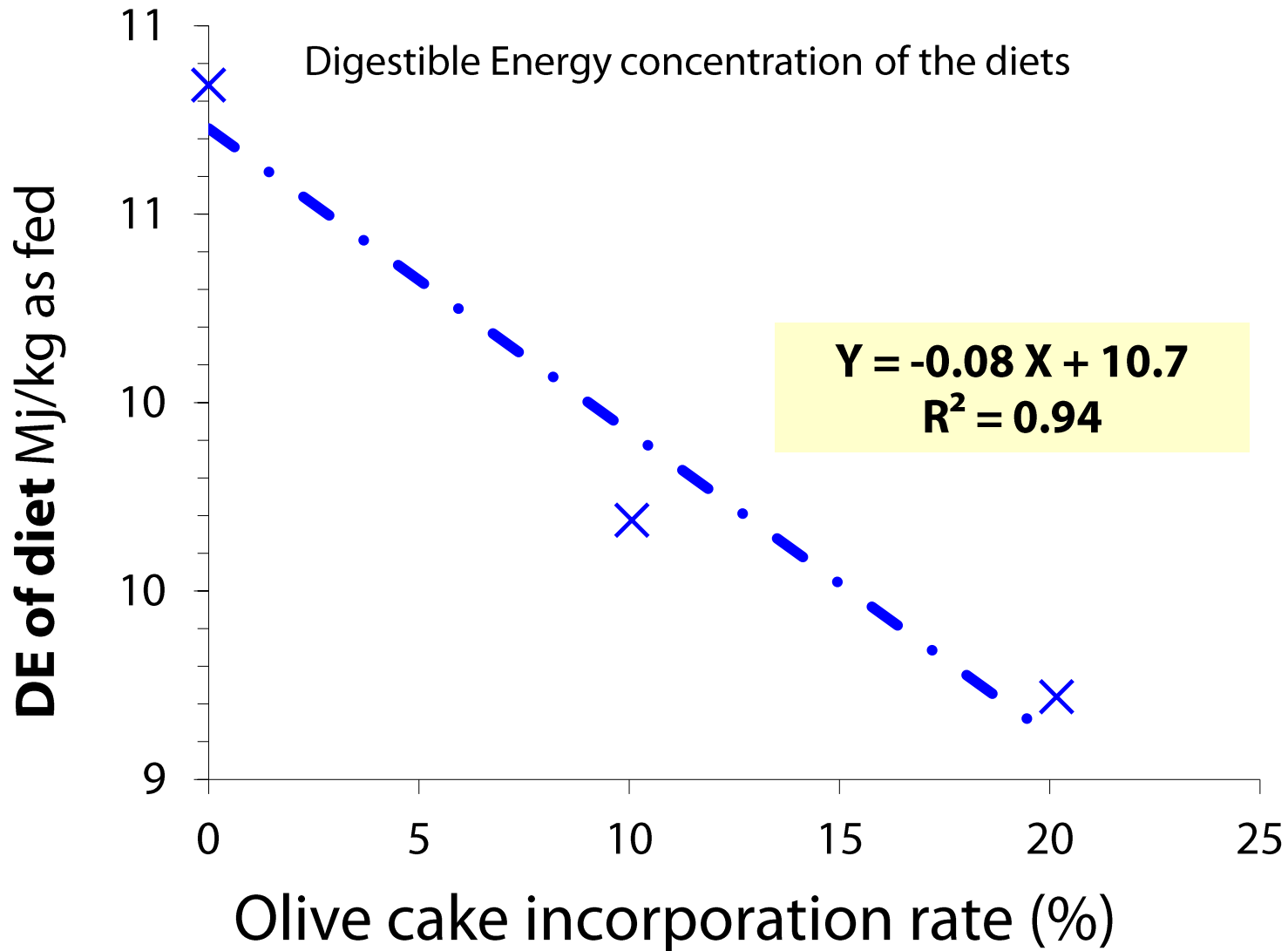
N= 12 rabbits/group, housed individually

Fecal digestibility according to TSOC incorporation

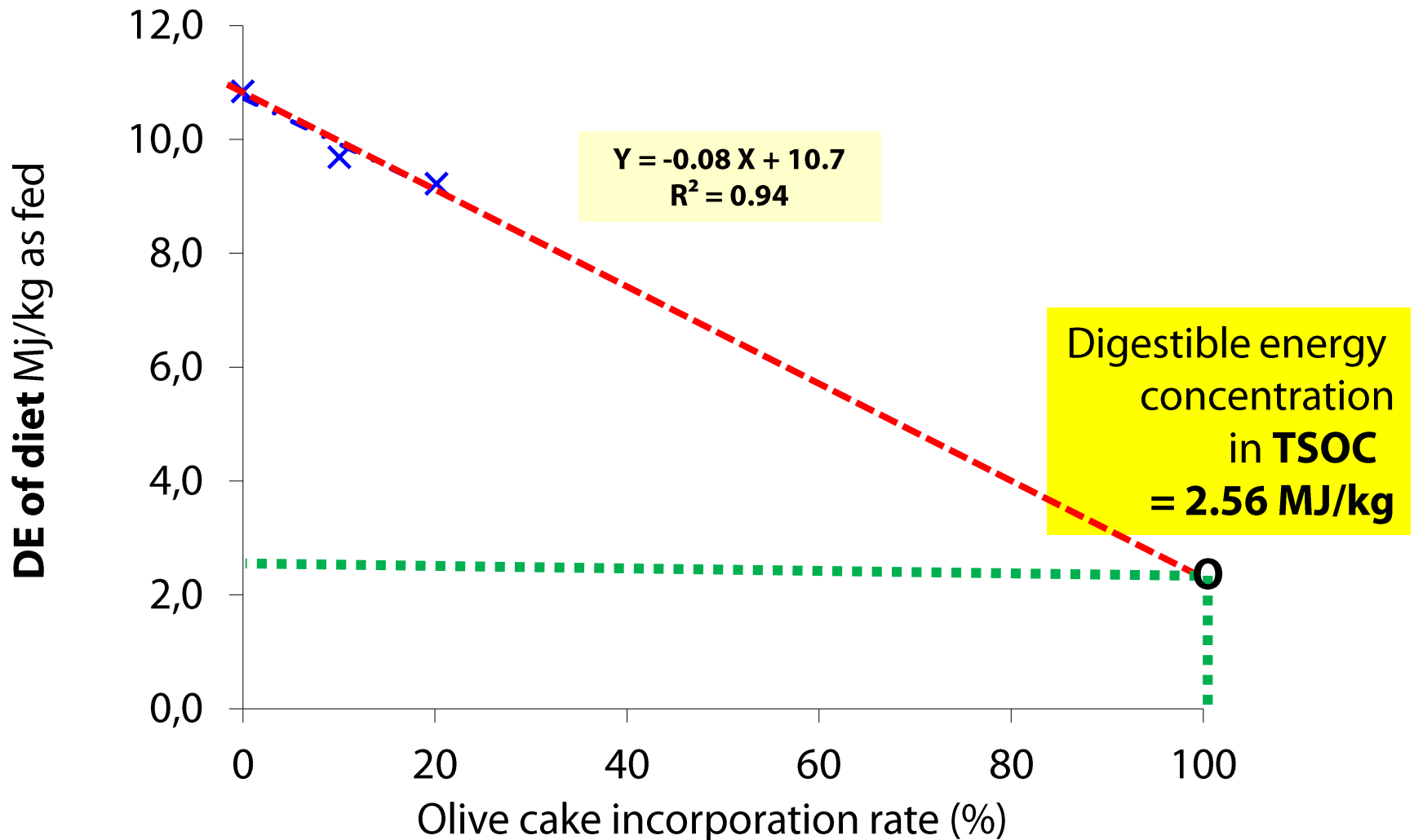


Expected digestibility decrease with TSOC incorporation.

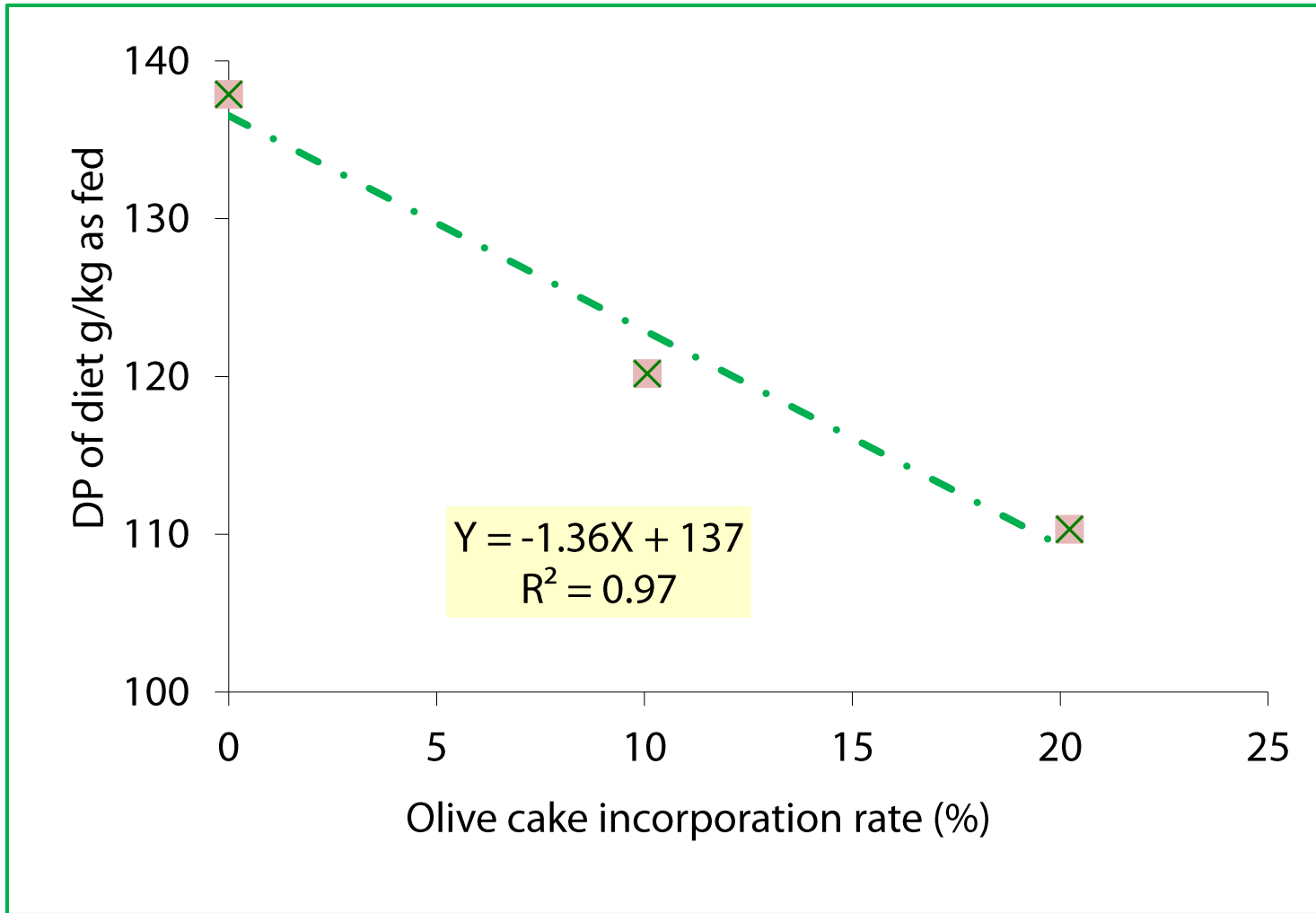
Nutritive value TSOC = content in Digestible Energy
and in Digestible protein



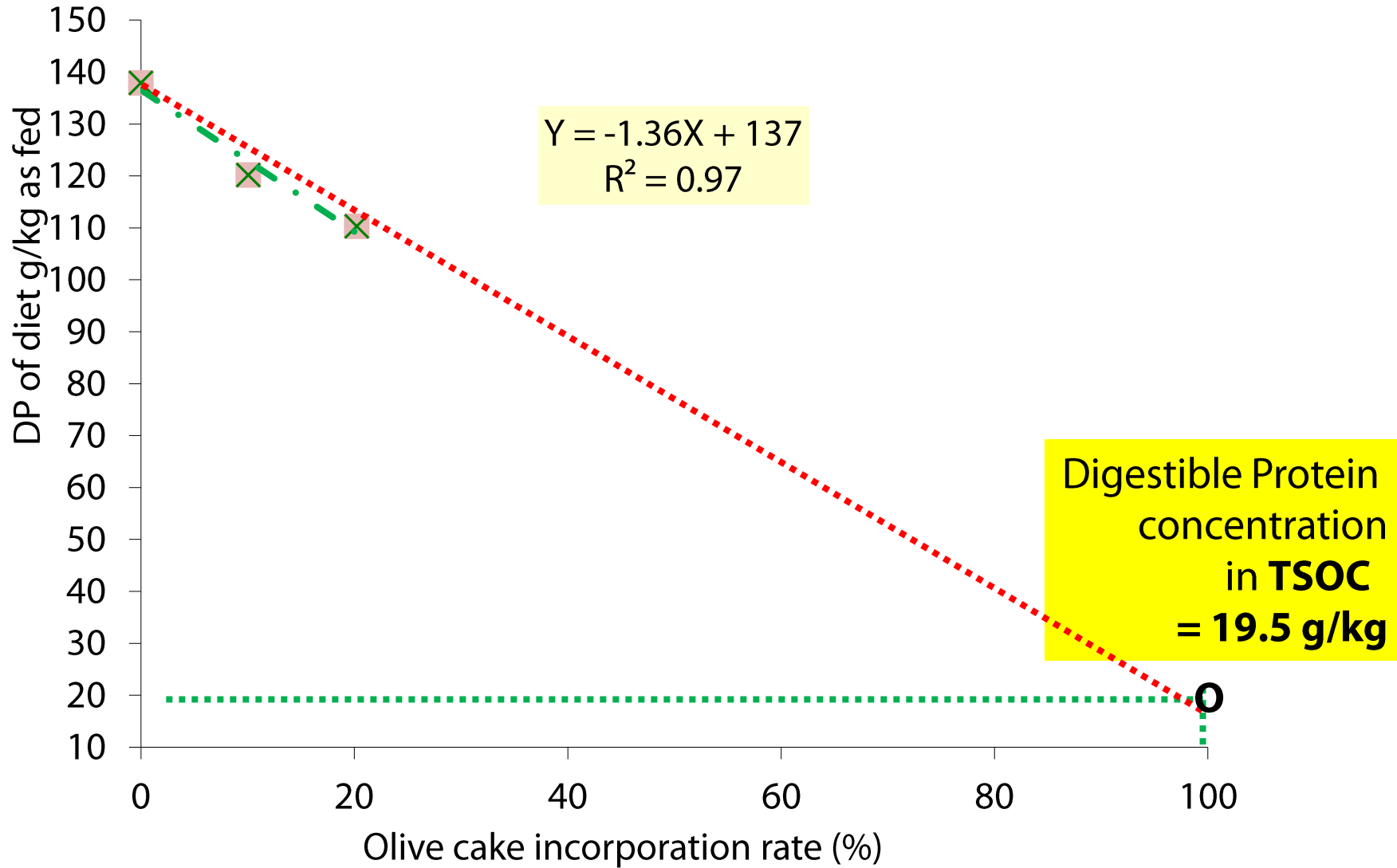
DE content of TSOC => extrapolation to 100%



Digestible Protein concentration of the diets



DP content of TSOC => extrapolation to 100%



Nutritive value of three stage olive cake for the growing rabbit

TSOC

Digestible energy	2.56 MJ/kg 611 kcal / kg
Digestibility of energy, %	13
Digestible protein, g/kg brut	19.5
Digestibility of proteins, %	37.5

Chemical composition of thee stage olive cake & comparison with a crude olive cake (COC)

g/ kg DM	TSOC	COC	OC*
Crude protein (N x 6.25)	60	64	100
Crude fat	74	82	92
Crude fibre (Weende)	470	455	258
NDF	787	707	640
ADF	554	530	525
ADL	243	242	

* : Fernandez-Carmona, 1996

Nutritive value of olive cakes for the growing rabbit

	TSOC Calculated	COC** Dorbane <i>et al.</i> , 2016	Fernandez- Carmona <i>et al.</i> , 1996*
Digestible energy, MJ/kg DM	2.56	2.83	7.10
Digestible proteins content, g/kg DM	19.5	24.4	9.7
Protein digestibility, %	37.5	46.6	

** COC = crude olive cake

* Direct measurement = 98% OC in the diet

Conclusion

- **Chemical composition** with a high interest for the growing rabbit :

Rich in Lignins: 240 g/kg DM

Good lignocellulose source

Olive cake could be considered as a high fibre source for the growing rabbit with a low protein and energy content.



- Determine the optimum inclusion rate of three stage olive cake in growing rabbit.
- Trial on performances : growth & FCR values.
- Effect of olive cake on the health of rabbit.

Thank for your attention



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