Research Note

COMPLETE DIETS FOR HORSES[1, 2]

Complete-type diets, containing 87% locally produced ingredients, were developed and evaluated with Paso Fino and Thoroughbred horses. Once the prototype diet was accepted by a Paso Fino horse, with no concomitant colic, compactation, or any other digestive disturbance resulting, it was studied further with Thoroughbred horses.

Nine Thoroughbred horses were distributed at random into three groups:

Group A – Offered pangola hay ad libitum + 15 pounds/horse/day of colt developer.

Group B – Offered 30 pounds/horse/day of a complete diet containing 50% pangola-star mixed hay.

Group C – Offered 30 pounds/horse/day of a complete diet containing 50% sudan-sudex hay.

A transition period of 27 weeks preceded the 5-week experimental period. During the transition period preliminary observations and adjustments were made to insure that the horses could maintain their stamina and general physical condition. They were exercised vigorously 2–3 hours/day on the average, as compared with about three times a week for about 30 minutes/day for a race horse in training-racing.

The prototype diet used is shown in the following tabulation, while the weight data appear in table 1.

Ingredients[3]	%
A) Locally produced	
Ground hay	50.0
Tuna fishmeal	16.0
Cane molasses	20.0
Ground NaCl	1.0
B) Imported	
Ground yellow corn	13.0
Vitamin A palmitate	4 oz/ton (1000 I.U./lb of feed)
C) Chemical composition	

[1] Manuscript submitted to the Editorial Board December 3, 1976.

[2] Conducted under contract and with the help of Escuela Vocacional Hípica, Administración del Deporte Hípico, Hipódromo El Comandante; and Molinos de Puerto Rico.

[3] For the diet containing 50% pangola-star hay, whose crude protein content was 6.1%. The sudan-sudex hay contained 7.5% crude protein; thus, minor adjustments in the tuna fishmeal and corn content became necessary.

Fraction	Content *Calculated* %	*Analyzed* %
Dry matter	90.0	90.0
Crude protein	12.0	15.6
TDN	55.0	–
Crude fiber	15.5	10.6
Calcium	1.5	1.6
Phosphorus	0.8	1.2

The diets produced were palatable and once the horses were accustomed to the bulky mash diet, they would consume within 24 hours all the 30-pound rations offered at once.

A level of molasses as high as 20% in the diet was imperceptible visually, because it was absorbed by the ground hay present. Dustiness was minimized, but not totally eliminated, by this molasses level.

A portion of the diet was pelletized and the dustiness problem was partially solved when a small pellet size was used. A one-inch circumfer-

TABLE 1.—*Horses' average weight in pounds (kg)*[1]

Group number	Beginning transition	Beginning of the experiment	End of the experiment	Net gain
1	943 (429)	1000 (455)	1012 (460)	12 (5.5)
2	991 (450)	1022 (465)	1032 (469)	10 (4.5)
3	1038 (472)	1043 (474)	1055 (480)	12 (5.5)

[1] The transition period lasted 27 weeks. The experimental period lasted 5 weeks.

ence pellet would probably have solved the dustiness, the excess bulk, and the excess waste associated with offering the diet as mash or in the small pellet form.

No digestive disturbances became apparent when a diet with such high forage and fiber content was offered. The horses were allowed to consume it at will within the subsequent 24 hours. The feces produced were semi-loose and no compactation nor colic occurred. Free-choice eating such a diet, contrary to published recommendations, proved to be safe, simple, and economical from the management standpoint.

Contrary to a prevalent misconception, star grass (*Cynodon mlenfuensis*) caused no toxicity nor digestive disturbances when fed to horses as hay in levels as high as 50% of the total ration (about 15 pounds/horse/day).

Excessive urination was observed from the horses receiving the complete diets, and an associated bedding management problem resulted. The logical explanation seems to be that the condition may be a result of the level of NaCl present in the diets consumed when compared with the lack of salt supplementation in the original standard feeding system

used. The minimum NaCl requirements of horses under given work stress conditions in a tropical environment need to be established.

All three systems of feeding sustained and/or increased the weight of all horses. It could be concluded then, that even with highly physiologically sensitive horses as are Thoroughbreds continuously exposed to excessive work stress, a very simple complete diet based predominantly on locally produced hays and other ingredients, including tuna fishmeal instead of soybean meal, but no oats, proved to be, from the management standpoint, a simpler way of feeding horses.

Manuel Soldevila
Department of Animal Husbandry
Renato Irizarry
Lajas Substation