

# horse science



**4-H HORSE PROGRAM**

NAME \_\_\_\_\_

ADDRESS \_\_\_\_\_

CLUB \_\_\_\_\_

## **4-H HORSE PROGRAM**

### **HORSE SCIENCE**

This educational material has been prepared for 4-H use by the Cooperative Extension Services of the U.S. Department of Agriculture and State Land-Grant Universities in cooperation with the National 4-H Council and the American Quarter Horse Association.

Trade or brand names used in the publications are used only for the purpose of educational information. The information given herein is supplied with the understanding that no discrimination is intended and no endorsement of products or breeds of horses by the Federal Extension Service or State Cooperative Extension Services is implied, nor does it imply approval of products or breeds of horses to the exclusion of others which may also be suitable.

This material was originally published by the National 4-H Council, 7100 Connecticut Avenue, Chevy Chase, Maryland 20815.

Programs and educational materials of National 4-H Council are available to all persons regardless of race, color, sex, age, religion, national origin or handicap. Council is an equal opportunity employer.



**Table 1. Daily Nutrient Requirements of Horses Based on mature weight of 1000 to 1200 lbs**

	Daily Feed Per Horse lbs.	Digestible Protein lbs.	Total Digestible Nutrients lbs.	Calcium grams	Phosphorus grams	Vitamin A Int'l. Units*
400 pound weaning - (age about 6 months)	11 to 12	1.0 to 1.2	8.0 to 9.0	33.0	21.0	12,000
600 to 700 pound yearling	13 to 14	1.6 to 1.8	9.0 to 10.0	33.0	21.0	16,000
800 to 1000 pound 2 year old	15 to 16	1.3 to 1.5	10.0 to 11.4	17.0	17.0	25,000
1000 lb. mature idle horse - (less than 1 hour riding daily)	16 to 17	0.6 to 0.8	6.0 to 8.1	12.0	12.0	8,000
1000 lb. horse - light work - 1 to 3 hours riding daily	16 to 17	0.8 to 1.0	8.0 to 11.0	24.0	21.0	18,000
1000 lb. horse - medium work - 3 to 5 hours riding daily	19 to 20	0.9 to 1.1	11.0 to 14.0	24.0	21.0	18,000
1000 lb. horse - hard work - more than 5 hours riding daily	22 to 23	1.2 to 1.4	14.0 to 17.0	24.0	21.0	18,000
1000 lb. breeding stallion (moderate breeding)	20 to 22	1.6 to 1.7	13.0 to 15.0	60.0	40.0	32,000
1000 lb. bred mare - light work	18 to 20	1.1 to 1.3	10.0 to 12.0	24.0	24.0	24,000
1000 lb. lactating mare	28 to 30	1.9 to 2.1	18.0 to 20.0	40.0	40.0	40,000

\* Horses can use carotene to produce Vitamin A at the rate of 400 International Units of Vitamin A from 1 mg. of carotene

Your 4-H horse project offers an opportunity for you to learn how to balance a ration. To accomplish this, you must be accurate in your addition, multiplication, division and subtraction. You will be working with percentages, so be sure and watch decimal placings.

You can use Nutrient Requirement Tables in two ways: (1) to check the ration being fed to see if it is balanced, and (2) to formulate an adequate ration for your horse.

Follow this procedure in checking through the example ration and in working out a ration for your horse on the blank sheet.

- 1) Determine the age, weight and type of work your horse is doing.
- 2) Fill in Section 3 of the enclosed work sheet from Table 1, Daily Nutrient Requirements of Horses.
- 3) List available feeds in Section 1 of your work sheet, giving attention to each column. If you have actual analysis on your feeds, use these. If not, take average analysis from Table 2.
- 4) Weigh the amount of each feedstuff being fed daily. If a mixed feed is being used, you can either find out the amount of each feed ingredient that is in the mixture or use analysis of the mixture from the feed tag.

5) Multiply each figure in Section 1 by the pounds fed daily (Section 2, column 1). Record the results in the appropriate columns of Section 2 on your work sheet.

6) Add the columns in Section 2. This gives the total amount of each nutrient in your horse ration.

7) Check these totals against the "Daily Nutrient Requirements" listed in Section 3 of your work sheet. If the "requirement" is more than the totals in your ration, you will know that your ration is inadequate. Your next step is to find a feed ingredient that is a good source of the deficient nutrient and either substitute this new feedstuff for one you are now using or add this new ingredient to your horse ration. After doing this, you should refigure your totals to be sure other nutrients are not out of balance. Excesses of some nutrients can interfere with use of others in addition to being a waste of feed and money. For example, excess calcium can prevent complete utilization of phosphorus in a ration.

**Table 2. Average Nutrient Content of Feeds**

<b>Feed</b>	<b>Digestible Protein %</b>	<b>Total Digestible Nutrients %</b>	<b>Calcium grams per lb.</b>	<b>Phosphorus grams per lb.</b>	<b>Carotene mg. per lb. ‡</b>
<b>Concentrates</b>					
Rolled Oats	11.0	75.0	0.41	1.95	0.0
Corn No. 2	7.8	85.0	0.09	1.22	1.3
Rolled Milo	9.3	83.0	0.14	1.22	0.0
Rolled Barley	10.6	80.0	0.41	2.13	0.0
Wheat Bran	12.3	65.0	0.63	5.90	1.2
Wheat	14.2	75.0	0.22	1.86	1.4
Soybean Oil	42.0	78.0	1.27	2.77	0.0
Linseed Meal	30.0	75.0	1.60	3.20	0.0
Molasses	0.0	53.7	3.35	0.36	0.0
<b>Roughages</b>					
Timothy	4.6	51.0	1.04	0.91	10.0
Oat Hay (green)	5.0	47.3	0.95	0.86	14.0
Wheat Hay	3.8	46.7	0.95	0.86	14.0
Smooth Brome	6.1	46.3	1.63	1.18	16.7
Crested	5.4	51.0	1.00	0.60	2.2
Kentucky Blue	6.5	51.0	1.00	0.94	20.0
Prairie Hay	3.7	43.1	2.80	0.56	14.0
Clover-Timothy	5.5	46.2	4.00	0.86	6.1
Alfalfa	12.4	50.3	6.60	1.06	16.8
Ladino Clover	13.0	44.8	6.20	1.60	73.1
Red Clover	7.6	44.3	6.13	0.86	16.7
Mixed Grass	5.1	53.8	2.65	0.80	9.0
Reed Canary	4.8	45.1	1.63	0.82	7.0
Oat Straw	0.7	44.7	0.86	0.45	0.0

‡ Convert Carotene to International Units of Vitamin A by multiplying by 400

### BALANCING HORSE RATIIONS - WORK SHEET

Animal Mature Horse Weight 1050 Age 7 Work Classification Medium

Section 1

Composition of Feeds

*3 to 5 hours riding daily*

Feed	Digestible Protein %	T.D.N. %	Calcium grams per lb.	Phosphorus grams per lb.	Vitamin A International Units per lb. of feed
<u>Timothy</u>	<u>4.6</u>	<u>51.0</u>	<u>1.04</u>	<u>0.91</u>	<u>4000</u>
<u>Barley</u>	<u>10.6</u>	<u>80.0</u>	<u>0.41</u>	<u>2.13</u>	<u>—</u>
<u>Molasses</u>	<u>0.0</u>	<u>53.7</u>	<u>3.35</u>	<u>0.36</u>	<u>—</u>

Section 2

Quantity of Nutrients in Feeds Being Used

Feed	Lbs. fed	Digestible Protein lbs.	T.D.N. lbs.	Calcium gm.	Phosphorus gm.	Vitamin A I.U.
<u>Timothy</u>	<u>12</u>	<u>0.55</u>	<u>6.1</u>	<u>12.5</u>	<u>10.9</u>	<u>48000</u>
<u>Barley</u>	<u>5</u>	<u>0.53</u>	<u>4.0</u>	<u>2.1</u>	<u>10.7</u>	<u>—</u>
<b>Total</b>	<u>17</u>	<u>1.08</u>	<u>10.1</u>	<u>14.6</u>	<u>21.6</u>	<u>48000</u>

Section 3

Daily Nutrient Requirements  
(Based on air-dry feed containing 90 percent dry matter)

Size and Use of Horse	Lbs. fed	Digestible Protein lbs.	T.D.N. lbs.	Calcium gm.	Phosphorus gm.	Vitamin A I.U.
<u>1050# Mod. Work</u>	<u>19 to 20</u>	<u>0.9 to 1.1</u>	<u>11.0 to 14.0</u>	<u>24.0</u>	<u>21.0</u>	<u>18000</u>

Section 4

Balancing Ration and Meeting Requirements

Total from Section 2	<u>17</u>	<u>1.08</u>	<u>10.1</u>	<u>14.6</u>	<u>21.6</u>	<u>48000</u>
Ration deficiency	<u>2 to 3</u>	<u>—</u>	<u>0.9 to 3.9</u>	<u>9.4</u>	<u>—</u>	<u>—</u>
Supplement <u>Molasses</u>	<u>3</u>	<u>—</u>	<u>1.6</u>	<u>10.1</u>	<u>1.1</u>	
Balanced ration	<u>20</u>	<u>1.08</u>	<u>11.7</u>	<u>24.7</u>	<u>22.7</u>	<u>48000</u>

## BALANCING HORSE RATIIONS - WORK SHEET

Animal \_\_\_\_\_ Weight \_\_\_\_\_ Age \_\_\_\_\_ Work  
 Classification \_\_\_\_\_

### Section 1 Composition of Feeds

Feed	Digestible Protein %	T.D.N. %	Calcium grams per lb.	Phosphorus grams per lb.	Vitamin A International Units per lb. of feed

### Section 2 Quantity of Nutrients in Feeds Being Used

Feed	Lbs. fed	Digestible Protein lbs.	T.D.N. lbs.	Calcium gm.	Phosphorus gm.	Vitamin A I.U.
<b>Total</b>						

### Section 3 Daily Nutrient Requirements (Based on air-dry feed containing 90 percent dry matter)

Size and Use of Horse	Lbs. fed	Digestible Protein lbs.	T.D.N. lbs.	Calcium gm.	Phosphorus gm.	Vitamin A I.U.

### Section 4 Balancing Ration and Meeting Requirements

<b>Total from Section 2</b>						
<b>Ration deficiency</b>						
<b>Supplement</b>						
<b>Balanced ration</b>						





1. This document is section 10 of 14 of 4HHS01, which supersedes CO 201, one of a series of the 4-H Youth Development Program, Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida. Date first printed August 1965. Date revised June 1989. Please visit the FAIRS Website at <http://hammock.ifas.ufl.edu>.
2. R. D. Setzler, Washington State University. Debbie Glauer, member of 4-H Animal Science Design Team, Department of Family, Youth and Community Science, Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida, Gainesville, 32611.



UNIVERSITY OF  
FLORIDA

Cooperative Extension Service  
Institute of Food and Agricultural Sciences

COOPERATIVE EXTENSION SERVICE, UNIVERSITY OF FLORIDA, INSTITUTE OF FOOD AND AGRICULTURAL SCIENCES, Christine Taylor Waddill, Director, in cooperation with the United States Department of Agriculture, publishes this information to further the purpose of the May 8 and June 30, 1914 Acts of Congress; and is authorized to provide research, educational information and other services only to individuals and institutions that function without regard to race, color, age, sex, handicap or national origin. The information in this publication is available in alternate formats. Single copies of extension publications (excluding 4-H and youth publications) are available free to Florida residents from county extension offices. Information on copies for out-of-state purchase is available from Publications Distribution Center, University of Florida, PO Box 110011, Gainesville, FL 32611-0011. Information about alternate formats is available from Educational Media and Services, University of Florida, PO Box 110810, Gainesville, FL 32611-0810. This information was published June 1989 as CO 201, which is superseded by 4HHS01, Florida Cooperative Extension Service.