

ANSC 324
Spring, 2007
Homework #3
15 Points

Due Date: one week from today.

I. Premixes

You are the head poultry nutritionist for Agri-Minerals, a company that specializes in trace mineral premixes for the livestock industry. Your responsibilities include formulating premixes to be mixed at your plant. These mineral premixes are often blended with a vitamin premix to make a base mix that is sold to your clientele for inclusion in the diets they make. In addition, to overseeing the formulation of these base mixes, you serve as a technical advisor to your clientele. Broiler Specialties, Inc., a long standing client of Agri-minerals, has contacted your office and requested that you supply them with a base mix that will meet the vitamin and trace mineral requirements of their 0-3 wk old broilers. Use the ingredients below to formulate a base mix that includes both vitamins and trace minerals. Keep in mind, that since this is a base mix with vitamins and trace minerals mixed, you need to be concerned about the break down of vitamins. Therefore, you should add vitamins at a level of 2x NRC. The vitamin premix is supplied to your company as a premix. You will need to determine how much vitamin premix should be added to your base mix to meet the birds' requirements when the premix is added to the diet at a level of 5 lb/ton. Rice hulls are available as a carrier for your base mix. Complete the attached table which will provide your mill manager with the percent inclusion of each ingredient in addition to the amount of each ingredient needed to mix a 1 ton base mix.

Trace mineral ingredients:

Ferric Chloride, FeCl_3
Manganese Sulfate, MnSO_4
Sodium Selenite, Na_2SeO_3
Zinc Carbonate, ZnCO_3
Cupric Sulfate, CuSO_4
Potassium Iodate, KIO_3

Vitamin premix provided by Nutri-Solutions, Inc.:

<u>Vitamin</u>	<u>IU or mg per Pound of Premix</u>
A	14,400,000 IU
D ₃	1,400,000 ICU
E	80,000 IU
K	3650 mg
Riboflavin	12,800 mg
Pantothenic Acid	40,000 mg
Niacin	60,000 mg

Table 1. Base mix formula.

Ingredient	% of premix	lbs. per 2,000 lb batch
Ferric Chloride, FeCl_3		
Manganese Sulfate, MnSO_4		
Sodium Selenite, Na_2SeO_3		
Zinc Carbonate, ZnCO_3		
Cupric Sulfate, CuSO_4		
Potassium Iodate, KIO_3		
Vitamin premix		
Rice Hulls		

II. Broiler Starter Formulation with Brill.

As a technical service, formulate a broiler starter diet (0-3 wk) for Broiler Specialties, Inc. using the premix that you formulated above at an inclusion rate of 5 lb/ton and the ingredients listed below. Also, note the particular ingredient constraints that are to be used. Set minimum nutrient requirements based on the NRC sheet for calcium, available phosphorus (nonphytate P), methionine, lysine, and tryptophan. In addition, place upper limits such that methionine and lysine do not exceed the NRC minimum recommendation by more than 5%. The energy density should be set at a minimum of 3200 kcal metabolizable energy (ME) **per kg** of diet.

Print your formulation and double check all specifications used. Be sure you save this diet with a unique name so that you can recall it later if needed. **Note: You do not need to modify the vitamin or trace mineral profile of ingredient #720. Simply use it to reserve the 5 lb/ton of space needed for this premix.**

<u>Ingredients Available</u>	<u>Lower Limit (%)</u>	<u>Upper Limit (%)</u>
Ground Corn		
Meat and Bone Meal	4.0	6.0
Soybean Meal, 50% crude protein		
Premix		
Choice White Grease		9.0
Limestone		
Dicalcium Phosphate		
Salt	0.35	0.35
DL-Methionine (contains 98% methionine)		

NOTE: PRINT ALL FORMULATIONS AND CHECK NUTRIENT COMPOSITIONS AGAINST THE NRC RECOMMENDED MINIMUM. YOU NEED ONLY CHECK THE NUTRIENTS FOR WHICH YOU SET A MINIMUM OR MAXIMUM CONSTRAINT (I.E., CRUDE PROTEIN, CALCIUM, ETC.)