

## Comparison of Selected Koi Foods Notes Mary Nielsen

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Mary Nielsen

The following is a listing of nineteen koi foods, of which eighteen are currently available in the USA. I took the ingredients and Guaranteed Analyses from the companies' product pages, or retailers' listings, or from the actual packages. I called a few companies to ask about certain percentages that were not provided, mostly ash and moisture.

To calculate the prices per pound, I used the best available online price on the largest volume typically purchased by the hobbyist, but these varied widely; for example, Ultra Balance is available in a 40-lb bag, but I could only find Tetra in a 4.85-lb size. My searches were by no means exhaustive, but I hope typical of the average busy hobbyist shopping for a good price.

The **yellow** highlighting indicates carbohydrate ingredients, which are typically converted into fat by koi; the **pink** indicates terrestrial protein ingredients, and I don't know how digestible those are. Ingredients highlighted in **green** are plant proteins, which contain heavy percentages of carbohydrates. The significance of the total percentage of guaranteed-analysis ingredients lies in the remaining, unenumerated percentage, which is generally carbohydrates, e.g. a food that has 60% guaranteed-analysis ingredients would normally have the remaining 40% in unspecified carbohydrates.

This analysis does not purport to be scientific; it is for my own use, and though I have tried to be accurate, there is a certain amount of trying to compare apples and oranges.

### Nijikawa

#### Growth:

45% protein, 78.4% guaranteed-analysis ingredients, \$5.33/lb

Fish Meal, **Wheat**, **Poultry Meal**, **Pea Protein Concentrate**, Fish Oil, **Poultry Fat**, **Canola Seeds**, **Feather meal**, Canola Oil, **Meat Meal**, **Dried Beans, Peas**, Yeast Extract, Nucleotides, L-Lysine Monohydrochloride, Vitamin Premix (L-Ascorbyl-2-Polyphosphate, Vitamin E Supplement, Menadione Sodium Bisulfite Complex, Calcium Pantothenate, Biotin, Riboflavin Supplement, Pyridoxine Hydrochloride, Vitamin D3 Supplement, Folic Acid, Vitamin B12 Supplement, Vitamin A Supplement, Thiamine Mononitrate), Mineral Premix (Calcium Carbonate Flour, Magnesium Oxide, Ferrous Sulfate, Zinc Sulfate, Manganese Sulfate, Sodium Selenite, Copper Sulfate, Calcium Iodate, Cobalt carbonate).

#### 4 Season:

35% protein, 66.6% guaranteed-analysis ingredients, \$5.00/lb

Wheat, Peas, Fish Meal, Meat Meal, Poultry Meal, Pea Protein Concentrate, Feather Meal, Fish Oil, Canola Seeds, Canola Oil, Blood Meal, Nucleotides, Dried Yeast, Vitamin Premix (L-Ascorbyl-2-Polyphosphate, Vitamin E Supplement, Menadione Sodium Bisulfite Complex, Calcium Pantothenate, Biotin, Riboflavin Supplement, Pyridoxine Hydrochloride, Vitamin D3 Supplement, Folic Acid, Vitamin B12 Supplement, Vitamin A Supplement, Thiamine Mononitrate), Mineral Premix (Calcium Carbonate Flour, Magnesium Oxide, Ferrous Sulfate, Zinc Sulfate, Manganese Sulfate, Sodium Selenite, Copper Sulfate, Calcium Iodate, Cobalt carbonate), L-Lysine Monohydrochloride, DL-Methionine, L-Threonine, Calcium Propionate, Ascorbic acid and Astaxanthin.

## Kenzen

### Primary diet:

49% protein, 78% guaranteed-analysis ingredients, \$7.50/lb

Herring Meal, Potato Starch, Whole Dried Egg, L-Lysine, DL Methionine, Yeast Extract, Fat Product (source of DHA from Algae), Fructooligosaccharides, N-Dimethylglycine (DMG), L-Tryptophan, L-Ascorbyl-2-Polyphosphate (source of stabilized vitamin C), Rosemary Extract, Mixed Tocopherols, L-Carnitine, Citric Acid, Inositol, Vitamin E supplement, Biotin, Niacinamide, Calcium Pantothenate, Riboflavin, Folic acid, Vitamin B12 Supplement, Manganous Oxide, Zinc Oxide, Ferrous Sulfate, Thiamine Mononitrate, Vitamin A acetate, Calcium Iodate, Pyridoxine Hydrochloride, Vitamin D3 Supplement, Selenium Yeast.

## Star Milling Ultra Balance

### Growth:

35% protein, 61.9% guaranteed-analysis ingredients, \$3.60/lb

White Fish Meal, Wheat Flour, Ground Wheat, Corn Gluten Meal, Fish Oil, Lecithin, Shrimp Meal, Spirulina, Mono-Dicalcium Phosphate, Dried Saccharomyces cerevisiae, Propionic Acid (a preservative), Lignin Sulfonate, Mannan Oligosaccharides, Marigold Extract, Choline Chloride, Taurine, Canthaxanthin, Vitamin C (AsPP L-ascorbyl-2-polyphosphate), Zinc Proteinate, Manganese Proteinate, Copper Proteinate, Cobalt Proteinate, Ferrous Sulfate, D-Alpha Tocopherol Acetate, Zinc Sulfate, Magnesium Oxide, Yucca Schidigera Extract, Niacin Supplement, D-Calcium Pantothenate, Copper Sulfate, Vitamin K(Menadione Sodium Bisulfite Complex), Thiamine Mononitrate, Riboflavin Supplement, Pyridoxine Hydrochloride, Vitamin A Acetate, Vitamin D Supplement, Biotin Supplement, Selenium Yeast, Vitamin B12 Supplement, Folic Acid, Cobalt Carbonate.

### Maintenance:

30% protein, 56.9% guaranteed-analysis ingredients, \$3.64/lb

White Fish Meal, **Wheat Flour, Ground Wheat, Wheat Germ Meal**, Fish Oil, Lecithin, Shrimp Meal, Spirulina, Mono-Dicalcium Phosphate, Dried Saccharomyces cerevisiae, Propionic Acid (a preservative), Lignin Sulfonate, Mannan Oligosaccharides, Marigold Extract, Choline Chloride, Taurine, Canthaxanthin, Vitamin C (AsPP L-ascorbyl-2-polyphosphate), Zinc Proteinate, Manganese Proteinate, Copper Proteinate, Cobalt Proteinate, Ferrous Sulfate, D-Alpha Tocopherol Acetate, Zinc Sulfate, Magnesium Oxide, Yucca Schidigera Extract, Niacin Supplement, D-Calcium Pantothenate, Copper Sulfate, Vitamin K(Menadione Sodium Bisulfite Complex), Thiamine Mononitrate, Riboflavin Supplement, Pyridoxine Hydrochloride, Vitamin A Acetate, Vitamin D Supplement, Biotin Supplement, Selenium Yeast, Vitamin B12 Supplement, Folic Acid, Cobalt Carbonate.

## **FD Koi Food**

### **Primo Plus:**

43% protein, 76% guaranteed-analysis ingredients, \$6.94/lb

Fish Meal, **Bran, Wheat Flour**, Stevia Powder, **Gluten Meal**, Brewers Dried Yeast, Paprika, **Alfalfa**, Krill Meal, Garlic Powder, Aqua-Vitamins, Minerals

### **Build Up Extra:**

36% protein, 65% guaranteed-analysis ingredients, \$4.84/lb

Fish Meal, **Bran, Wheat Flour, Gluten Meal**, Brewers Dried Yeast, **Alfalfa**, Krill Meal, Stevia Powder, Garlic Powder, Aqua-Vitamins, Aqua-Minerals

## **Saki-Hikari**

### **Growth:**

40% protein, 79.7% guaranteed-analysis ingredients, \$7.57/lb

Fish Meal, **Wheat Flour, Wheat Germ Meal**, Brewer's Dried Yeast, Fish Oil, **Soybean Meal**, Krill Meal, **Gluten Meal**, Dried Seaweed Meal, Bacillus Subtilis, **Dried Bakery Product**, Protease, Garlic, Astaxanthin, Monosodium Glutamate, DL-Methionine, Vitamin A Oil, Vitamin D3 Supplement, Vitamin E Supplement, Menadione Sodium Bisulfite Complex (source of Vitamin K), Choline Chloride, L-Ascorbyl-2-Polyphosphate (Stabilized Vitamin C), Inositol, Calcium Pantothenate, Riboflavin, Thiamine Mononitrate, Pyridoxine Hydrochloride, Niacin, Folic Acid, Biotin, Ferrous Sulfate, Magnesium Sulfate, Zinc Sulfate, Manganese Sulfate, Cobalt Sulfate, Calcium Iodate, Aluminum Hydroxide, Sodium Acid Pyrophosphate, Salt.

**Multiseason:**

37% protein, 70% guaranteed-analysis ingredients, \$7.99/lb

Fish meal, wheat germ meal, milled rice, rice bran, brewers dried yeast, dried bakery product, soybean meal, roasted barley flour, spirulina, krill meal, fish oil, lecithin, dried seaweed meal, DL-methionine, garlic, dried B. subtilis fermentation product, astaxanthin, choline chloride, vitamin E supplement, L-ascorbyl-2-polyphosphate (stabilized vitamin C), inositol, D-calcium pantothenate (vitamin B<sub>5</sub>), riboflavin, vitamin A supplement, thiamine mononitrate, pyridoxine hydrochloride, niacin, menadione sodium bisulfite complex (source of vitamin K activity), folic acid, vitamin D<sub>3</sub> supplement, biotin, disodium phosphate, salt, ferrous sulfate, magnesium sulfate, zinc sulfate, manganese sulfate, cobalt sulfate, copper sulfate, calcium iodate, selenium yeast.

**Blackwater Creek****Gold-N:**

40% protein, 76% guaranteed-analysis ingredients, \$5.14/lb

Fish Meal, Wheat Flour, Shrimp Meal, Dried Kelp, Rice Bran, Soy Protein Isolate, Fish Oil, Dehulled Soybean Meal, Corn Gluten Meal, Ground Wheat, Poultry By-Product Meal, Blood Meal, Spinach, Propionic Acid (a preservative), Yeast Culture, Ascorbic Acid, Beet Powder, Dried Bacillus licheniformis Fermentation Product, Brewer's Dried Yeast, Asparagus, Anise, Vitamin A Supplement, Vitamin D3 Supplement, Vitamin E Supplement, Vitamin B12 Supplement, Riboflavin Supplement, Niacin Supplement, Calcium Pantothenate, Menadione Sodium Bisulfate (source of Vitamin K activity) Folic Acid, Thiamine Mononitrate, Pyridoxine Hydrochloride, Biotin, Calcium Carbonate, Zinc Sulfate, Ferrous Sulfate, Magnesium Oxide, Manganese Sulfate, Copper Sulfate, Ethylenediamine Dihydriodide, Cobalt Sulfate, Sodium Selenite

**Cool Season:**

32% protein, 59% guaranteed-analysis ingredients, \$3.59/lb

Wheat middlings, Fish Meal, Ground Wheat, Corn Gluten meal, Rice Bran, Shrimp Meal, Yeast Culture, Propionic Acid (a preservative), Ascorbic Acid, Garlic Powder, Monosodium Glutamate, Calcium Carbonate, Zinc Sulfate, Ferrous Sulfate, Magnesium Oxide, Manganese Sulfate, Copper Sulfate, Ethylenediamine Dihydriodide, Cobalt Sulfate, Sodium Selenite, Vitamin A Supplement, Vitamin D3 Supplement, Vitamin E Supplement, Ascorbic Acid, Vitamin B12 Supplement, Riboflavin Supplement, Niacin Supplement, Calcium Pantothenate, Menadione Sodium Bisulfite Complex (source of Vitamin K activity), Folic Acid, Thiamine Mononitrate, Pyridoxine Hydrochloride, Biotin

## Dainichi

### Growth:

44% protein, 75.7% guaranteed-analysis ingredients, \$7.70/lb

White fish meal, wheat germ, wheat flour, krill, soybean meal, spirulina, brewer's yeast, powdered milk, calcium montmorillonite clay, vitamin mix, mineral mix, garlic, protease, natural gum

### All Season:

39% protein, 73.7% guaranteed-analysis ingredients, \$6.35/lb

White fish meal, wheat germ, whole wheat flour, krill, soybean meal, brewer's yeast, powdered milk, calcium montmorillonite clay, spirulina, vitamin mix, mineral mix, garlic, protease, natural gum

## Tetra

### Tetra Pond Growth Sticks:

43% protein, 63.1% guaranteed-analysis ingredients, \$4.84/lb

Wheat Flour, Fish Meal, Wheat Gluten, Soybean Oil, Potato Protein, Corn Starch, Corn Gluten, Shrimp Meal, Dried Yeast, Monobasic Calcium Phosphate, Lecithin, Algae Meal, Ascorbic Acid (Source of Vit. C), Riboflavin-5-Phosphate, Inositol, A-Tocopherol-Acetate, Niacin, L-Ascorbyl-2-Polyphosphate (Stabilized Vit. C), D-Calcium Pantothenate, Thiamine Mononitrate, Pyridoxine Hydrochloride, Vitamin A Palmitate, Menadione Sodium Bisulfite Complex, Cyanocobalamin, Cholecalciferol, Manganese Sulfate, Zinc Sulfate, Ferrous Sulfate, Cobalt Sulfate, Artificial Colors, Ethoxyquin as a Preservative

## EA

(This food is no longer available in the US, but was touted as being based on a koi's natural diet, "a mix of worms, crustacea and vegetation with NO fish meal added – because koi do not eat fish." I am adding it to the comparison to see how it stacks up against the others.)

### EAHealth:

36% protein, 59.8% guaranteed-analysis ingredients, not available in US

Vegetable protein\*, Crustacea, Vegetable oil, Squid, Seaweed, Honey, Brewer's yeast, Polychaete worm, Garlic, Vitamin/mineral premix Vitamin A5 500IU/kg, Vitamin D3 1800IU/kg,

Choline, Pyridoxine, Vitamin E 320 mg/kg, Stabilised Vitamin C, Niacin, Riboflavin, Thiamine, Vitamin K, Folic acid, Biotin, Vitamin B1, calcium sulphate.

\*Note: "Vegetable protein" is generally understood to be soybean meal, which is approximately 55% protein and 49% carbohydrates.

## Mizuho

Hi Growth: Fish Meal, Krill Meal, **Wheat Flour**, Fish Oil, **Tapioca Starch**, **Soy Meal**, **Wheat Germ**, **Potato Starch**, Nicotinic Acid, Pantothenic Acid, Folic Acid, Choline, Inositol, Biotin, Ferrous Sulfate, Ferrous Fumarate, Manganese Sulfate, Zinc Sulfate, Copper Sulfate, Cobalt Sulfate, Calcium Iodate, Ferrous Peptide, Calcium Biphosphate, Calcium Phosphate

Normal: Fish Meal, **Soybean Oil Cake**, **Rice Bran Oil Cake**, **Potato Starch**, **Wheat Flour**, **Corn Starch**, Calcium Phosphate, Fish Oil, Marigold Powder, Nicotinic Acid, Pantothenic Acid, Folic Acid, Choline, Inositol, Biotin, Ferrous Sulfate, Ferrous Fumarate, Manganese Sulfate, Zinc Sulfate, Copper Sulfate, Cobalt Sulfate, Calcium Iodate, Ferrous Peptide, Calcium Biphosphate, Calcium Phosphate, Ethoxyquin (a preservative)

## Tomigai

Spirulina: White Fish meal, Fish Meal, **Soy Isolate**, **Wheat Whole**, **Soybean Meal**, **Flour**, **Wheat Germ**, Spirulina, Squid meal, Shrimp Meal, Garlic Powder, Fish Oil, Vitamin Premix (Vitamin E Supplement, Ascorbic Acid, Inositol, Niacin Supplement, D-Calcium Pantothenate, Pyridoxine HCL, Riboflavin Supplement, Vitamin K (MSBC), Thiamine Mononitrate, Folic Acid, Vitamin A Supplement, Biotin, Vitamin D3 Supplement, Vitamin B12 Supplement), Trace Minerals, L-Ascorbyl-2-Polyphosphate, Choline Chloride, Calcium Propionate, ADM Bacillus

Taberu: White Fish meal, **Soybean Meal**, **Wheat Whole**, **Wheat Midds**, Fish Meal, **Wheat Germ**, **Soy Isolate**, Mono Calcium Phosphate, Fish Oil, Garlic Powder, Vitamin Premix (Vitamin E Supplement, Ascorbic Acid, Inositol, Niacin Supplement, D-Calcium Pantothenate, Pyridoxine HCL, Riboflavin Supplement, Vitamin K (MSBC), Thiamine Mononitrate, Folic Acid, Vitamin A Supplement, Biotin, Vitamin D3 Supplement, Vitamin B12 Supplement), Trace Minerals, Choline Chloride, ADM Bacillus, L-Ascorbyl-2-Polyphosphate, Calcium Propionate.