

Mazuri[®] Koi



Why Koi?

- **Koi fish described as living jewelry**
- **Raised by enthusiasts around the world**
 - display in private ponds
 - public water gardens
 - breeder competition
- **Sold in 3 categories**
 - Pond
 - Ornamental
 - Show



Why Koi?

- **Fry hatch in early spring**
 - **Grow 1-3 inches by summer**
 - **May grow 6 inches the first year**
- **Full grown Koi range in size from 10 inches to 36 inches**
- **May weigh as much as 25 lbs**
- **Average life span is 5 years but may live well over 20 years with proper nutrition and water conditions**



When and How to Feed Koi

- Feed 1-2 meals/day to active fish
 - Remove uneaten food to maintain water quality
- Stop feeding when water temp drops below 45 F
- Many customers like to use wheat based product for early spring and late fall feeding
 - Gear fish up for summer
 - Slow them down just before winter



What is a “Healthy” Diet?

- A Diet that is “Balanced”, i.e. that contains the nutrients the animal needs in proper proportions, appropriate to the animal’s physiology (GI Tract)
- A Diet that is palatable
- A Diet that achieves the desired objectives. In the case of Koi this normally means long life, support of the immune system, vibrant color, good growth
- A Diet that is Holistic, provides enrichment and activity

“What are you trying to Accomplish?”



GI TRACT

Reflects an animal's eating habits

- **Complexity**
- **Length**



FISH vs. TERRESTRIAL ANIMALS

Fiber Utilization

- No foregut fermentation
- Little or no hindgut fermentation

Protein Digestion

- Fish are extremely efficient at digesting protein
- Many do well with 40-50% protein diets



FISH vs. TERRESTRIAL ANIMALS

4) Omega - 3 fatty acids - required by some fish

- Eicosapentaenoic Acid (EPA) 20:5, n-3
- Docosapentaenoic Acid (DPA) 22:5, n-3
- Docosahexaenoic Acid (DHA) 22:6, n-3

5) Vitamin C

- Cartilage synthesis
- Water soluble antioxidant
- Disease resistance



Dietary Protein

- **Most expensive component of diet**
- **Protein quality (not quantity) most important**
 - **Fish Meal is best – fish protein to grow fish**
 - **100s of scientific papers on the “replacement value” for a protein source**
 - **Always compare to fish meal as the gold standard.**



Important Considerations for Koi Diets

These are exhibit fish, NOT meat fish. The goal should be safe growth and long life.

- Low to moderate energy
- High vitamin fortification, correct mineral balances
- Emphasis on correct levels of amino acids
- Color enhancers



COLOR ENHANCERS

REDS: Enhanced with Carotenoids

- Usual carotenoids added are marigold petal meal, spirulina algae
- In addition, Mazuri® Koi Diet has shrimp, canthaxanthin, astaxanthin, beta-carotene

OTHER COLORS: Not Enhanced with Carotenoids

- Instead, enhanced by a high plane of nutrition, particularly a good amino acid balance



Vitamin C

- Fish will get Scurvy unless vitamin C is included in their diet
- Vitamin C in its natural state has the shortest shelf life of all vitamins
- Three basic forms:
 - Ascorbic acid (short shelf life)
 - Encapsulated ascorbic acid (somewhat longer shelf life)
 - L-ascorbyl-2-polyphosphate (long shelf life)



Vitamin C in Large Doses Improves Immune Response

Mortality of Catfish Infected with Bacteria

<u>Vit. C, ppm</u>	<u>Mortality (%)</u>
0	100
30	70
60	70
150	35
300	15
3,000	0



Vitamin E

- **Shown to strengthen Immune Response in fish**
- **Anti-Oxidant**
- **Natural vitamin E has been shown to be from 36% to 7 times more effective than vitamin E in its synthetic form**
- **Mazuri[®] Platinum Koi Diets use only Natural Vitamin E (d- α tocopheryl)**



MAZURI® KOI DIETS

ALL

MAZURI® KOI DIET BAGS ARE
DATE CODED FOR FRESHNESS



5M81 MAR 20 11 2 137

Product Code No.

Month

Day

Year

Shift #

Bag #



MAZURI® KOI DIETS

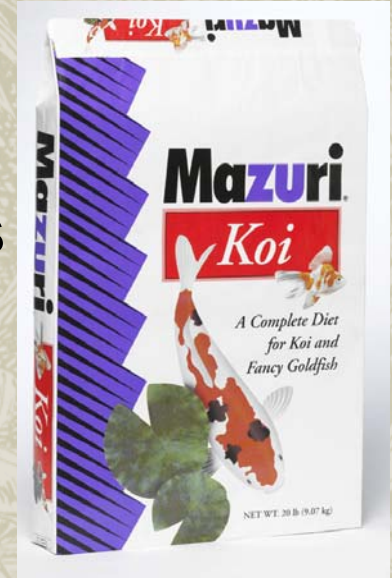
- All products made at Richmond-DRUG FREE FACILITY
- We manufacture our own feed unlike the vast majority of other Koi food companies
- US sourced ingredients
- Sustainable menhaden fishmeal
- Corn or wheat based product depending on customer needs and desires



MAZURI® KOI DIETS

- 5EE8 and 5M81 Koi Platinum Bits
- 5EE4 and 5M80 Koi Platinum Nuggets
- 5MC8 Koi Platinum Ogata
- 50D0 and 5MM4 Koi Wheat Nuggets
- 5M78 Koi Pond Nuggets

Particles FLOAT so Koi can be easily observed while they eat!



MAZURI® KOI DIETS

• PLATINUM

- Designed for serious Koi owners
- High Levels of Natural Vit E and Stabilized Vit C
- Coloring additives: marigold petal meal, spirulina, shrimp, astaxanthin, beta-carotene, canthaxanthin
- Excellent amino acid balance
- Three particle sizes: Bits, Nuggets, and Ogata (jumbo)
- 20 lb & Small Pack Bags



MAZURI® KOI DIETS

- **PLATINUM WHEAT**

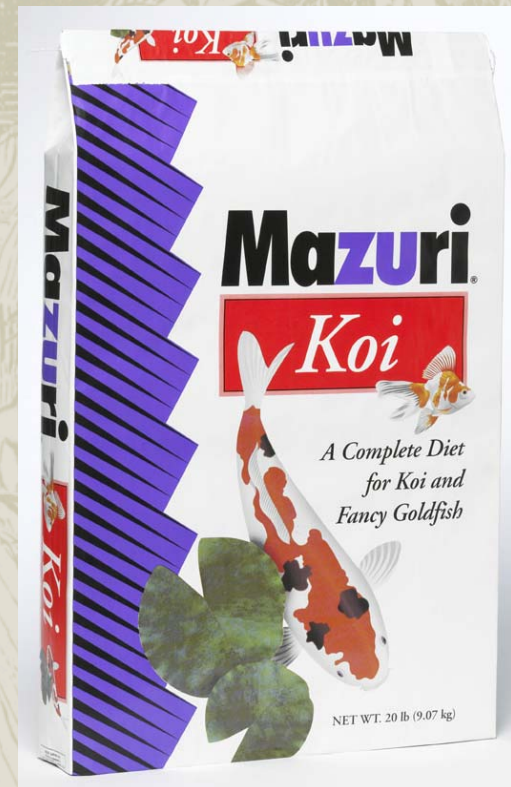
- Designed for serious Koi owners
- Wheat is the Sole Grain Ingredient
- Highly Digestible to promote excellent water quality
- Highly Palatable
- Same Color Enhancers as in all Platinum diets
- High Levels of Natural Vit. E and Stabilized Vit C
- 20 lbs. and Small Pack Bags



MAZURI® KOI DIETS

• POND

- Designed for Economical Performance
- Synthetic Vitamin E
- Lower level of l-ascorbyl-2-polyphosphate
- Two coloring additives: marigold petal meal & spirulina
- Excellent amino acid balance
- One particle size-nuggets
- 20 lb bags





Mazuri® Koi Platinum Wheat Nuggets

50D0

Description

Mazuri® Koi Platinum Wheat Nuggets is a floating, highly digestible and nutritionally complete and balanced wheat-based diet. The diet is designed for koi in ponds, tanks and aquariums and is formulated to provide complete nutrition in one product, with special ingredients added to provide pigmentation.

Features and Benefits

- **Highly digestible.**
- **Complete nutrition** - No supplement needed.
- **Contains spirulina algae** - Provides source of pigmentation.
- **Contains a high level of stabilized vitamin C** - Level greatly exceeds normal dietary requirement and may help resistance to stress.
- **Highly palatable** - Fish will eat it readily.
- **Floating particles** - Fish can be observed eating.
- **Contains wheat germ** - Favored by many koi feeders.
- **Contains only natural vitamin E** - Vitamin E comes from only natural sources.

Product Form

- Extruded particle - 5/32" x 5/32" length. 20 lb. net weight paper sack.

Guaranteed Analysis

Crude protein not less than	31.0%
Crude fat not less than	4.0%
Crude fiber not more than	5.0%
Phosphorus not less than	1.0%

Ingredients

Ground wheat, dehulled soybean meal, fish meal, wheat middlings, wheat germ, fish oil, shrimp meal, dehydrated alfalfa meal, salt, L-ascorbyl-2-polyphosphate (source of vitamin C), brewers dried yeast, spirulina algae meal, dicalcium phosphate, monocalcium phosphate, betaine, biotin, choline chloride, vitamin A acetate, d-alpha tocopheryl acetate (source of natural vitamin E), cholecalciferol (source of vitamin D₃), calcium pantothenate, pyridoxine hydrochloride, tagetes extract, menadione dimethylpyrimidinol bisulfite (source of vitamin K), canthaxanthin, cyanocobalamin (source of vitamin B₁₂), ethoxyquin (a preservative), thiamin mononitrate, nicotinic acid, folic acid, DL-methionine, riboflavin, astaxanthin, beta carotene, manganous oxide, zinc oxide, ferrous carbonate, copper sulfate, zinc sulfate, calcium iodate, cobalt carbonate, sodium selenite.

Feeding Directions

Feed to koi in ponds or tanks as a floating feed to fish six inches or longer. Feed only as much as fish will readily consume. Do not over feed as excess feed will decompose in the water, resulting in poor water quality, which in turn can be harmful to the health of the fish.



50D0

Mazuri® Koi Platinum Wheat Nuggets

Approximate Nutrient Composition

NUTRIENTS

Protein, %	31.3
Arginine, %	2.01
Cystine, %	0.43
Glycine, %	1.65
Histidine, %	0.75
Isoleucine, %	1.48
Leucine, %	2.31
Lysine, %	1.91
Methionine, %	0.60
Phenylalanine, %	1.40
Tyrosine, %	0.87
Threonine, %	1.19
Tryptophan, %	0.41
Valine, %	1.61

Fat (ether extract), % **4.1**

Fat (acid hydrolysis), % **4.3**

Linoleic Acid, % 0.82

Omega-3 Fatty Acid, % 0.54

Fiber (Crude), % **3.9**

Neutral Detergent Fiber, % 12.6

Acid Detergent Fiber, % 4.8

Nitrogen-Free Extract [by difference], % **41.6**

Quality Controlled by PMI Nutrition International, a subsidiary of America's oldest and largest animal nutrition company.

MINERALS

Ash, %	9.0
Calcium, %	1.50
Phosphorus, %	1.00
Phosphorus (non-phytate), %	0.67
Potassium, %	1.10
Magnesium, %	0.23
Sodium, %	0.48
Chlorine, %	0.75
Sulfur, %	0.30
Iron, ppm	360
Zinc, ppm	150
Manganese, ppm	130
Copper, ppm	21
Iodine, ppm	1.6
Selenium, ppm	0.51
Cobalt, ppm	0.50

VITAMINS

Vitamin K (as menadione), ppm	1.0
Thiamin Hydrochloride, ppm	14
Riboflavin, ppm	13
Niacin, ppm	130
Pantothenic Acid, ppm	51
Choline Chloride, ppm	1,970
Folic Acid, ppm	2.7
Pyridoxine, ppm	6.0
Biotin, ppm	1.0
Vitamin B ₁₂ , mcg/kg	130
Vitamin A, IU/gm	20
Vitamin D ₃ [added], IU/gm	1.9
Vitamin E, IU/kg	110
Ascorbic Acid, ppm	2,000

MEDICATED KOI FOOD IS ILLEGAL!

- The FDA must approve each specific drug to be used for each specific animal species
- The FDA has never approved any medication for Carp or Koi (Has approved Romet and Tetracycline for Catfish and Salmonids)
- So ANY and EVERY medicated koi food sold in the U.S. is against the law!



Mazuri® Gel Diets

- Nutritionally rich dry powder. Mix with boiling water, sets up into a firm sinking gel that won't come apart in water
- Used by Aquariums for years as a tool to administer drugs, and as a primary food source for fish
- Customers can add medication, so long as it is prescribed by a vet
- We provide the unmedicated gel. Vet provides the medication





SHELF LIFE

- Specific things go wrong with feed as it ages, and in predictable ways
- Certain nutrients are “bellwether nutrients” that diminish to critical levels before others do
- Shelf life depends on several things:
 - Storage temperature and humidity
 - Packaging
 - Levels and type of ingredients used



MOLD

- **NEVER** feed moldy feed. Molds make Mycotoxins, which at some level make fish sick
- **Moisture is the problem** – from the air or standing water. Big problem in Mississippi; not so big a problem in Nevada
- **Vapor barrier packaging a must** in humid climates
- **Storing in a cool (65°F) place helps**
- **Easily detectable by smell (moldy sock smell) When in doubt smell feed!**



VITAMIN C

- **Dissipates faster with high temperature and humidity**
- **Fish need a minimum level of about 60 ppm in their diet to avoid scurvy; higher doses improve their immune response**
- **Amount of Vit. C remaining depends upon:**
 - **FORM of Vit. C used in the diet**
 - **AMOUNT of Vit. C originally put in the diet**
 - **How OLD the diet is**
 - **Storage temperature and humidity**



FAT OXIDATION

- **Makes feed unpalatable, destroys fat soluble vitamins (A,D,E & K), reduces the nutritional value of fats and proteins, creates free radicals**
- **Fat oxidation speeds up at high (say 95°F) temperatures, so should store feed at room temperature or lower**
- **Fat oxidation virtually ceases at freezing temperatures or if the feed container is nitrogen flushed**
- **SMELL the feed if in doubt. Rancid feed has a characteristic off smell**



Mazuri® Koi Diets

- Now is the time to start feeding Koi or to start thinking about feeding Koi
 - Water temps are rising
- Find water garden/landscaping centers in your area...visit them
- Attend local pond tours and/or Koi shows
- Let Mazuri know if you have any questions or concerns!!

www.mazuri.com

800.227.8941

