

## FALL AND PRE-WINTER POND PREP

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In the fall, pond temps are falling slowly, coming down from their summer highs in the 80's. Koi appetites, metabolism, bioconverter function, and fish immune systems are still near their summer peak of efficiency. In the spring, pond temps are up and down, going from the 50's to the 60's and back. The bioconverter bacteria and fish immune systems are still not up to speed. Many unprepared ponds will suffer from outbreaks of parasites, Aeromonas infections (koi ulcer disease), pea green water, and string algae. Pond owners would do very well to take preventive action in the fall, and again in early spring, to help prevent these common spring time blues. In Tucson, late October is probably about right in the fall, and mid February for the spring time prep. Start a month earlier than the appearance of your garden or pond would normally suggest. Some helpful hints to put your fish to bed healthy and help ward off some of these springtime blues:

**A) Clean up the pond, plants, and filters.** Vacuum or remove debris on bottom of pond, without stirring up too much sediment into the water. Cut back dead vegetation. Repot plants in spring in clean coarse sand (after March 15 in Tucson). Clean sediment from bogs. Drain and clean sumps and pre-filter chambers (if not already done regularly). After removing all the big chunks from system, then clean bioconverter (BC) media (with pond water if possible). When you are done with the gunky stuff, do a 50% water change, adding dechlorinator (sodium thiosulfate is cheap and avoids chlorine burns on koi gills).

**B) To reduce background levels of harmful critters (bacteria, fungi, protozoa, flukes, fish lice, anchor worms, etc.) and help prevent springtime illnesses and infections, try this regimen, especially **2A** or **2B**, after you have your pond "visually clean" as in "A":**

**1) SALT** used to be recommended for protozoa and some flukes. There are now so many salt-resistant parasites that its effectiveness as anything other than

an osmotic tonic is questionable. However, if you wish, add pure coarse solar salt (sodium chloride) to **.2** (point two) % (two parts per thousand – about **1.5** (one point five) lbs. per 100 gallons). Add gradually to avoid shocking the BC. Place the salt (in a fine mesh container – nylon stocking? - or let a hose with pond water bubble up through the salt in a bucket) in an area of high water flow where circulation will carry it throughout the pond. DO NOT dump loose salt crystals in the pond. After two weeks **at .2** %, lower salinity with gradual water changes.

If you have plants or bogs, check the plant / salt chart at [www.koivet.com](http://www.koivet.com). Point two (.2%) (1.66 lbs per 100 gal), doesn't kill many plants or parasites, but has some osmotic tonic effect. Expensive or specialized plants, submerged vegetation, and plants with free floating roots like even less salt - about **.1** (point one)%. Bottom line - want to save your plants? Remove them from the pond or don't go past **.1**% salt.

**2A) POTASSIUM PERMANGANATE (PP)** (for salt resistant protozoa, flukes, fungi, and some bacteria). A four part **PP** or **F/MG** series will really help reduce the numbers of all of the above mentioned critters. **PP has the added benefit of reducing DOC's (dissolved organic compounds), and will leave you with a cleaner, healthier pond. PP lowers oxygen. Maintain high water circulation levels. At these doses, PP kills many beneficial bioconverter bacteria. BYPASS BIOCONVERTER or bead filter (safe off line for 4-6 hours in cool weather; always flush BC to waste before re-starting).**

**Dosage regimen:** PP: A teaspoon measure (they vary) holds between 6 and 8 grams of PP crystals, which, at one teaspoon per 600 gallons, yields a safe dose between 2.6 to 4 ppm. DO NOT dump crystals in the pond all in one spot (DUH!). Dissolve crystals in a couple of quarts of hot water, and circulate around pond. Water will appear dark pink to purplish. After several hours, water will turn lighter pink, then tan. When a white coffee cup of pond water no longer appears pink at all, resume flow to the BC (after flush to waste). Repeat on days three, six, and nine. Perform 30% water change after treatments 2 and four.

**NOTE: Potassium permanganate can be dangerous.** Do the first few treatments on a day when you can check on the fish periodically. If, at any point, water turns an ugly milk chocolate color

(usually means a WHOLE LOT of organics are in your water), immediately reverse / neutralize the PP with one pint of 3% drugstore hydrogen peroxide per 1000 gallons, and do a 50% water change with dechlorinator.

**OR: 2B) FORMALIN / MALACHITE GREEN (F/MG):** Dose with a proprietary Formalin / Malachite Green like "Pro-Form C" or "Rid-Ich". **Dosage regimen:** The effective dose for formalin is 25 ppm. The label dose of Pro-Form C and Rid-Ich (100 ml per 1000 gallons) only achieves 15 ppm. I suggest 1.6 times the label dose, or 160 ml (about 2/3 cup) per 1000 gallons, to achieve 25ppm. Formalin will lower oxygen. Maintain high water circulation levels. At these doses, Formalin is OK for BC bacteria, with no need to bypass. Repeat on days three, six, and nine. Perform 30% water change after treatments 2 and four.

**RESOURCES:** Potassium permanganate, F/MG, sodium thiosulfate, and salt test kits are available from a number of sources (try Rancho del Koi, Desert Pet Center, or Mountain View Koi locally). Sodium chloride is available from your grocery store (water softener salt) – make sure you get PURE sodium chloride with no additives, NOT potassium chloride. Rid-Ich is available at Desert Pet Center. Pro-Form is available at a number of online vendors.

**QUESTIONS? COMMENTS? I welcome both.**

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**Suggested reading and research:**

- Nick St. Erne, DVM "Advanced Koi Care"
- Eric Johnson DVM "Koi Health and Disease" ( [www.koivet.com](http://www.koivet.com) )
- Koi Health Advisor program text – Associated Koi Clubs of America ( [www.akca.org](http://www.akca.org) )

**Local koi product resources:**

Rancho Del Koi – 886-8797; feed, equipment, consulting  
Desert Pet Center – 745-5158 "Rid-Ich"  
Mountain View Koi – 520 378-3710 (in Sierra Vista); plants, fish, chemistry, equipment

**Online koi product resources:**

[www.koivet.com](http://www.koivet.com)  
[www.aquaticceco.com](http://www.aquaticceco.com)  
[www.keirinponds.com](http://www.keirinponds.com)  
and many others