



Top 10 Reasons NOT to Use Synthetic Pesticides & Fertilizers

1. Nutrient and chemical pollution are among the main proposed reasons for coral reef declines [\[y\]](#).
2. Pesticides put stress on coral reefs, making them less resilient to rising ocean temperatures and ocean acidification [\[y\]](#).
3. “Less than 0.1% of pesticides applied for pest control reach their target pests” [\[s\]](#). Therefore, greater than 99.9% of pesticides make their way into the environment affecting other plants, wildlife and human health.
4. In wildlife, pesticides and fungicides such as Malathion, Permethrin, Profenofos, Chlorpyrifos, and Imidacloprid can cause endocrine disruption, reproductive effects, neurotoxicity, kidney/liver damage, birth/developmental effects [\[j\]](#), a reduction in coral settlement and metamorphosis, coral bleaching [\[o\]](#), feminization of organisms [\[a\]](#), oxidative stress [\[e; m\]](#), an increase in risk of disease in fish [\[f\]](#), paralysis of the central nervous system of organisms [\[q\]](#), and can make fish more vulnerable to predation [\[b\]](#).
5. Herbicides such as Atrazine and Glyphosate (Roundup™) can cause the above effects plus photosynthesis inhibition [\[f; y\]](#), a decrease in phytoplankton (the base of the food chain) biomass, and a decrease in oxygen production [\[v\]](#).
 - a. A decrease in algal photosynthetic efficiency occurs within minutes of exposure, limiting energy flow from zooxanthellae to the coral host. Limited energy will prevent the coral from growing and producing their calcium carbonate skeletons [\[y\]](#). Other effects are oxidative stress (which leads to coral bleaching) and reduced reproductive output [\[y; g; w\]](#).

6. Many pesticides are also endocrine disrupting compounds (EDCs). EDCs interfere with natural hormones and can affect embryonic, reproductive and sexual development in humans and wildlife. They can also impact sex ratios in crustaceans [p]. Some EDCs have worse effects at lower concentrations than at higher concentrations which makes regulations difficult to put in place [x].
7. Synthetic, water soluble fertilizers are not absorbed by the soil, and instead get washed away and end up in our oceans. This increase in nutrients causes eutrophication: algal blooms, decreases in oxygen, decreases in water quality, fish and organism die offs, and decreases in photosynthetic efficiency of coral symbionts and other photosynthetic organisms [aa]. Algae also “take over and reduce the chances for new hard corals to establish and grow” [n].
8. Excess nitrogen (which can come from synthetic, water soluble fertilizers) leads to growth of non-native algae. Honu eat this algae and develop fibropapillomatosis (tumors) [z].
9. Pesticide compounds can be stored and accumulated in edible fatty tissues of fish which we eat [h]. Human health effects linked to these pesticides include cancer [m; i; c; u; a], Parkinson’s Disease [r], brain developmental issues in children [l; t], damage to cognitive function in adults [l], endocrine disruption, reproductive effects, neurotoxicity, kidney/liver damage, birth/developmental effects, and skin irritation [j].
10. Hawai’i’s coral reefs are valued at \$10 billion [d]. “Hawai’i’s nearshore reefs annually generate about \$800 million in gross revenues” [k]. Benefits of Hawai’i’s coral reefs include: coastal buffer to wave action/erosion, a major source of food and resources, tourism and recreation, Hawaiian culture preservation, and habitat for marine organisms.

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