

# THE PESTICIDE PROBLEM AT HOME



by Michael [REDACTED]



# PESTICIDE EXPOSURE

## Pesticide use is questioned

“When people talk about using chemicals on the farm, oftentimes they use the word “pesticides.” To people outside agriculture, pesticides tends to be the catch-all category for any and all chemical compounds we spray on our crops. All things considered, that is far from the truth. We don’t have a jug labeled “pesticides” that goes on anything and everything. In agriculture we call any sort of chemical we use on the farm ‘crop-protection products’” (Rochric, 2016). Farmers do have very specific guidelines to apply crop protection products in which to use, how much, and when, which is not the happy-go-lucky application many people assume is used. And still, after extensive tests and safety precautions recommended, many people ignore them, and blame the use of pesticides for any health problems to come from it.

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**- Jenny Rochric**

"Pesticides can be found in our air, our food, our soil, our water and even in our breast milk."

-JENNY ROCHRIC

# PESTICIDE USES AND EFFECTS

## Pesticides are used in more places than just farms

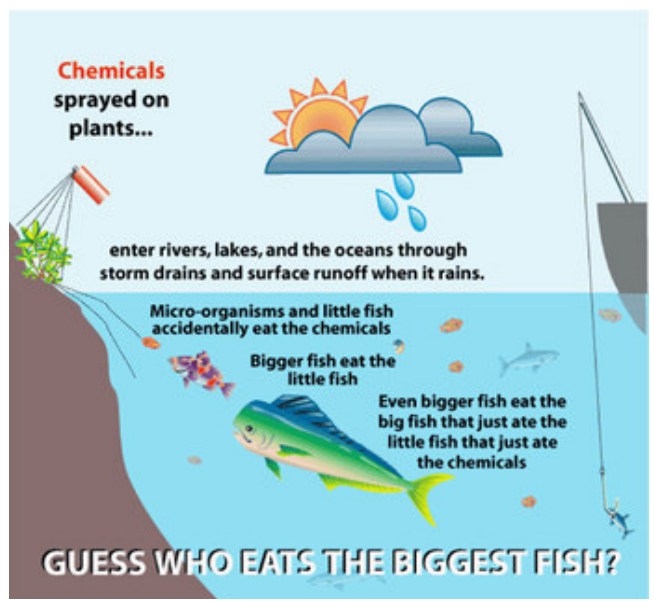
Pesticide products are used more than just on the farm. In fact, pesticides are used in crop fields, businesses, parking lots, schools, parks, and even the home. If you think about it, you're never really too far from a pesticide, as most people even keep some sort of bug repellent under their sink. According to Rochric (2016), "Pesticides are used in our schools, parks, and public lands. Pesticides are sprayed on agricultural fields and wood lots. Pesticides can be found in our air, our food, our soil, our water and even in our breast milk." With all things in mind, it has been estimated that in America alone, over 2.5 million tons of commercial pesticides are used each year.



## Pesticide runoff affects the health of humans and the environment

Pesticides are said to impact a slew of living things, from bacteria to humans. Although pesticides are meant to kill a certain pest to protect a crop yield, they are able to kill more than just what they are specialized for. Through their many applications, pesticides manage to get in our air, water, sediments, and even out food. As stated in the article "Environmental Effects of Pesticides," "Pesticides easily contaminate the air, ground, and water when they run off from fields, escape storage tanks, are not discarded properly and especially when they are sprayed aerially." Initially, one might think that this is not a problem if they didn't understand completely that pesticides are meant to terminate life. This means their introduction to places outside where intended is bad, as it can kill things that weren't meant to be.

## The Non-Food Food Chain...



# WHY PESTICIDES ARE USED



Skin after working with arsenic and heavy metals found on fields that use pesticides.

## Pesticides do reduce seasonal pest problems

It's understood that pesticides can be harmful to life, but they were and are still used for a reason. As the EPA explains on their site "Why We Use Pesticides," "Pesticides are used to control various pests and disease carriers, such as mosquitoes, ticks, rats and mice. Pesticides are used in agriculture to control weeds, insect infestation and diseases." This brings the justification of the use of pesticides in concept, because without their use, crop yields would be far lower due to infestation. If there were to be a lower crop yield, the demand for certain products could not be met and they would need to be substituted for something else. Otherwise, the global calories grown would go down. With less food in total, less life could be supported.

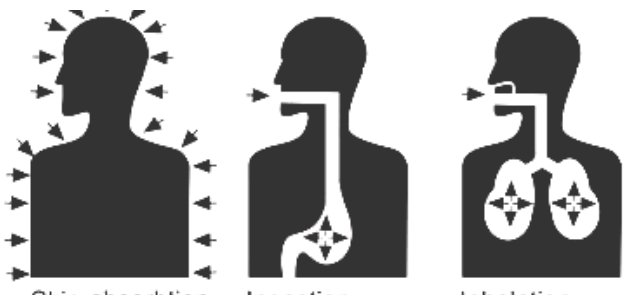
## They kill more than just pests

The environment is comprised of many forms of life, and while pesticides are designed and used only to kill invasive species, they can often impact a larger range of life than what was intended. In theory, a pesticide will only work against its' targets, but in reality, air, water, land, and other living organisms are affected by pesticide use. First, evaporation can move pesticides into the air after being sprayed when only some of the spray lands where intended, and the rest is taken away by wind. Such an action can lead to problems mentioned in the "Impacts of People's Lives" section of this writing through breathing in the chemical over time.

Next is the point that pesticides can get in water through mismanaged application. Examples of how pesticides can enter the water is most often related to the runoff of farming, which brings these chemicals to water bodies, lacing them with pesticides. Consumption of this contaminated water in large amounts may lead to health decline. The land itself absorbs pesticides just after application intended for plants to repel invasive species. In effect, these pesticides may be harmful to the plant roots, which are less protected by natural barriers plants build above ground. Finally, pesticides can affect living things, as mentioned previously. However, if specific pesticides directly enter the system, it may lead to death.

## Pesticides cause health problems after consumption

Dangers of contact with large amounts of synthetic (artificially created) pesticides exist. Contraction of enough pesticides depends on exposure and how it got in the system. The ways pesticides can enter the system are orally (eating/drinking), dermally (on the skin), or by inhaling. Acute symptoms include skin and eye irritation, headaches, dizziness, nausea, etc. Moreover, symptoms only get more intense over extended periods of contact with pesticides.



While there is a case against synthetic pesticides being carcinogens (cancer causing), there indeed has been recent studies saying that certain chemicals used in pesticides can trigger cancer in a variety of ways. Such ways are through disrupting hormones, damaging DNA, inflaming tissues and turning genes on or off. Through modern studies, it is scientifically claimed that many pesticides are "known or probable" carcinogens.



**An at home solution to pesticide exposure**

Even if the simple solution in words is to eliminate the use of pesticides entirely, it is not realistic. This is because pesticides support so many of the crop yields currently. For their continued usefulness, it does not make sense in an efficiency, economic, or consumer aspect to not use pesticides. Even though a large-scale solution is not probable, small changes at home can help to lower the amounts of pesticides introduced to the environment, and lead to a safer world for life to thrive.



The solution to lowering pesticide use can start at home. Whether a person wants to use less, or reduce their exposure to pesticides, these recommendations stay true. The first, and main way to reduce exposure is to avoid pesticide laden areas identified by warnings. A sign easily displays how toxic the area is in a pesticide aspect, from caution, to warning, and all the way to danger. Given the health concerns linked with pesticides, personal health should be prioritized if signs indicating any of these levels of pesticide are identified. Equally important is realizing how much a given person uses, and if possible, reducing it. Some people use pesticides to keep their lawns green, their garden alive, and so on. With the thought in mind that pesticides at such low capacities is not nearly as harmful, they should still be avoided.

If a person were to want their garden or grass just as green, there are solutions to the pest problem other than pesticides. Such recommendations could be as simple as keeping spiders and bugs that don't eat plants around to eat the bugs a person doesn't want. There are many other solutions to pest issues other than using pesticides, such as rotating crops, intercropping, controlling pests with pests, and preparing products before consumption.



# AFFORDABLE SOLUTIONS

## At home solutions are affordable

Each of the solutions mentioned are very easy at home, if all a consumer wants to do is lower exposure to pesticides. First, the most simple is to wash and peel any fruits or vegetables (if possible) before use. The water can wash away topical pesticides, while the peeling can take off residual traces. At nearly no cost other than time and 30 seconds of water, this solution is the simplest.

A common practice in the farming community is rotating crops. This method is used for the benefits to the soil nutrients, but also to help against pest problems. As crops are switched out seasonally, the pests won't be able to rely on that spot seasonally for the crop they infest, and must move elsewhere. Reliable in general, this method costs as much as any other crop season, and will work as long as the last wasn't the same crop.

Next is similar to crop rotation, but doesn't wait for variety between crops, but has variety in one crop season. Intercropping, or polyculture, is when multiple crop species are grown in one field together. The mass of plants makes it hard for pests to focus down their desired plant. Moreover, if the crops in the field are grown very intentionally, one can plant a crop between the crops they want to protect to attract a predator to keep the pests off the other. Alternatively, one could just grow a plant that repels a pest of scent alone. The kind of plant needed depends on the desired pest removal. For at-home gardeners, something to repel mosquitos might be wanted for a more pleasurable gardening experience. If this is the case, such a person should plant some basil, rosemary, garlic, marigold, lavender, lemongrass, lemon balm, catnip, or lemon thyme to repel mosquitos. It should also be noted that these strategies could be used to repel grass pests, if needed. A small, at-home gardener could expect to pay between \$5 and upwards of \$50 depending on the size of the area they want to protect.





# SOLUTIONS ARE ACCESSIBLE

## It can be done at home

Whether it's for a garden at home, or a family farm, practices such as intercropping, rotating crops, growing against the pest, and just washing produce, can lower exposure, and limit how much they output themselves. Intercropping along with crop rotation are simple practices, and are as accessible as long as the individual has the know-how to complete such a practice. Each is simple, as intercropping is just planting multiple crops in one plot at once, and rotating crops is just as it sounds; which is rotating which crop is planted in a field each season. It is also accessible to grow against a pest, as a grower might just go to where they normally buy seeds, and buy very intentionally to grow a plant that repels pests.

Of the three methods suggested, crop rotation is simple enough that it comes down to not growing the same species season after season to avoid seasonal pests, while growing against a pest only requires the grower to understand what a pest doesn't like, and where to buy it.

An example of a plant that repels pests is basil, which deters mosquitoes. Finally, intercropping is just noting how much space a given plant needs to thrive due to root space needed, and planting accordingly. This is to say that something like a tall grass cannot be grown next to a small flower, as the roots of the grass will rob the flowers of nutrients and will also block much needed sun from reaching the flower much of the time.



# BENEFITS OF NOT USING PESTICIDES

## Environmental benefits

### *Slower adaptation against pesticides*

Plants will not as quickly evolve to resist pesticides, increasing the current known 275 weeds and 500 insects that are resistant to at least one known pesticide.

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### *Will stop kill the good bugs, too*

Fewer bugs will be subject to the residual pesticides. There are actually only 1% of bugs identified as pests, while the other 99% are still impacted by pesticide use in a very negative way. Each of these other bugs are very beneficial to the environment, so with less pesticide use, these bugs can help the environment more than before.

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### *Less pesticide runoff in the environment*

With the elimination or reduction of pesticide use, the amount of harmful chemicals released into the environment, atmosphere, soil, water, and so on, each year would greatly drop.

## Societal benefits

### *Less health problems*

The potential consumption of pesticide-lined produce would go down, decreasing the risk of experiencing harmful symptoms linked with pesticides, such as nausea and dizziness.

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### *More demand for organic foods*

As the knowledge of pesticides being bad grows, along with the idea that they are not the only way to grow crops, will increase demand on the home-grown, organic, and fresh agriculture markets again. This will create a new line of work and revenue in modern agriculture, which hasn't been present since industrial agriculture and commercial use of pesticides has become more common.

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### *Less unintentional pesticides consumption*

The supply for pesticides may go down as the domestic demand goes down. When home growers realize they don't need pesticides to keep a green lawn, or have some nice tomatoes growing, they won't purchase pesticides to keep them that way as much. This drop in demand could lower the amount of these chemicals made, and in turn, lower their introduction into the bodies of organisms which weren't intended.



## Solutions are sustainable

The idea of changing what is grown seasonally, growing more than one plant at once, or growing a pest repelling plant, are all sustainable. With just a little more pre-planning and intention, crop rotation and intercropping are techniques that can help repel pests, without the harmful chemical use of pesticides. This statement stays true for growing against a pest, because it just adds the purchasing and planting of a plant that repels a pest each season. None of the proposed solutions are unreasonable in a labor or cost aspect, but will each take time and careful attention to what they specifically need to fix their pest problems.





# IT'S EASY TO PLANT AT HOME

## To grow at home

In the following section, an example of growing against a pest will be explained, while the others are not, as they are extremely easy concepts to understand and execute in a material and procedural way.

Materials you will need to grow basil:

- 6-inch planter (pot)
- Soil (enough to fill the pot)
- Basil seeds
- Water
- Nutrient enricher (optional)

The list of items to grow one basil plant can cost a person about \$3 at minimum. The cost for other plants that repel other bugs can run for very similar costs, only seeing difference in cost for seeds. The main plants grown at home against insects are basil, lavender, lemongrass, lemon thyme, mint, rosemary, chrysanthemums, nasturtiums, petunias, and pitcher plants; and any one of the seed packets for those listed can range between \$0.50 and \$7 at the time of print. Each one of those listed also repels very certain insects, and are planted in yards for that factor occasionally.

## If the plant is going into a pot, follow these steps:

- Purchase materials (previously listed)
- Set out pot/planter (make sure the pot complies with spacing requirements).
- Fill soil a little under desired point in pot.
- Lay seeds in the middle of the soil (amount determined on seed bag).
- Cover the seeds with more soil.
- Place near light as often as seed packet directs (if not specified, Google it).
- Water as frequently as seed packet direct (if not specified, Google it).
- Place plant where pests are a problem that the plant repels.
- If there are more pests showing up, plant more.

## If the plant is going into the ground, follow these steps:

- Purchase materials.
- Dig into the soil to plant seeds - be sure that the plant will have enough space, and is deep enough (specified on the seed packet).
- Cover seeds.
- Water as directed on seed packet.





# GOOD TO GROW AT HOME

## Smallest packet of seeds with what they repel when grown

Basil (\$0.75): flies, including mosquitoes the carrot fly, asparagus beetles and white flies

Lavender (\$3.95): moths, scorpions, water scorpions, fleas, and flies, including mosquitoes -pictured at top-

Lemongrass (\$2.95): mosquitoes

Lemon Thyme (\$2.79): mosquitoes

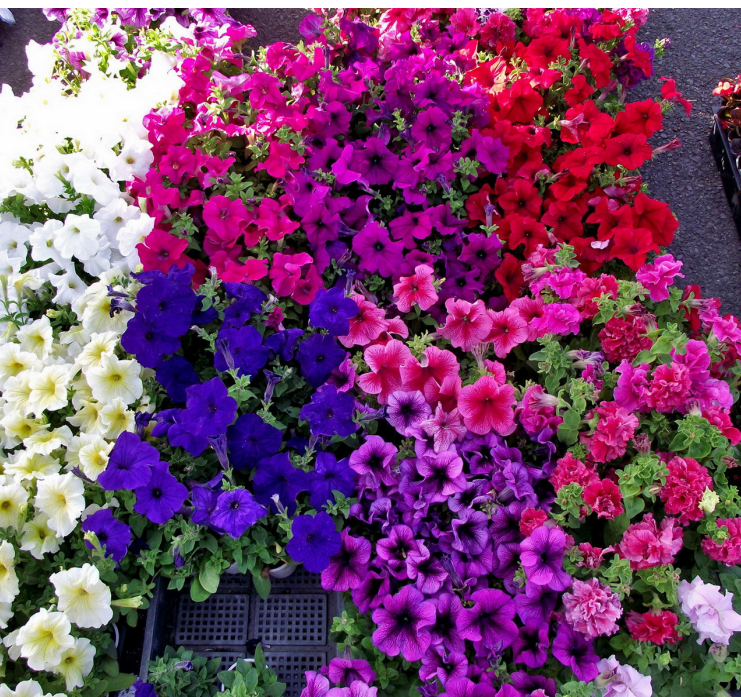
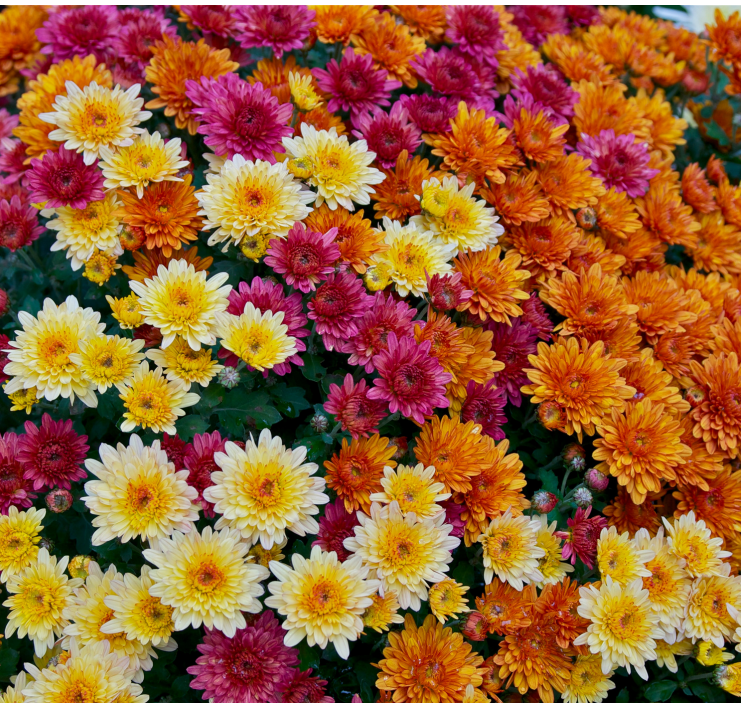
Mint (\$1.95): aphids, cabbage looper, flea beetles, squash bugs, white flies, and the Small White

Rosemary (\$4.99): cabbage looper, carrot fly, slugs, snails, and the Mexican bean beetle

Chrysanthemums (\$4.99): roaches, ants, the Japanese beetle, ticks, silverfish, lice, fleas, bedbugs, and root-knot nematodes -pictured at center-

Nasturtiums (\$2.50): squash bugs, aphids, many beetles, and the cabbage looper

Petunias (\$4.50): aphids, tomato hornworm, asparagus beetles, leafhoppers, and squash bugs -pictured at bottom-



## Growing locally helps fix the pesticide problem

The problem in the beginning is that human/life exposure to synthetic pesticides can lead to health issues. The first solution to not suffer negative effects is to simply remove the body from pesticides when possible, while the second, is to stop using pesticides in one's personal life. A person may stop using pesticides by growing plants against pests that have been a problem for them in the past. And yet, there are other techniques to do the same thing, such as intercropping, and rotation cropping.

# SOLUTION TRADEOFFS

## Growing at home poses benefits, but also concerns

### Pros: Cons:

The person planting has access to fresh produce.

New plants can attract new kinds of pests, other than those being repelled.

The individual gains experience and some know-how of planting.

Planting against a pest is a commitment that involves using monetary resources.

Less risk of consuming pesticides from topical application.

Plants have no outside protection against natural diseases.

The individual contributes less to the pollution of the world with pesticides.

This solution is a time commitment, that not all may have time to do.



## Even so, it is worth it to grow at home

There were multiple very easy solutions proposed to lower exposure and use of pesticides. The first is to avoid any areas under pesticide use warnings, while the others are technique-based planting styles of intercropping, or crop rotation. Of those mentioned thus far, they are all free, and are based completely off of an individual's commitment. Also of the three mentioned so far, they are effective in inconsistency.

This means that pests can't rely on the location to supply them, and thus, fewer will appear. The final solution is to lower or eliminate the use of pesticides for one's self. This solution is extremely and affordable, as it is potting a plant. The final solution is effective, as the intention of planting it was to repel a specific pest, which is also the purpose of pesticides.

## People should care to reduce their exposure to pesticides

The first and foremost reason to care about pesticide use is that they can enter the human body when they aren't intended to, and from there can cause compromises in health if experienced for too long. Multiple sources confirm the study that many pesticides are carcinogens, and the Toxins Action Center elaborates on its' Toxic Substances and Disease Registry publication from February of 2009, which states that "children who live in homes where their parents use pesticides are twice as likely to develop brain cancer versus those that live in residences in which no pesticides are used." Now, this is just one of the many health issues linked with extended exposure to certain pesticides. However, cancer is certainly one of the most life-threatening, and long-lasting problems to come from pesticide exposure. It is for the sake of one's own health, and out of consideration for others that an individual should not use pesticides,



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