What's possible?

What we all want – healthy, safe parks and lawns

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An early East Coast project:
New Hampshire
Downtown park
2 springs, 1 year apart

Method:
No synthetics
Low N—biological organisms plus foods was primary product—liquid
Grass seed
Aeration
Not irrigated
Weed control is building turf density

https://www.youtube.com/watch?v=IIhT-PwHBs0 <- health effects of pesticides

Chip Osborne, expert on organic lawns, parks, school grounds
Beyond Pesticides website, https://www.beyondpesticides.org/

Why change what's being done in Madison now?

Why change?

1. It's cheaper (training is now free from Beyond Pesticides)
2. It's sustainable
3. It's healthier for everyone

   a. EPA registrations are 'bait and switch' - only reagent grade chemicals, not mix of reagent(s), solvents, surfactants used for registration
   b. No tests for biochemical pathway shifts, neurological, behavioral, endocrine, immune, epigenetic, and multi-generation effects
   c. No tests for low dose effects (ppb, ppt, ppq) where human and animal physiology works.
   d. All registration data come from the company that makes the product <– biased data
   e. 'Risk' evaluation is based on economic impact on the company
   f. Pesticide design guarantees that there will be broad, multi-level unintended effects – see https://www.youtube.com/watch?v=IIhT-PwHBs0 for details

Irvine, CA
2016 – 2017
before-after

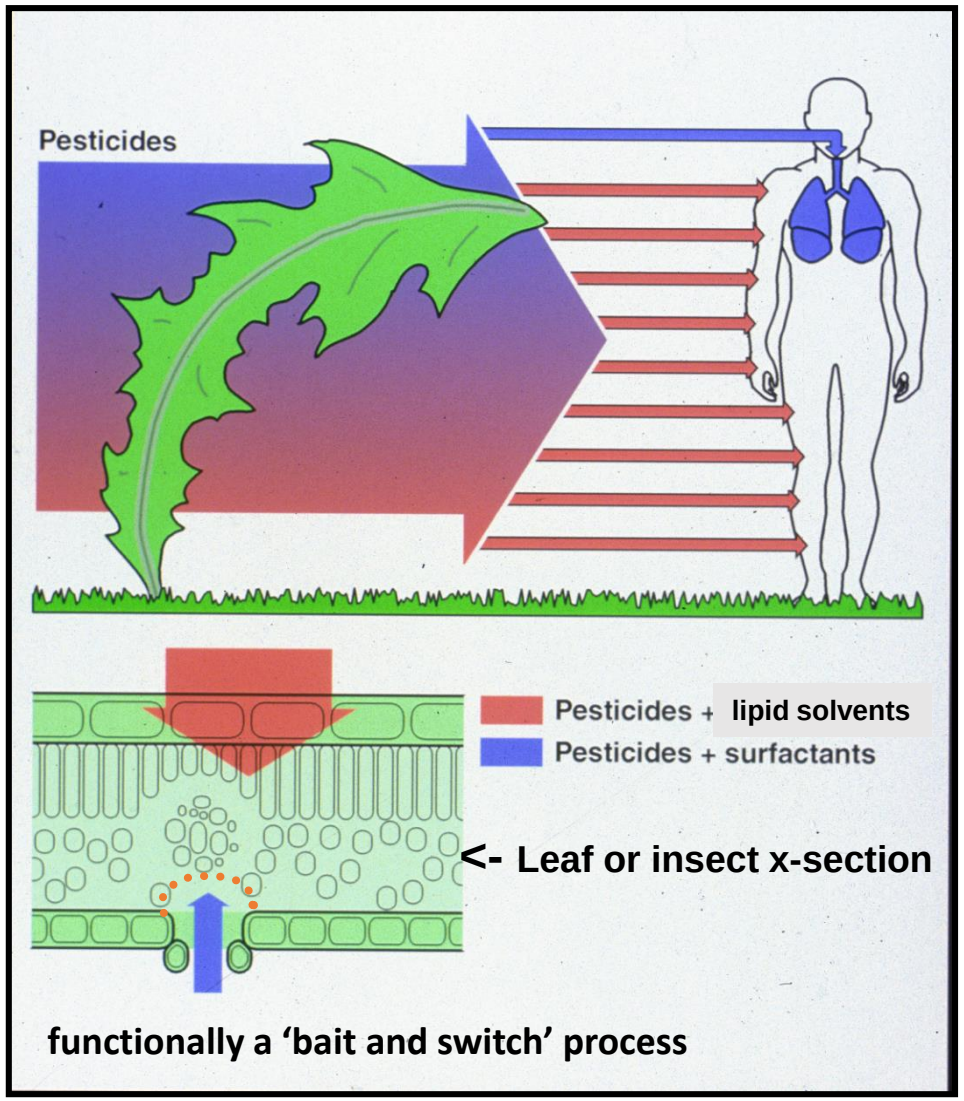
Madison can have this too and reduce costs of turf management and be trained for free by Chip Osborne through Beyond Pesticides' national organization's endowed program. Contact Jay Feldman, Beyond Pesticides' Director, for more information

Supplementary material

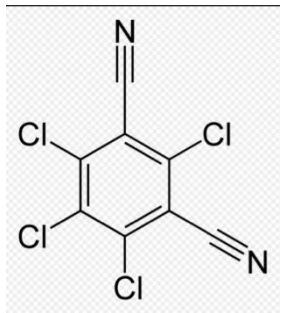
Basic Principles

Why is body entry for an off-the-shelf pesticide mixture easy ?
'inert' (other) ingredients:
1) non-ionic (fat soluble) solvents (= no charges)
2) surfactants
3) heavy metals, e.g. As, Cd, Co, Cr, Ni and Pb commonly added during manufacture (Defarge et al., 2018)

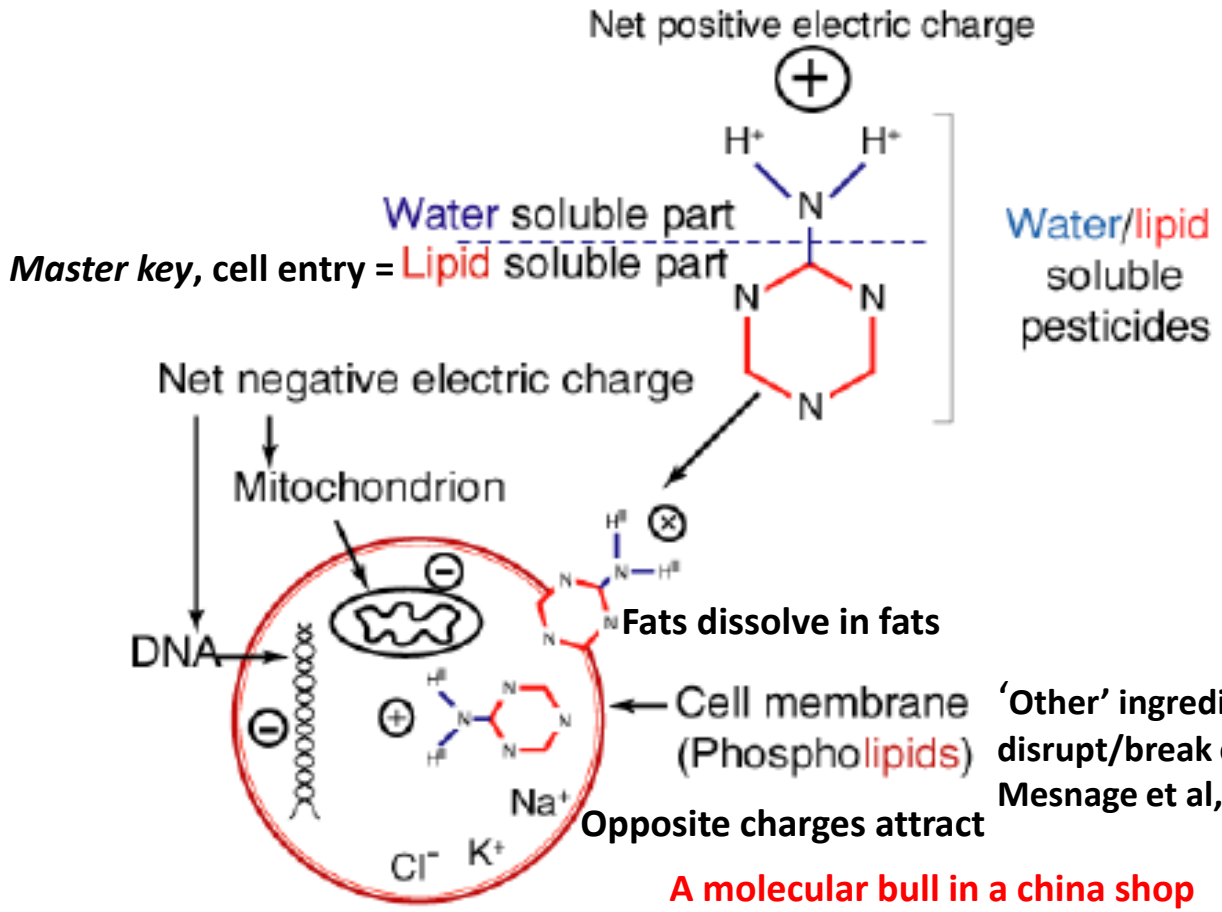
'inerts' are NOT part of EPA registration process >



Chlorothalonil



Pesticide structure-function
(Why *multiple* unintended effects are virtually certain)



***Master key*, cell entry =**

Fats dissolve in fats

Opposite charges attract

'Other' ingredients can disrupt/break cell membranes
Mesnage et al, 2012

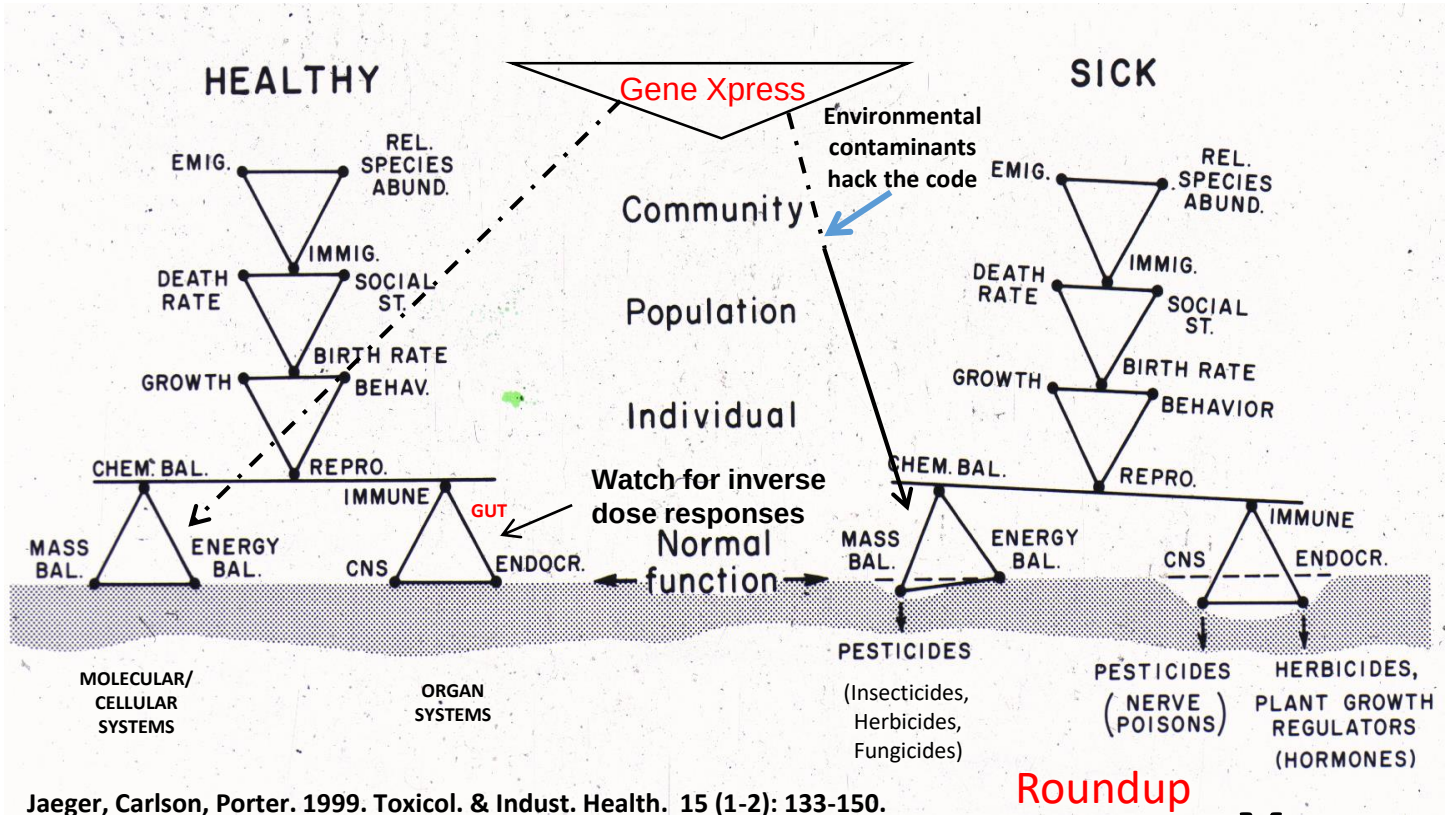
A molecular bull in a china shop

Hypothesis

Everything is interconnected

Overview/theory

Neurological, endocrine, immune, developmental, genetic effects:



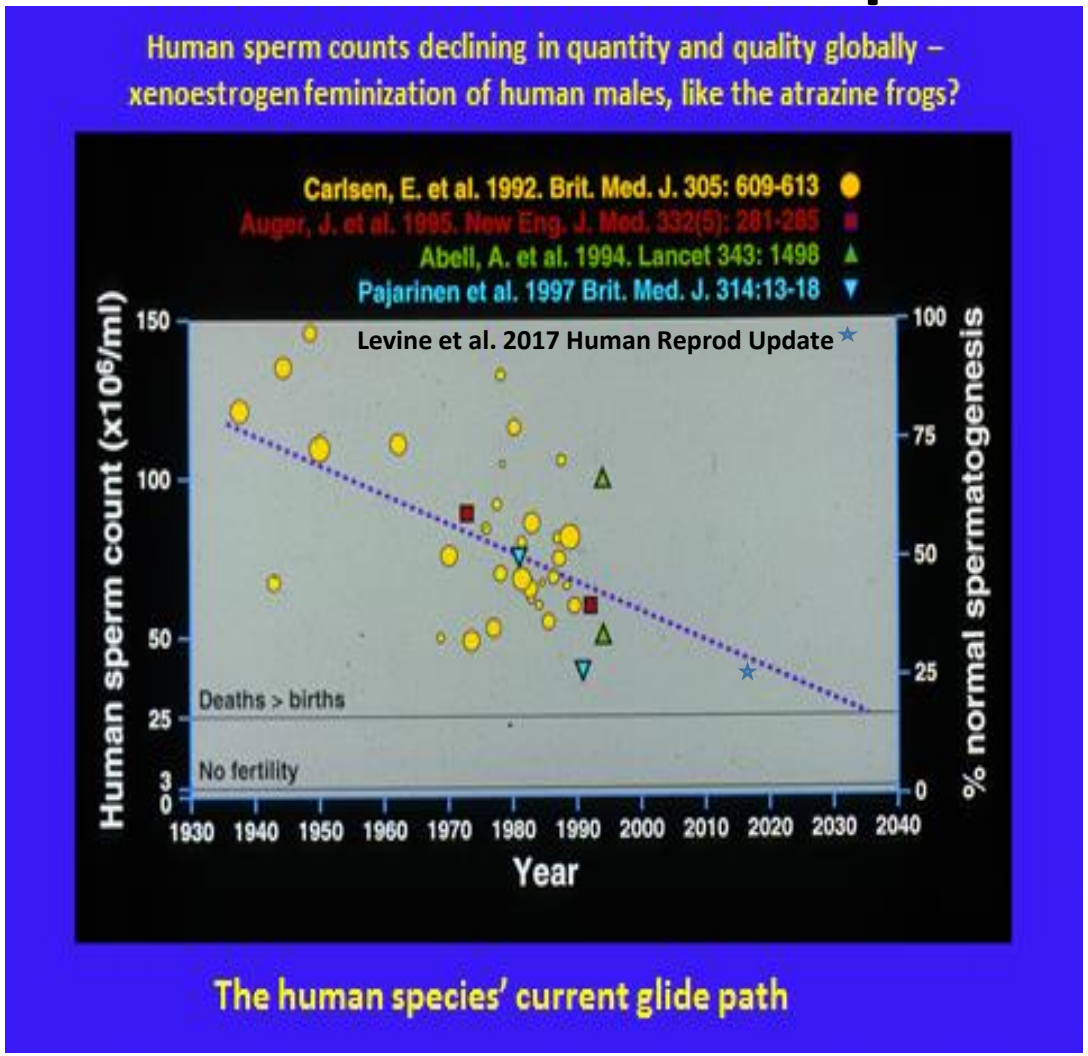
Jaeger, Carlson, Porter. 1999. Toxicol. & Indust. Health. 15 (1-2): 133-150.
Aldicarb, atrazine, nitrate mixes at environmentally relevant concentrations altered mouse aggression, immune function and thyroid hormone levels.

Roundup

Beneficial soil microorganisms

Stops aromatic amino acid synthesis = antibiotic effects

A Global Problem: Example 1 - Endocrine system



Roundup and **Atrazine** can alter the balance of testosterone/estrogen

All of us are conceived as bisexual organisms and develop that way early in our embryonic life until ppt –ppq sex hormones (testosterone/estrogen) decide our sexual and brain development.

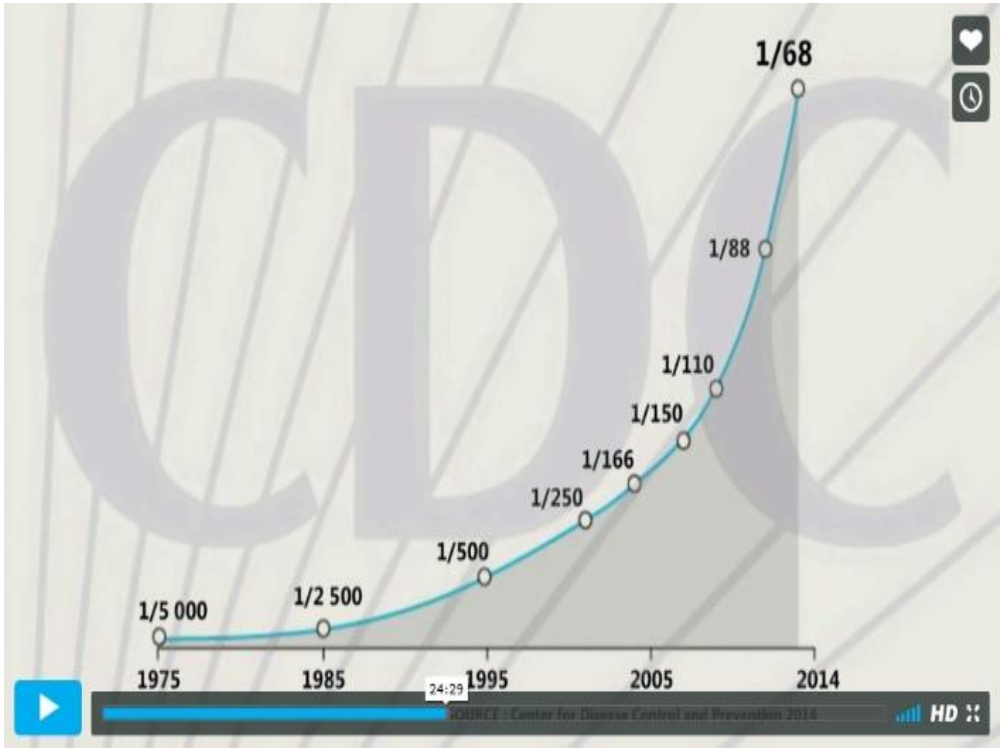
4/26/17 – 1 in 8 couples – fertility problems

60-70% US males qualified as sperm donors

6-7% US males qualified as sperm donors

1% of Israeli soldiers qualify (2012)
2013 ->1st year ever US whites– more deaths than births

Example 2: Neurological system
US autism birth rates as of 2014
Center for Disease Control and protection



Martin Boudot film, 'Toxic Chemicals: Our Kids in Danger'
2015 survey best estimate: 1/45 US births autistic
https://www.autismspeaks.org/science/science-news/new-government-survey-pegs-autism-prevalence-1-45

Example 3: Immune system <– chronic inflammation/oxidative stress

Immune insult is associated with many serious chronic health problems

Dietert, R.R. and J.M.Dietert. 2007. Curr. Medicinal Chem. 1075-1085

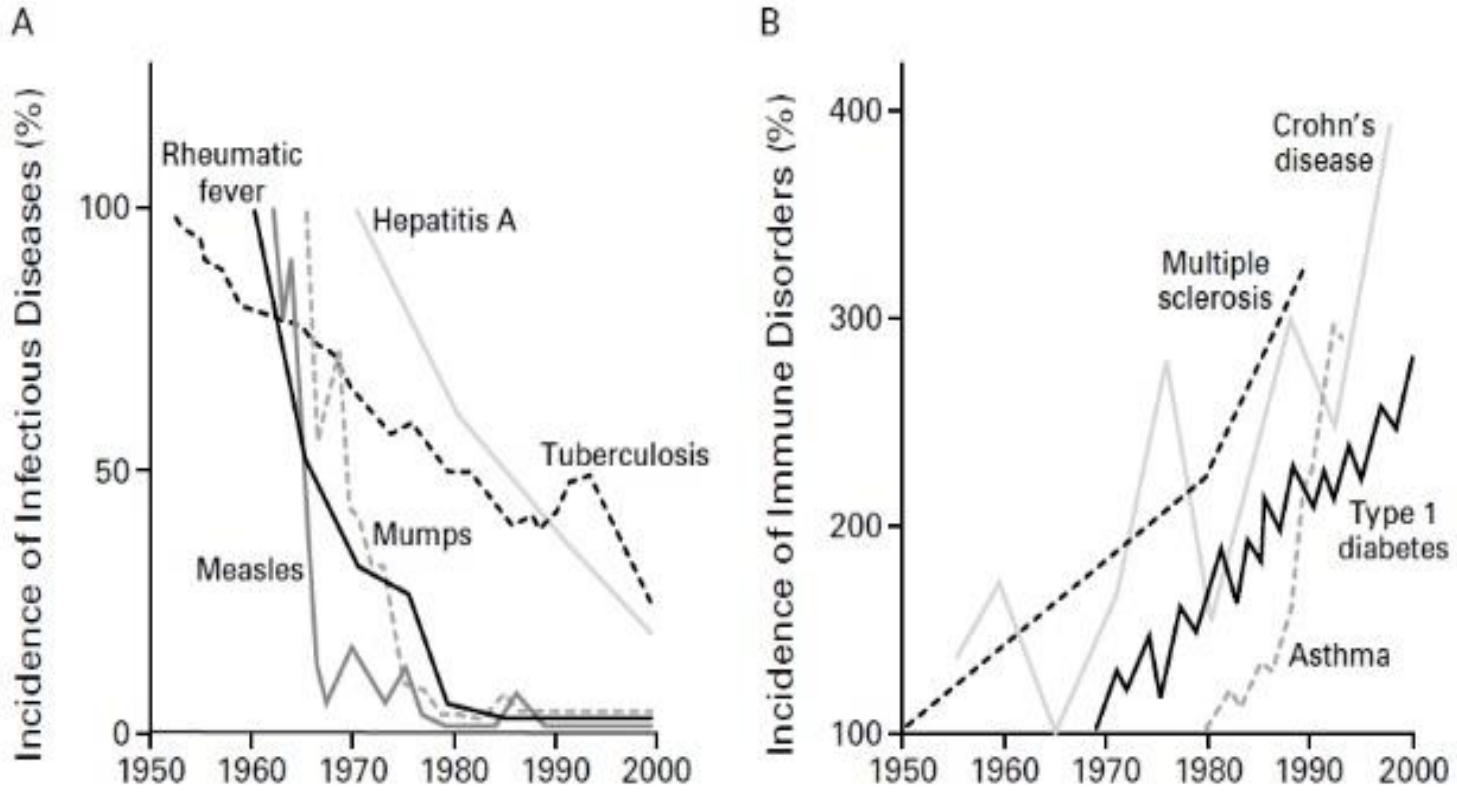


Figure 1. Inverse Relation between the Incidence of Prototypical Infectious Diseases (Panel A) and the Incidence of Immune Disorders (Panel B) from 1950 to 2000.

In Panel A, data concerning infectious diseases are derived from reports of the Centers for Disease Control and Prevention, except for the data on hepatitis A, which are derived from Joussemet et al.[12] In Panel B, data on immune disorders are derived from Swarbrick et al.,[10] Dubois et al.,[13] Tuomilehto et al.,[14] and Pugliatti et al.[15]

J-F. Bach. N Engl J Med 347 (12), 911-920. 2002 Sep 19

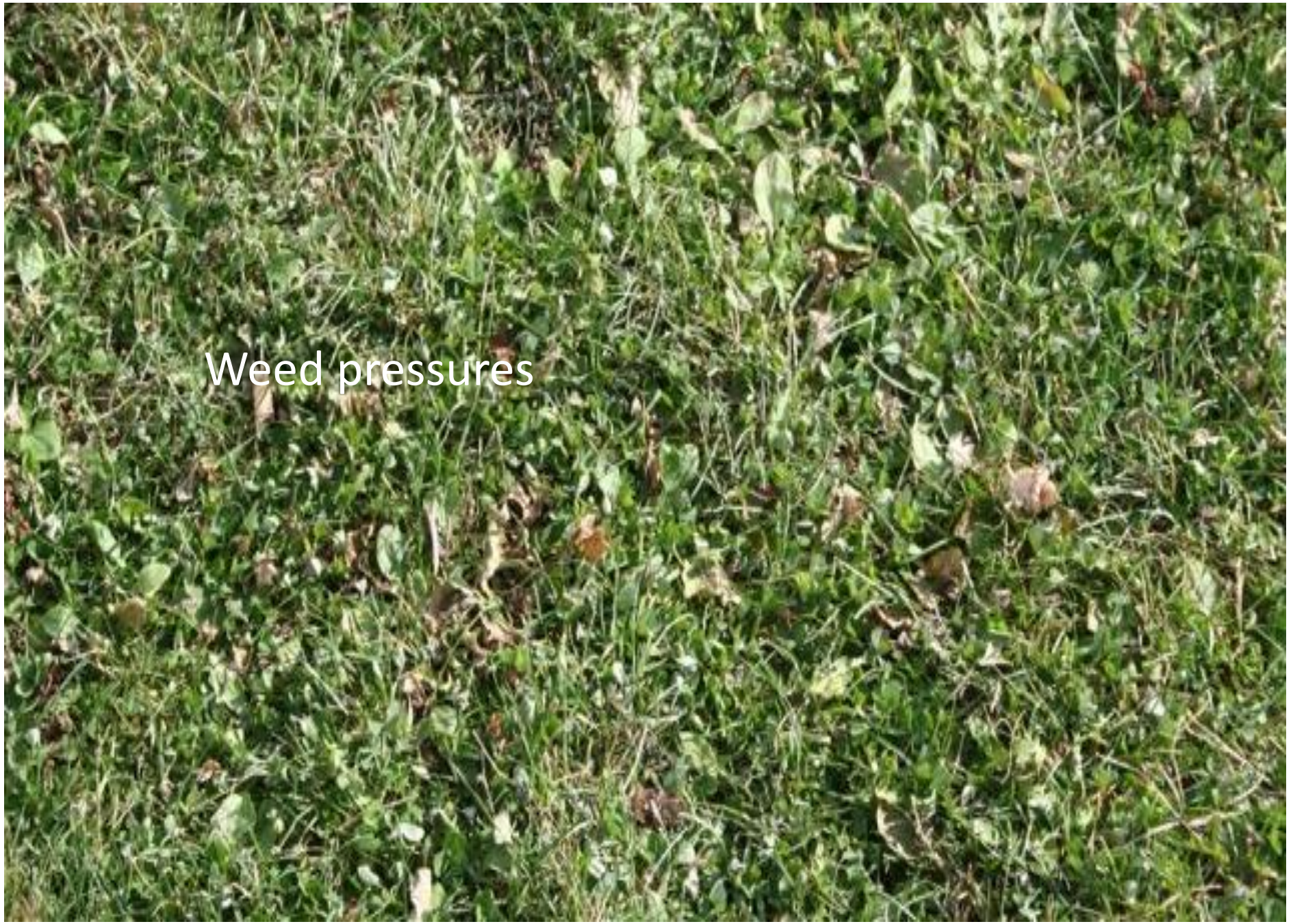
Current administration is defunding the highly successful WHO program for early containment of highly infectious diseases, e.g. Ebola

Boulder CO
2011-2014


2010 Before organic management
mid-August during growing season


Minimal turf density


Unhealthy system


Weed pressures


Transition complete


Weeds replaced with grass
Healthy system
Expectations met

Two possible solution paths to achieve change:
Solution 1 : allow illnesses to continue to accumulate until a breaking point is reached where the remaining population recognizes likely causes and decides to act.