



Rachel Carson Conference

Symposium on
Pesticide Dependency

WORLD POPULATION

7 Billion people

60% Billion malnourished



FOOD CONSUMED per CAPITA

2,200 lbs per year







World Pesticide Use

6 billion pounds

\$45 billion/year

World Crop Losses

40% Pre-Harvest

Losses

25% Post-Harvest Losses

Total Losses = 52%

FOOD COMTAMINATION

Pesticides in Foods

5% above Tolerance

Fruits and Vegetables

Human Poisonings

26 million = world

220,000 deaths

U.S. Pesticide Poisonings

300,000 non-fatal poisonings

EPA

Rachel Carson Leadership

Carson Stimulation

Designed Housefly Control

Required Less than 1,000th Dosage



U.S. Corn and Soybeans

Insecticides plus Herbicides on

Corn and Soybeans

Total 310 billion kg

Organic Corn and Soybeans

Zero Pesticides

Zero commercial nitrogen fertilizer

Cover legume crop

22-year Experiment

Corn and Soybean Yields

Exactly the Same

In organic and commercial treatments

Organic Treatment

No Soil Erosion

35% extra labor

Reduced costs

Organic Treatment

33% Reduced fossil energy

No commercial fertilizers

No insecticides or herbicides

Why are Pesticides Heavily Used

On Corn and Soybeans?

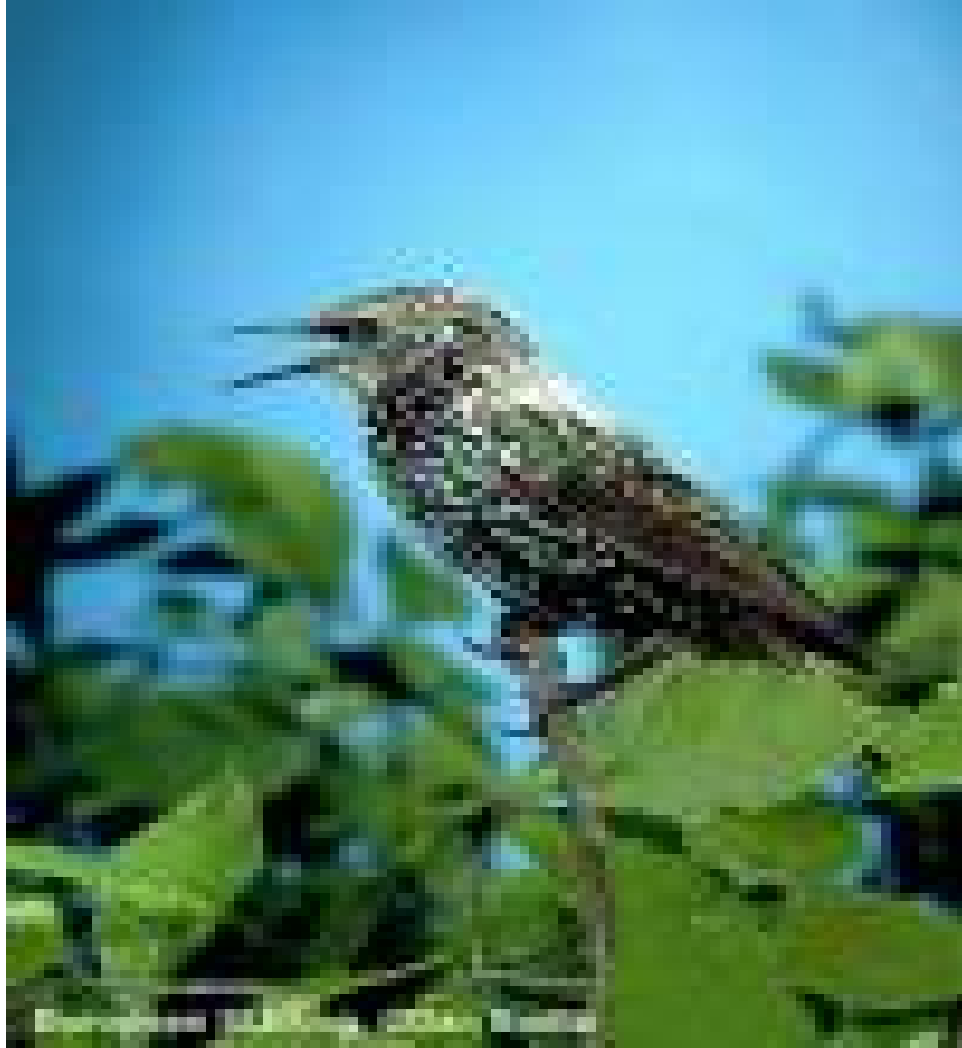
And on other crops in the U.S.?

DDT

First used in 1945

By 1950 DDT Resistance





2,4-D Herbicide Impacts

Corn borer 33% larger +

Produced more eggs

Corn leaf aphids 1,700

2,4-D Herbicide

Black smut disease increased 5+

Lost resistance to Southern corn

Disease pathogen







Natural Enemies Killed

Cotton = \$200 million

Other Crops = \$300 million

Total = \$500 million

Rice Indonesia

Brown Plant Hopper

\$1 billion/year

Natural Enemy Controls

50% - 90% Control in Crops

Pesticide Resistance

520 insects & mites

200 weed species

150 plant pathogens

Costs of Resistance

\$1.5 billion/year



Honeybees & Wild Bees

Benefits = \$40 billion/year

Pesticide Losses = \$300 million/yr

Essential Role of Bees

About one third of all food

Crops require bee pollination

Aircraft Applications

50% drift regular spray

75% drift ultra-low volume

Never reaches target area

Ground & Surface Water

Scientific Assessment

\$20 billion/year

Pesticide polluted water

Fishery Losses

EPA = \$10/fish

\$25 million/year

Bird Kills

72 million birds/year

\$2.1 billion/year

Environmental & Public Health

Total Costs

\$12 billion/year

No nestlings

Sweden Pesticides 10 years

Reduced pesticides 68%

Reduced human poisoning 77%

Indonesia Pesticides Rice

Reduced pesticides 65%

Rice yields increased 12%



Land and Food

99.7% = Land

0.3% = Oceans



Atlantic
Ocean

Dominion

Spain

Liberty

Caribbean
Islands

Atlantic
Ocean

Europe
Africa







WATER USE IN CORN

6 billion liters/growing season/ha

600,000 gallons/acre

WATER INPUTS

1,000 liters/kg grain

45,000 liters/kg beef

WATER: SOIL ORGANIC MATTER

5% soil organic matter

Holds 820,000 liters water/hectare





INVASIVE PEST SPECIES

Invasive Species = 50,000

Plants = 25,000

Microbes = 20,000

GMO's

40% of research focused on
Herbicide Tolerance in crops
No increase in yields

Herbicide Tolerance

75% of GMO crops are
Herbicide Tolerant
No yield increase

World Pesticide Use

World = 3 billion kg

U.S. = 0.5 billion kg

World Crop Losses

Pre-Harvest = 40%

Post-Harvest = 25%

Total = 52%

World Human Poisonings

26 Million Pesticide Poisonings

220,000 deaths

Damage and Control Costs

\$137 billion per year

Causes of Extinctions

Human population = 45%

Invasive species = 40%

Cotton Pesticides

Insecticides = 3-4 kg/ha

Perennials Grains

Energy

Soil Erosion

Rainfall Timing

Energy Inputs in Corn Ethanol

Total Input = 6,660 kcal (liter)

Total Output = 5,130 kcal (liter)

Minus = 29%

Corn Environmental Impacts

1,700 gal. Water/ethanol gal.

Uses more nitrogen fertilizer

More pesticides

CROPLAND DECLINE

20% per decade

IRRIGATION LOSS

10% loss/decade

FERILIZER DECLINE

17% decline/decade

WORLD GRAIN per PERSON

1960 = 270 kg

1984 = 340 kg

2004 = 300 kg







