Minimizing Wildlife Damage in Fruit Crops

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Why Control Wildlife in Fruit Crops?

- Economic losses
  - Fruit destroyed or consumed by wildlife
  - Increased disease & insect pressure with damaged fruit
  - Damage to plants and cropping system
    - Feeding on succulent shoots
    - Girdling or rubbing on plants
    - Puncturing plastic
- Food Safety

Wildlife Damage to Selected Fruit Crops – 1998 Estimate

- Survey conducted by USDA, APHIS, Wildlife Services
- Included 8,850 producers in California, Michigan, New Jersey, New York, North Carolina, Pennsylvania & Washington
- $41 million dollars loss reported

1998 Estimates of Wildlife Damage to Apples, Blueberries & Grapes

- Apples:
  - $13.5 million loss (1% of value of production)
  - $4 million spent for control
- Blueberries:
  - $4.4 million loss (4% of value of production)
  - $443,000 spent for control
- Grapes:
  - $23.1 million loss (1% of value of production)
  - $5.4 million spent for control

Cost of 1 Missing Tree/Acre

- Processing:
  - 109 tpa, 1000 bu/A, $4.00/bu., 20 yr. life
    - Delaying fruiting 1 year - $30.45
    - Not replanted - $608.91
      - (includes lost income)

- Fresh, Wholesale
  - 217 tpa, 800 bu/A, $15/bu, 20 yr. life
    - Delaying fruiting 1 yr. - $28.53
    - Not replanted - $570.68
      - (includes lost income)

Pests & Control Methods

- Birds
  - Starlings, Robins, Blackbirds, Crows & Ravens
- Deer
- Mice & Voles
- Coyotes
- Ground Squirrels

- Pyrotechnics
- Flagging
- Repellents
- Frightening Devices
- Fencing

Pest Management Strategies

- Cultural Controls
- Mechanical Controls
- Biological Controls
- Chemical Controls

Wildlife Damage Prevention Categories

- Habitat modification
- Exclusion
  - Fencing
  - Netting
- Scare devices (visual & auditory)
- Repellents (taste & smell)
- Removal
  - trapping
  - shooting


© Defenders of Wildlife

Raccoons

- Fencing (electric) –
  - 2 strands: 1st 4” aboveground, 2nd 12” aboveground
  - Mesh fence with an electric wire about 8 “ from the fence and 8” aboveground
- Dogs
- Trapping – not very practical or effective for larger areas

Birds

Bird Damage

- Damage is greater:
  - Near towns where certain birds are more abundant
  - In isolated plantings
  - In smaller blocks
  - Where snags or power lines serve as perches
  - Where nearby woodlands or brushy fields serve as nesting or roosting sites
  - On early ripening varieties & declining as the season progresses

Blueberry Fruit Losses to Birds

- Bluecrop – 100% crop loss with unnetted plants
  - 5 pints / bush yield X $1.99/pint = $9.95 loss / plant X 726 plants / acre = **$7,223.70 lost / acre**
- Tifblue - 60% crop loss with unnetted bushes
  - 10 pints/plant yield total
  - Loss of 6 pints / plant to birds X $1.99 / pint = $11.94 lost / plant
  - 726 plants / acre X $11.94 lost / plant = **$8,668 lost to birds**

Grape Crop Loss to Bird Feeding

- Crop losses ranged from 20% to 100% depending on variety & ripening time
  - Yield / vine: 20# fruit /vine X 454 vines/acre
    - (4 ½ tons/acre)
  - Selling price of fruit: $1,100 / ton
  - Losses ranged from $220 to $4,950/acre

Bird Habitat

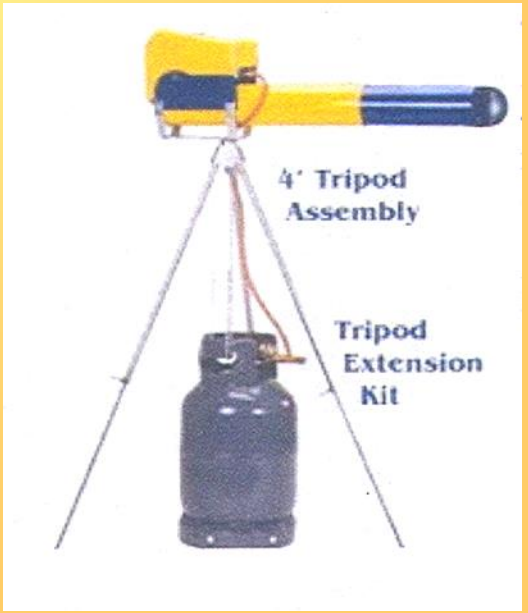
- Isolated plantings more vulnerable than those near other orchards, vineyards & small fruit plantings
- Smaller blocks more vulnerable than larger ones
- Power lines & tree snags may serve as bird perches & increase the level of damage
- Nearby woodlands & brushy fields (nesting & roosting sites) may result in increased feeding pressure

Visual Scare Devices

- Visual Scare Devices (streamers, spinners, aluminum pans, plastic owls & snakes, scare eyes
  - More effective when changed regularly
  - Combining with auditory devices increases impact
  - Reinforcing by occasional shooting (where permitted) will further increase control

Auditory Scare Devices

- Repels by scaring or disorienting birds
  - Fireworks
  - Shooting
  - Carbide cannons
  - Distress calls



Auditory Scare Devices

- Distress or alarm calls more effective than other noisemakers
  - Need to know what birds are causing the problem
- Broadcasting at irregular intervals & from different sites increases effectiveness
  - Check for local ordinances

Methyl Anthranilate

- Taste repellent for birds
  - Used as a fragrance in many products & a flavor enhancer for many foods
  - Synthesized from Concord grapes
    - Use on non-Labrusca types may leave a “foxy”flavor
    - Leaf burn on blueberry

Bird Control Tips

- Start before birds establish a feeding pattern
- Scare devices need to be operated from shortly before sunrise until sunset
- Vary frequency and location
- Supplement with shooting
- Combine several methods

Netting

- Most effective control practice
- Install before damage begins
- Suspend above crop canopy
- Net individual rows or entire block
  - Net should go from ground to ground on all sides
- Remove after harvest
  - Netting should last several years

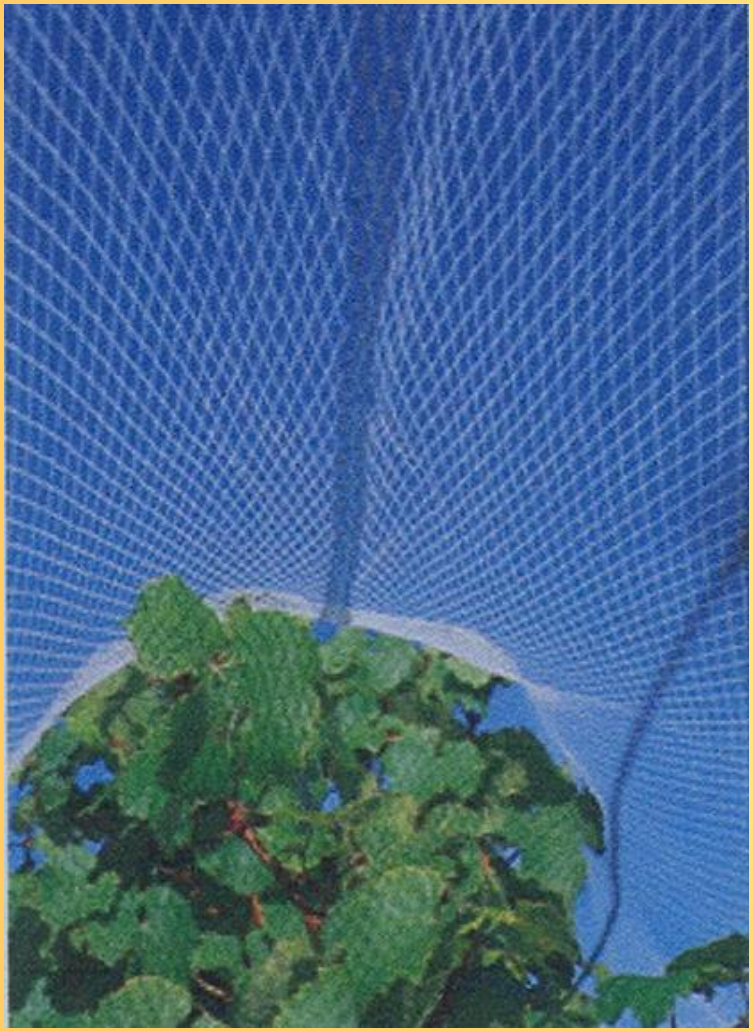
Dancing Man

- Irregular movement
- Can supplement with noise
- Ability to move around in plantings

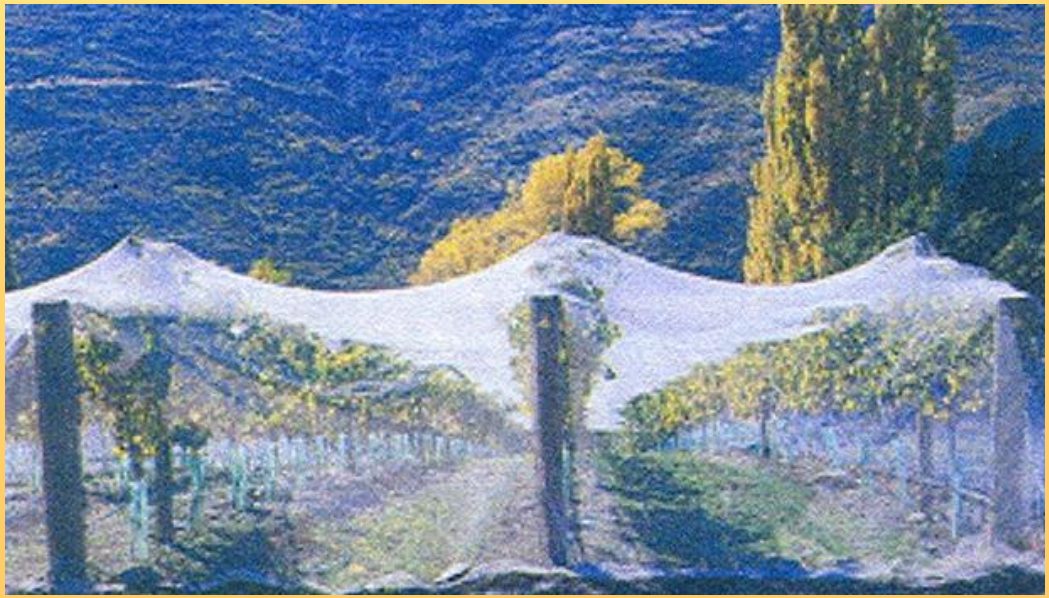

8:45

Exclusion

Bird Netting



Individual row coverage



Total field enclosure


Wild Turkey

Wild Turkey

- Often blamed for damage caused by other wildlife species
  - Visibility (active in daytime)
  - Presence in orchards
    - Feeding on bugs

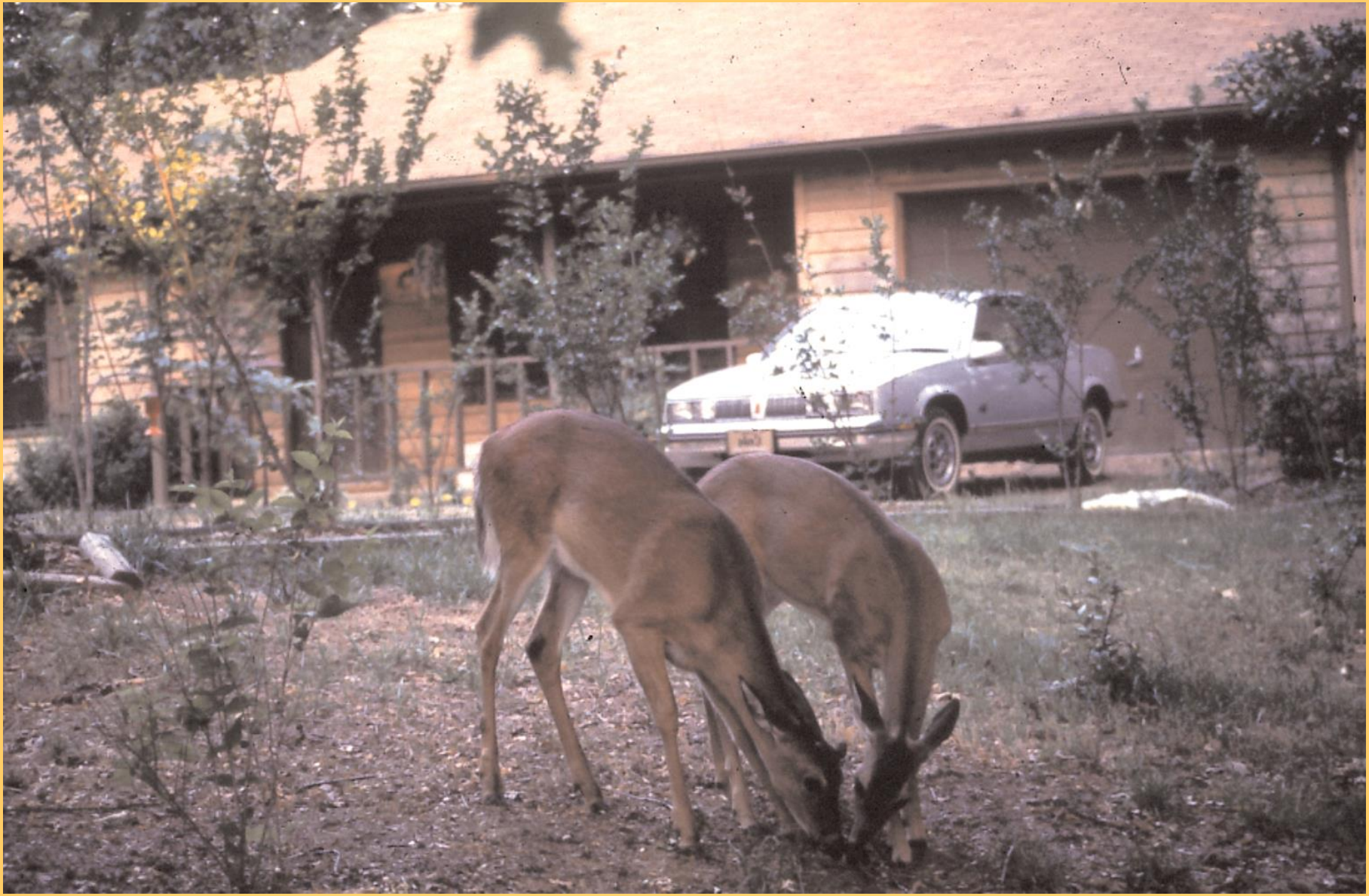
Wild Turkey Control

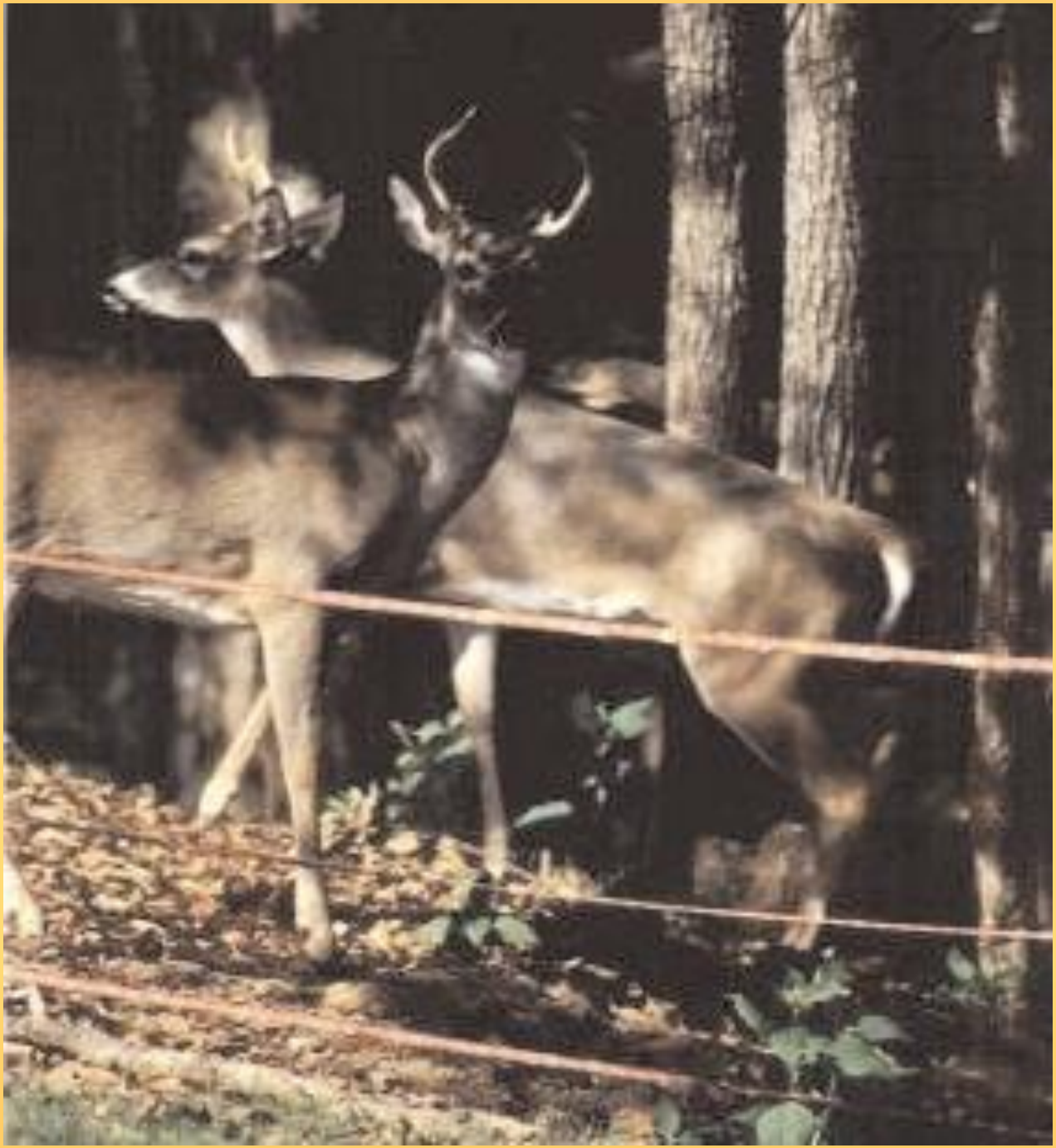
- Hunting
- Habitat Modification
  - Eliminate roosting sites in the vicinity of orchards
  - Eliminate Nesting sites (grassed areas on margins of woodlands)


White-tailed Deer

Deer Populations in the Southeast

- North Carolina
  - 670,000 in 1994
  - 1.25 million in 2007
- Georgia
  - Current estimate: >1.20 million
- Tennessee
  - Current estimate: >1.0 million





Deer Damage Crops By:

- Feeding on tender shoots and fruit

- Rubbing on branches
- Destroying plastic in plasticulture systems

- Food safety concerns (*E.coli 0157 H7*)

Deer Damage Control

- Habitat Modification:
  - Converting forest areas adjacent to orchards into cropland or pasture may help limit movement into orchards
- Hunting:
  - Encourage hunting on the farm
  - Encourage hunters to harvest does
  - May provide only temporary relief
- Shooting:
  - Check with area wildlife control officers

Deer Damage Control

- Area Repellents (smell)
  - Tankage, ammonia soaps, bone tar oil, blood meal, human hair, bar soap, (fabric softener dryer strips)
  - Put close to or on plants to be protected
  - Focus on side of planting where deer enter or disperse throughout planting
  - Some repellents may attract other animals

Deer Damage Control

- Taste repellents:
  - Apply directly to plants
  - Expect some initial damage
    - Putrescent egg solids, thiram, hot pepper sauce, ammonium soap
  - Reapplication may be necessary after heavy rainfall

Repellents (smell & taste)

- Tend to be temporary & variable in effect
- Work best in spring & summer when alternative food sources are scarce
- Frequent retreatment may be needed
- Varying repellents increases effectiveness
- Thiram, hot sauce, putrified egg solids, Hinder, mothballs, human hair, tankage, scented soaps, fabric softener sheets . . . .


ORGANIC
Milorganite
FERTILIZER
6-2-0
6% ORGANIC NITROGEN
IRON FOR DEEP, EVEN GREENING
NON-BURNING,
NO NEED TO WATER IN
ALSO FOR USE ON
VEGETABLES
CEDAR PINE
Moth
Balls
GRADE
LARGE EGGS
Clear
Ammonia


CONCENTRATE
YIELDS 8 QUARTS
Protect Your Garden!
DEER OFF
Deer, Rabbit & Squirrel Repellent
SHIELD-BRITE
HINDER
DEER AND RABBIT REPELLENT
DANGER
PELIGRO
LEFFINGWELL
RO-PEL
ANIMAL, RODENT
AND BIRD
REPELLENT
CAUTION
Net Contents 1 gal.
(3.8 liters)
DEER

Deer Damage Control

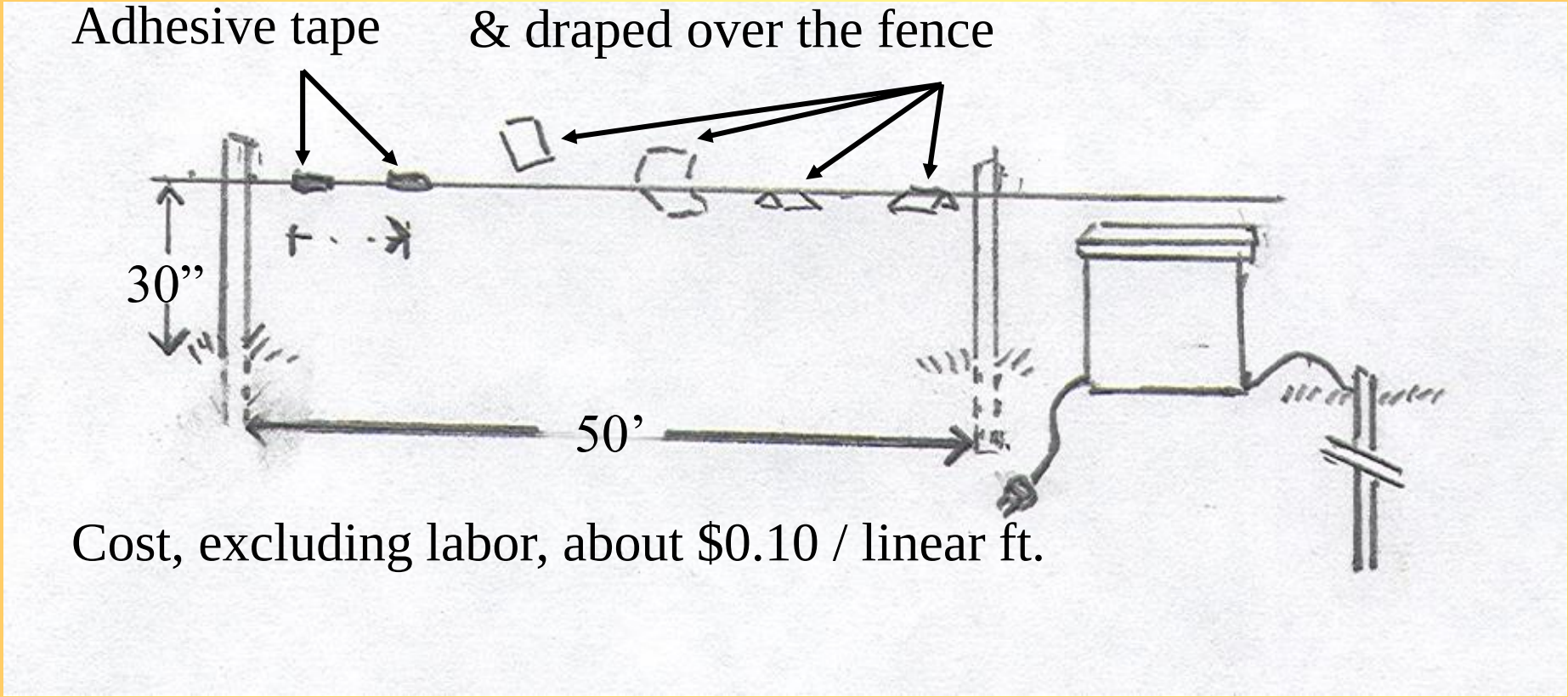
- Fencing (exclusion):
  - May be the only effective method in areas having a high deer population
  - Anticipate the problem – construct fences before deer establish a feeding habit
  - Have a wildlife damage permit & supplement by shooting if necessary

Deer Fencing

- Type of fencing depends on
  - Degree of deer pressure
  - Duration of desired control
  - Availability of electricity
  - Maintenance
- Costs, excluding labor, can run from about $0.10 to $2.00 per linear foot

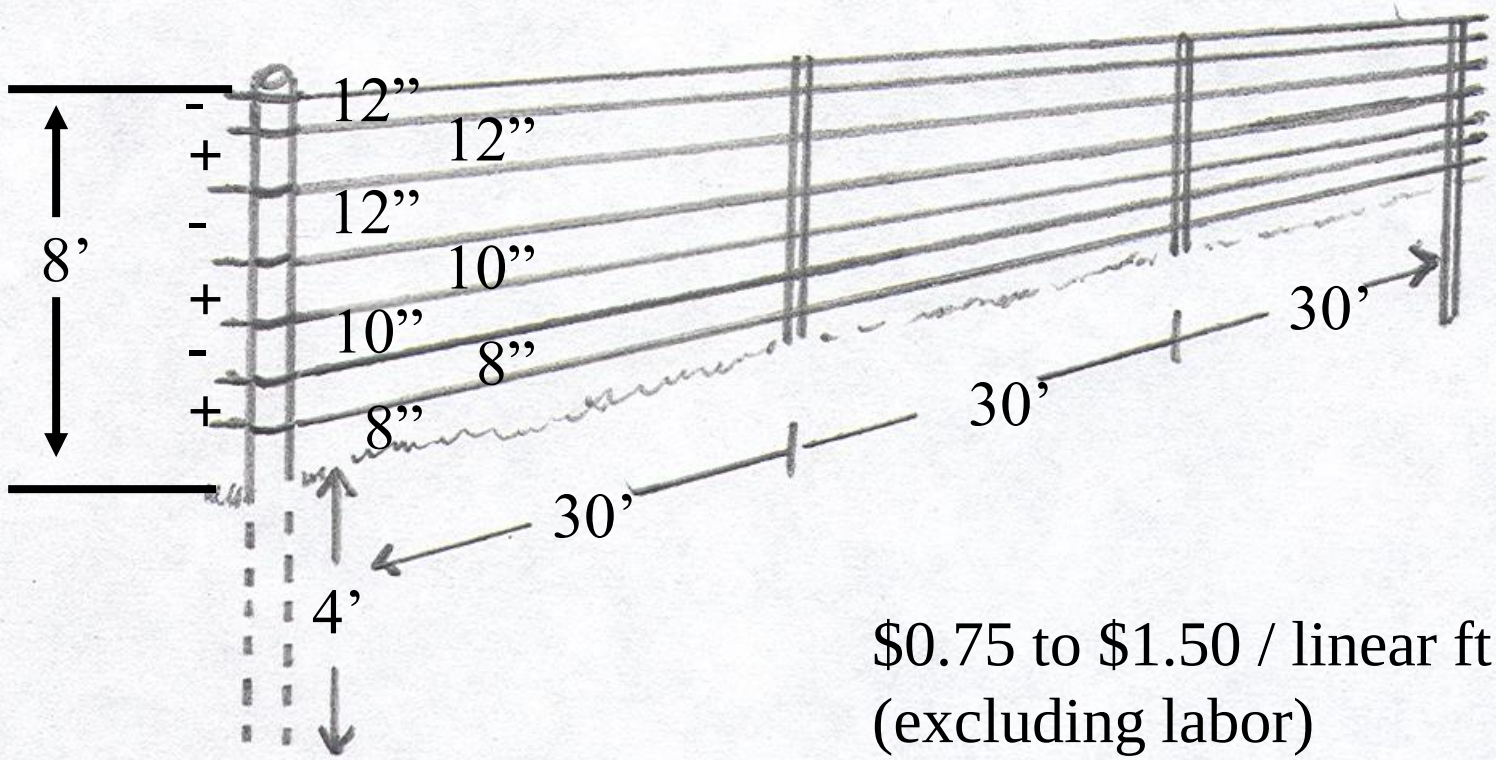
Peanut Butter Fence (moderate pressure)

3” X 4” strips of foil smeared with peanut butter & draped over the fence

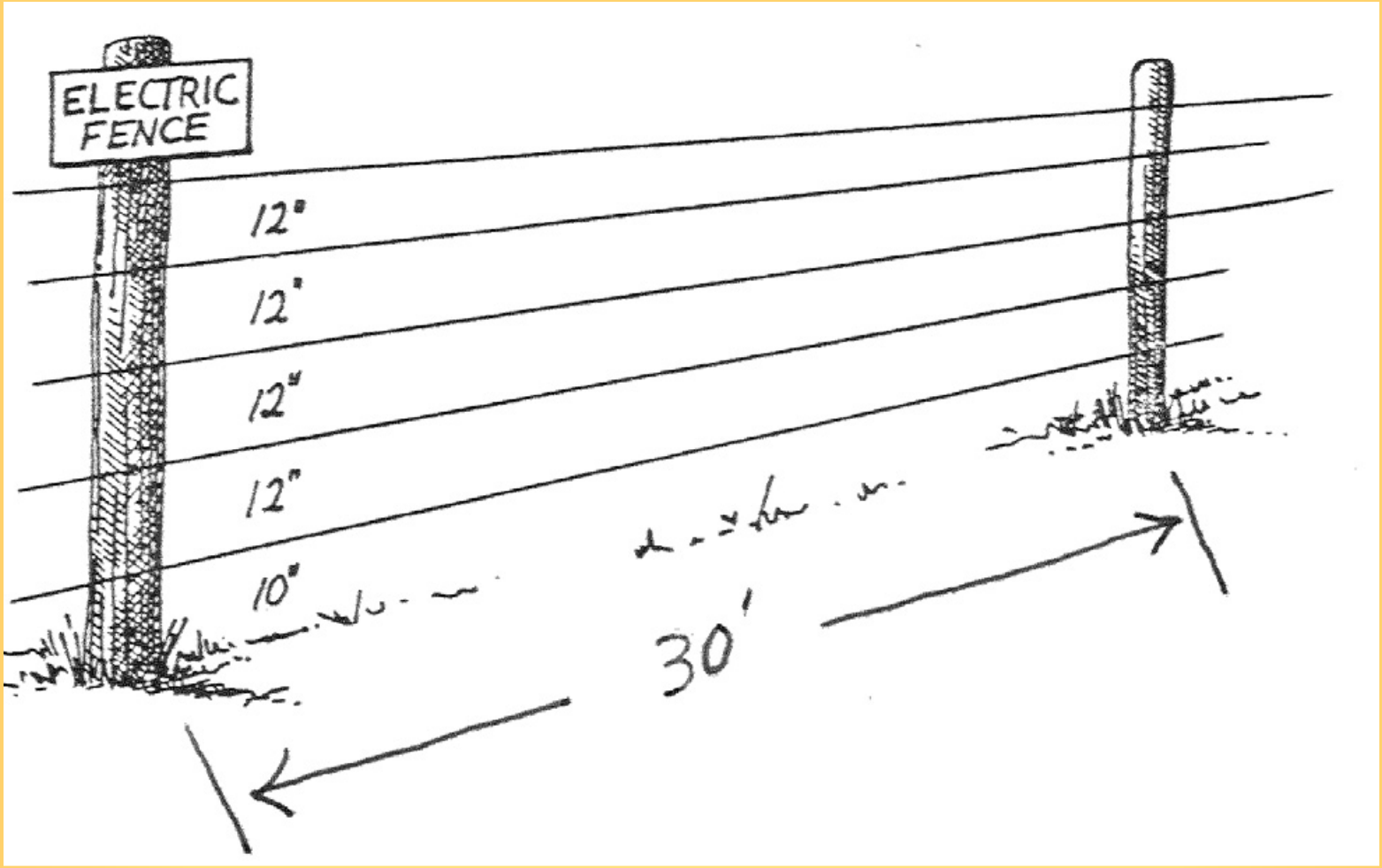


Cost, excluding labor, about $0.10 / linear ft.

7-Wire Vertical Deer Fence (moderate to high pressure)

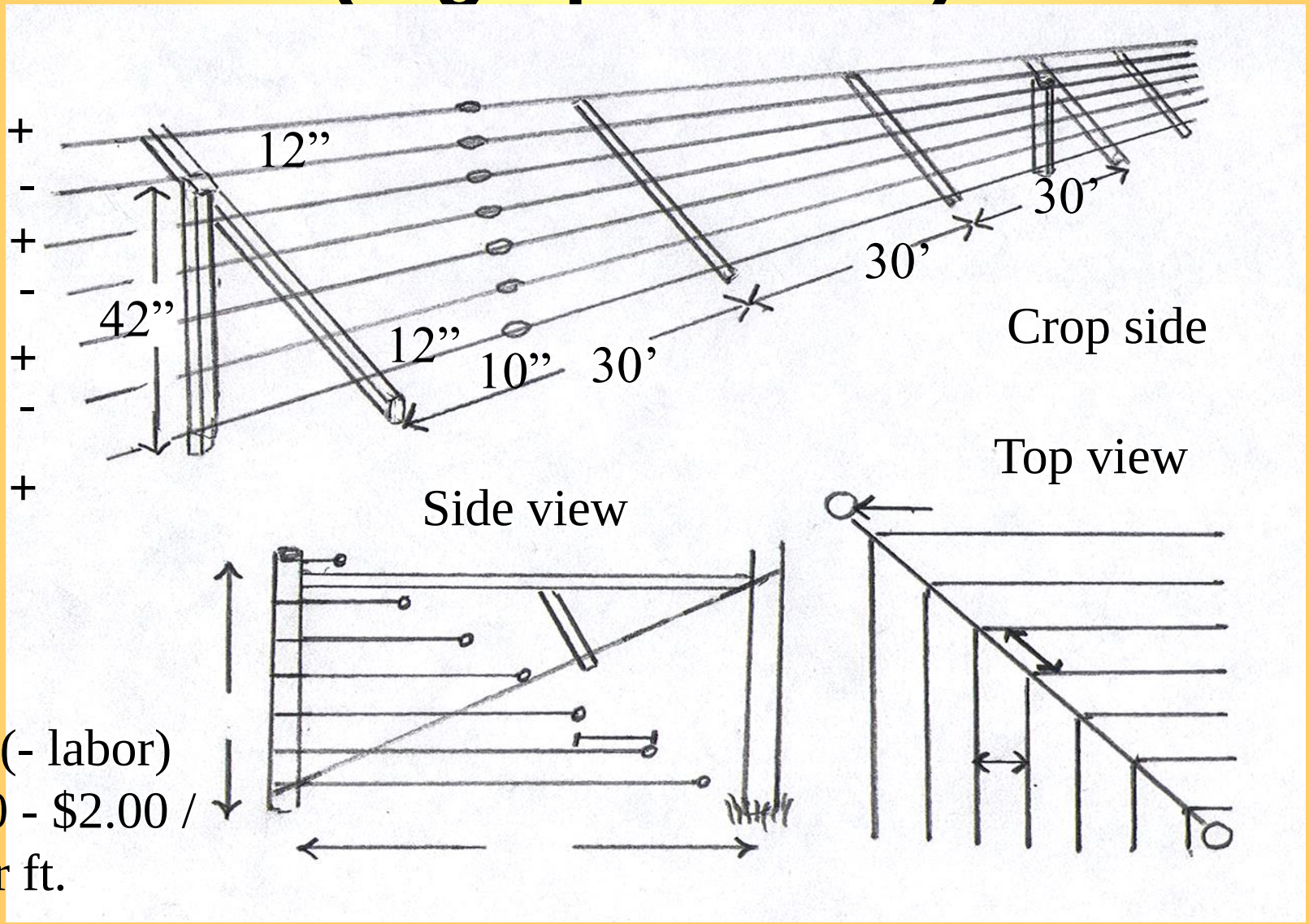


$0.75 to $1.50 / linear ft.
(excluding labor)


ELECTRIC FENCE
12"
12"
12"
12"
10"
30'

Non-electrified Fence

Slanted 7-wire Fence (high pressure)



Cost (- labor)
$1.50 - $2.00 / linear ft.

Meadow Vole

Prairie Vole

Cotton Rat

Pine Vole

Voles

- Small, chunky, ground-dwelling rodent
- Population changes greatly every 3 to 7 years
  - (may increase 20 times the low level)
- Voracious appetite
  - May eat almost their own weight daily
    - (seeds, bark, roots, leaves)

Vole Damage Can:

- Kill plants outright by totally girdling the trunk
- Weaken plants by partial girdling
  - Reduces growth, causes leaf yellowing
  - Reduces yield and fruit quality
  - Reduces anchorage
- Predispose plants to secondary factors which may kill them
  - provides an entry point for disease

Integrated Vole Management

- Monitoring
- Habitat Modification
- Exclusion
- Predation
- Repellents
- Toxicants (Rodenticides)

Vole Habitat

- Old fields
- No-till cropland
- Orchards
- Fencerows
- Ditch banks
- Hedgerows
- Woodland

- Meadow voles prefer moist to wet meadows
- Prairie voles prefer drier areas
- Pine voles are found throughout the state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