

A wide-angle photograph of a lush green spinach field. The rows of plants are dense and stretch towards a distant horizon. In the background, there are some farm buildings and a line of trees under a grey, overcast sky. The text is overlaid on the center of the image.

Evolution of Insect Management on Spinach Produced in the Arkansas River Valley

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1980 spinach production characteristics

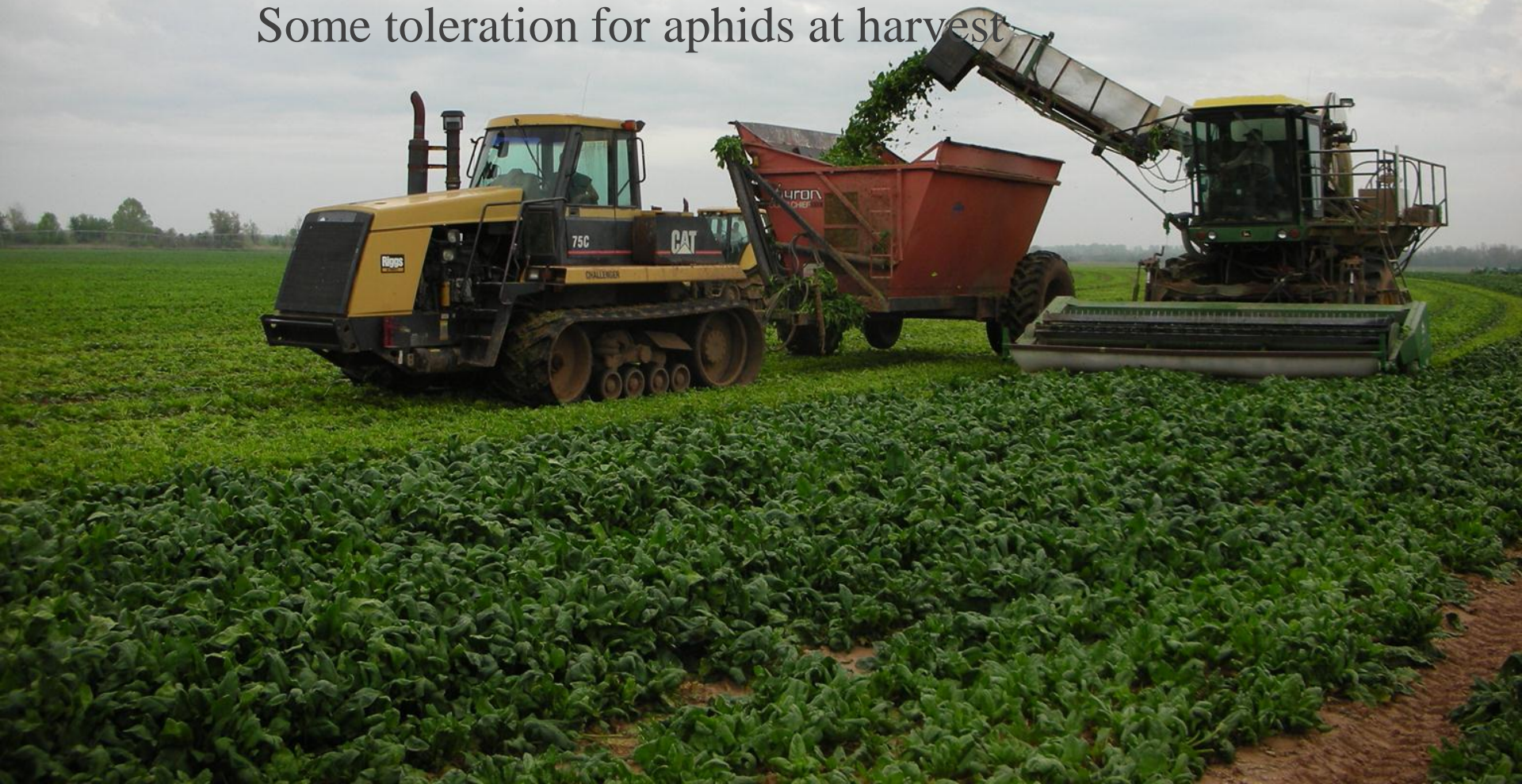
Produced for canning industry

Produced in cool season (fall, winter, spring) of hot climate

Single harvest only

Savoy leaf

Some toleration for aphids at harvest



Green peach aphid, *Myzus persicae*



Green peach aphid management

Key insect/plant characteristic – within plant aphid distribution

1970's – 1980's – dimethoate applied based only on plant size; phosdrin available for rescue; pyrethroids

Risks – not based on IPM practices
OP chemistry

Benefits – none (dimethoate and phosdrin were generally ineffective on spinach; pyrethroids could cause aphid population increase)

Use of older chemistry abandoned

Dimethoate no longer used

Phosdrin registration cancelled

New aphicides developed

Aphistar – 10 years of development but never registered

Imidacloprid – initial U.S. registration in 1994; mostly effective against GPA on spinach due to toxicity and systemic activity; may also be applied to soil and taken up by the plant; risk to honeybees

Current GPA management

Most effective is to scout for aphids and apply imidacloprid or other neonicotinoid insecticide when 5 GPA are detected per inner spinach leaf



Other methods of application include soil injection and seed treatments

Caterpillars

Few larvae detected prior to 1996; most were corn earworm and rarely required management; garden webworm occurred along weedy edges of field and was considered a beneficial

1996 – RoundUp Ready soybean became available





Common caterpillars since mid-1990's





Management now required on most spinach

Bt's
Avaunt, Radiant, Proclaim, Mustang-Max, Coragen, others

Current insect management on Arkansas River Valley spinach

Aphids – low threshold requires preventative insecticide application

Leps – now abundant but generally manageable with modern insecticides

