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## INSECT, PLANT DISEASE, & WEED SCIENCE NEWS [No. 90-9] [May 18, 1990]

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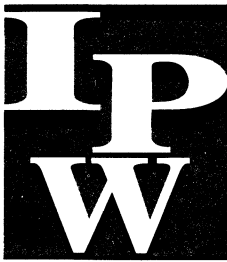
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# Insect Plant Disease Weed Science

# NEWS

UNIVERSITY OF NEBRASKA COOPERATIVE EXTENSION • INSTITUTE OF AGRICULTURE AND NATURAL RESOURCES

No. 90-9

May 18, 1990

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## *PLANT DISEASE*

### Foliar Disease Pressure Increasing on Wheat

**Powdery mildew** has exploded in the last ten days in southeastern Nebraska. In many fields powdery mildew has moved onto the upper half of the wheat plant, and in some situations, the flag leaves are becoming infected. The powdery mildew outbreak has reached the point where farmers should seriously consider applying a fungicide to protect the flag leaf and head from infection.

In addition to powdery mildew, the **leaf rust** threat has increased significantly since early May. A dramatic increase in leaf rust in eastern and central Kansas may indicate the beginning of an epidemic. Leaf rust levels are still light in Nebraska, but the developing rust situation in Kansas and our recent wet weather could lead to a severe leaf rust outbreak in eastern and south central Nebraska. Again, growers should think seriously about having their wheat treated with a fungicide.

This could be the year when applying fungicide to wheat in eastern and south central Nebraska will have a positive economic return. Consider these factors:

- Yield potentials are generally above 45 bushels per acre.
- Powdery mildew has developed rapidly since late April.
- The leaf rust situation is threatening.
- The weather forecast is for cool, wet, cloudy conditions which are ideal for the development of wheat leaf diseases.

Growers in eastern and south central Nebraska should check their fields regularly within the next ten days and give serious consideration to having them sprayed with a fungicide.

To protect against both powdery mildew and leaf rust, use Tilt, Bayleton, or Bayleton plus Mancozeb. Tilt cannot be applied beyond growth stage 8 which is roughly when the flag leaf is 50-75% emerged. Treatment with Bayleton or Bayleton plus Mancozeb can be later; however, if powdery mildew is present, treat it immediately. Aerial application is the desired treatment method. Products should be applied at a minimum rate of 5 gallons of solution per acre to ensure good coverage.

John E. Watkins



UNIVERSITY OF NEBRASKA-LINCOLN, COOPERATING WITH THE COUNTIES AND THE U.S. DEPARTMENT OF AGRICULTURE



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## Examine Seeds to Determine Type of Grain Damage

Germinating corn or sorghum seeds may be attacked by a number of soil- or seed-borne fungi that cause seed rots and seedling blights. Severe infection may kill the embryo before germination (seed rot), or destroy the seedling before or after emergence (seedling blights). The terms "preemergence and postemergence damping-off" often are used to specify the affected growth stage. These diseases are prevalent in excessively wet or poorly drained, compacted, or cold soils. Disease severity is affected by planting depth, soil type, seed quality, and/or mechanical injury to the seed.

Above-ground symptoms are yellowing, wilting, and death of the emerging leaves. These symptoms may be confused with mechanical, chemical or insect damage. Close examination of below-ground plant parts is necessary for accurate diagnosis:

**Seed Rot:** Absence of seedling emergence. Rotting and decay of the seed before germination.

**Seedling Blight:** Watery decay of seedling tissue before emergence or, following emergence, a soft rot and constriction of the stem near the ground level. The rotted area may be dark (Pythium), whitish-gray (Diplodia), slightly pink (Fusarium), or bluish (Penicillium) in color.

To prevent seed rots and seedling blights use injury-free, good quality seed; use a seed protectant fungicide, such as captan or thiram; and plant in warm, fairly moist soil at the proper depth with correct placement of fertilizer, herbicides, and insecticides.

David Wysong

## *Fungi Strikes Iris Early*

This week I examined several iris beds in Lincoln and found a fungal disease called iris leaf spot. This disease is more commonly seen later in the season, but apparently spring rains and moderate temperatures have favored spore production on last year's infected debris. The new crop of spores, splashed onto developing iris fans by the rains, are resulting in infection sites unusually early this year.

The spots are dark brown at first, surrounded by a water-soaked, and then yellowing region. They enlarge into rather oval lesions up to a half-inch in length, with a red-brown border. As the spots age, tufts of olive-colored spores turn the centers gray.

A few lesions per leaf would not be considered serious. Repeated spotting, however, can reduce the bloom and if repeated over many years, may weaken and kill entire plants.

Removing and destroying old leaves at the end of the season (or before production of new fans in the spring) reduces potential fungus inoculum. If plants are crowded or shaded, thinning to increase air movement and enhance more rapid drying of foliage may help. If the disease is regularly a problem, fungicide applications after wet weather will help prevent further spread. Treatment products include Bordeaux mixture or Benlate or Daconil 2787. Follow label instructions for proper application.

David Wysong

## Oak Wilt a Possible Threat in Nebraska

Oak wilt has been a serious problem east of Nebraska for many years. The causal agent, *Ceratocystis fagacearum*, is a vascular wilt fungus identified in 1940. Before then, oak decline and death attributed to drought or root rot may have been misdiagnosed. Occasional pockets of oak wilt infection have been identified in Nebraska in the last 20 years, most often in counties along the Missouri River.

Symptoms of oak wilt are unclear and need to be confirmed in the laboratory. Oak wilt symptoms may appear from early June through the beginning of leaf coloration in the fall. Infected oaks of the red oak group (black, northern,

red, pin, and scarlet) typically show wilting, bronzing, and premature defoliation of branch tips in the upper crown. Wilting leaves are dull green, bronze, or tan along the outer leaf portions. The leaf base and tissue along the main vein are the last to change color. Disease progression throughout the tree may occur within a few weeks in infected red oaks. Wilting branches will have a brown discoloration of the vascular tissues just beneath the bark.

Members of the white oak group (bur, post, and white) appear to be less susceptible to oak wilt. The symptoms are not as pronounced, and the disease does not progress as

quickly. Early symptoms are a wilting of foliage of individual branches in the crown. Leaves may yellow, but browning is only on the margins. The leaves remain attached. Over several years, individual branches may die. Some infected white oaks may die within two to four years; others appear to recover and grow normally. Vascular discoloration is rarely seen in white oaks.

The collection and handling of a sample sent to the Plant Disease Diagnostic Clinic for confirmation of possible oak wilt involvement is critical. The sample should consist of several branches which are actively wilting and have a branch diameter of approximately 1/2 inch. Isolations cannot be made from dead branches. Samples should be collected in midsummer. Fall and spring samples do not give reliable results. The sample branches should be rolled

in newspaper and sent promptly to the Plant Disease Diagnostic Clinic. Be sure to describe the symptoms, location, history, and care of the tree.

Control of oak wilt is limited to prevention of infection of healthy trees. The fungus is spread from tree to tree primarily by root grafts. Once the disease is identified, it is necessary to mechanically or chemically disrupt potential root grafts with adjacent trees. Infected red oaks should be removed and destroyed. White oaks may be left for observation to see if natural recovery occurs.

Luanne V. Coziahr

# INSECT SCIENCE

## Clover Leaf Weevil Common in Alfalfa

Alfalfa growers in eastern Nebraska are becoming alarmed about the large number of clover leaf weevil larvae in their fields. Reports indicate that as many as 30 to 40 larvae can be found per square foot in some northeastern counties. Perhaps half as many can be found in southeastern counties. In many fields, pupation has begun and the weevil cocoons can be found in debris near the base of plants.

Some growers are not sure whether they are finding clover leaf weevils or alfalfa weevils. From a distance, both the larvae and adults of these two species look very similar. The table below describes the differences between the two species.

Alfalfa Weevil	Clover Leaf Weevil
Overwinter primarily as adults.	Overwinter primarily as larvae.
Adults are brown with dark brown stripe halfway down back, snout on head, and 3/16 inch long.	Adults are dark brown, pitted light brown underneath, snout on head, and over 1/4 inch long.
Larvae prefer to feed on newly emerging leaves at stem tip.	Larvae prefer to feed on lower and middle leaves.
Larvae remain on plant most of time.	Larvae feed on plant at night and during the day rest in debris at base of plant.
Larvae have black heads.	Larvae have brown heads.
Adults leave fields in June.	Adults may remain in fields into July.

The obvious question for many people is: What should be done about the unusually large infestation of clover leaf weevils? Because this insect is not common, there is very little research on which to base management recommendations. Economic thresholds have not been developed for Nebraska, so we have little idea of how much damage the insect causes at various infestation levels. A University of Illinois treatment guideline indicates that insecticide treatment may be justified when five or more clover leaf weevil larvae are present per alfalfa crown. The clover leaf weevil larva feeds primarily at night on the lower and middle leaves of the alfalfa plant. Bruce Anderson, UN-L Extension forage specialist, said damage to lower leaves is not a loss to the physiology of the plant or to forage quality or yield. This is because the lower leaves are in the shade of upper leaves and are not contributing much to the plant photosynthetically. Also, lower leaves probably will not remain on the plant through harvest and will not be a part of the hay crop. Anderson explained that loss of middle leaves to the weevil would primarily lead to a reduction in hay quality, due to the loss in leaf tissue in the forage itself.

It seems reasonable that an economic loss is unlikely when the clover leaf weevil primarily is damaging lower leaves; however, economic loss is possible when leaves from the middle third of the plant are damaged substantially. We do not know how many larvae are required to cause economic damage, so growers will have to use their judgment regarding the extent of damage they observe in the fields.

Consider the following points when deciding about pest management: 1) Many clover leaf weevil larvae have ceased feeding and are close to or have already pupated. These larvae are not going to cause further damage to the first crop. 2) The crop is at bud stage in some southeastern locations and the best recommendation is to avoid the insecticide treatment, even if an economic weevil situation exists, and take an early cutting. Remember that once flowering occurs, the plant begins to produce new shoots from the crown that will become the second crop of the season. The clover leaf weevil will feed on these new shoots and can effectively damage the second crop before first harvest. This makes it even more important that growers scout thoroughly, take an early cutting when appropriate, and be ready to apply insecticides to protect regrowth after harvest.

Growers in eastern Nebraska should scout all alfalfa fields after first cutting and be prepared to treat with an insecticide if normal regrowth does not occur within five to seven days after harvest and clover leaf or alfalfa weevil adults (or larvae) are present. We expect that insecticides effective in controlling alfalfa weevils also will be effective against clover leaf weevils.

Research is underway that will hopefully provide us with more information about the management of the clover leaf and alfalfa weevils. We will keep you informed of any new developments.

Steve Danielson, Keith Jarvi, and John Witkowski

## Pest Update: Chinch Bugs Active

Last week (May 7-11), we observed chinch bugs causing noticeable damage to wheat and barley plants. We also received grower reports of oats being attacked by chinch bugs. The older leaves of damaged plants first turned yellow and later brown. These plants will probably die. Examination of heavily damaged plants will reveal large numbers of chinch bugs sheltered at the base. In fields of uneven plant densities, dying plants are most likely found in thin plant stands.

We are conducting a field experiment to compare the attractiveness of wheat, oats, and barley to chinch bugs. Many barley plants already are severely damaged and have very high bug densities (75-150 per 0.1 square meter). However, the adjacent winter wheat plots (dense stands) had very few bugs (approximately one bug per 0.1 square meter). More bugs are found in the oats (5-25), but so far we have not seen much damage to oat plants.

Barb Spike, Research Associate, Entomology

## For More Information

The following publications are among those available from the University of Nebraska Department of Agricultural Communications:

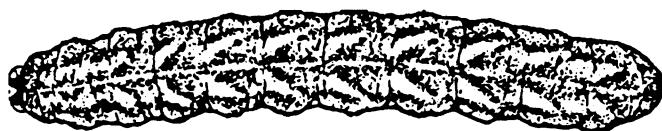
**G90-973: Oil Additives to Reduce Grain Dust.** Treating grains with oil additives can effectively reduce dust concentration in commercial grain handling facilities.

**RP 371: Historic Farmsteads.** This publication discusses what makes a farmstead historic and why historic farmsteads merit protection.

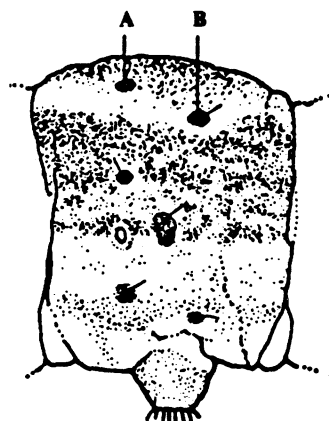
**G80-501: Corn Cutworms.** Cutworms — conditions that favor infestations, damage they cause and control.

These publications and many more are available free or for a nominal charge at your local Extension office or from the UNL Department of Agricultural Communications. For a Publications Catalog, contact your local Extension office or write Bulletins, 104 ACB, University of Nebraska, Lincoln, NE 68583-0918.

## Details to Distinguish the Dingy and Black Cutworms



**DINGY CUTWORM**

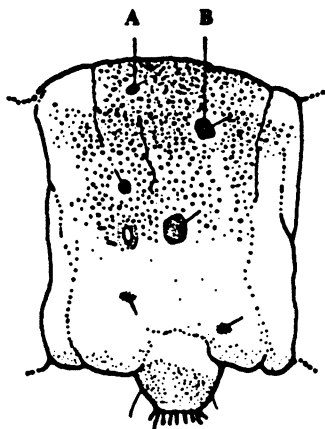


Abdominal Segment

- Overwinters as small larva.
- Associated with legumes.
- Pale gray to reddish brown with mottled pigmentation.
- Light gray V-shaped markings on back.
- Tubercles A and B of about equal size.



**BLACK CUTWORM**



Abdominal Segment

- Doesn't overwinter in Nebraska; migrates.
- Found on many crops, particularly in flooded or weedy areas.
- Light gray to nearly black with skin granulations.
- Indistinct pale stripe on back.
- Tubercle A much smaller than tubercle B.

## Treatment Depends on Type of Cutworm

As corn begins to emerge, watch for leaf feeding and cut plants as early signs of corn cutworms. Cutworms may be a problem even on fields which received a soil insecticide at planting. For that reason, we recommend scouting corn after plant emergence to assess the need for insecticidal cutworm control. In Nebraska, the two most common corn cutworms are the dingy and black cutworms. They vary significantly in their life cycle, behavior and damage potential, so proper identification is important.

Dingy cutworms overwinter as larvae and are usually the first to damage corn in the spring. They usually cause less damage than black cutworms because they feed primarily on leaves and only rarely cut stems. Treatment is only justified when high numbers are present.

Black cutworms do not overwinter in Nebraska. Each year, moths migrate northward in April and May. (See article on page 56.) Egg laying occurs on grasses and weeds before corn is planted. When these weeds are destroyed by cultivation or herbicides, cutworms migrate to newly emerged corn. Black cutworms will cut corn stems and kill the plant.

The black cutworm is light gray to nearly black, with granulation (small bumps) on the skin. There is an indistinct pale stripe on the back. The dingy cutworm is pale gray to reddish brown with a mottled pigmentation. There are light gray V-shaped markings on the back. Other characteristics are shown in the diagram above.

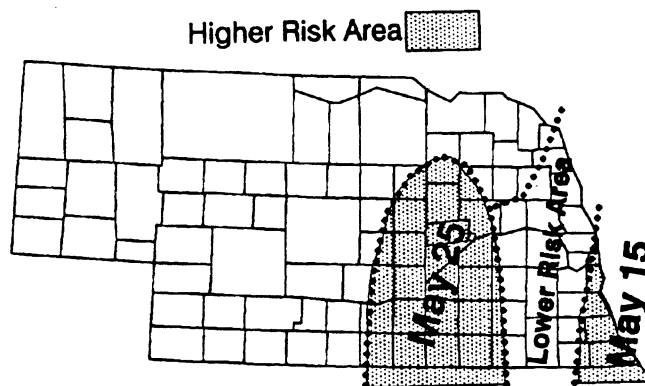
If 5% or more of the corn plants are cut and cutworms are less than 1 inch long, treat with an insecticide. If cutworms are greater than 1 inch long, they are close to pupation and treatment is not recommended. Lorsban 4E and several synthetic pyrethroid insecticides (Asana 1.9EC, Pydrin 2.4EC, Ambush 2E, and Pounce 3.2EC or 1.5G) are recommended for cutworm control. If the soil surface is dry or crusted, rotary hoeing immediately before or after insecticide application may improve control. However, do not incorporate or otherwise disturb the soil after applying pyrethroid insecticides. For more information on identifying and controlling corn cutworms, refer to NebGuide G80-501, *Corn Cutworms*, and EC 90-1509, *Field Crop Insect Control Guide for Nebraska Corn and Sorghum*, available at your local Extension office.

## Black Cutworm Movement Causes Concern

Recent migrations of black cutworm moths into extreme southeastern and east-central Nebraska warrant concern for corn injury in late May. Pheromone traps located across the eastern third of Nebraska last week indicated heavy moth concentrations in Thayer and Hamilton counties with appreciable numbers in Antelope, Burt and Sarpy counties. Richardson County appears to have been on the "fringe" of an earlier flight the last week of April that was carried into Iowa.

The figure at right indicates projected black cutworm cutting dates and relative risk areas based on the date of occurrence of major moth flights and accompanying moth numbers. Boundaries are vague, so growers and field scouts in this entire area should be alert. Below-normal temperatures will delay projected cutting dates.

It is important to note that weather and field conditions subsequent to major moth flights govern the potential for larval cutworm damage. Fields with early weed growth (grassy or broadleaf) or planted no-till into standing vegeta-



Projected black cutworm cutting dates.

tion are strong candidates for infestation. The severity of damage to corn will depend on plant growth stage and coincident cutworm developmental growth stage.

Jim Kalisch

### *Mosquitoes Common Carrier*

## Take Heart: Protect Man's Best Friend

The incidence of dog heartworm is increasing in the Midwest. This mosquito-transmitted nematode (*Dirofilaria immitis*) is primarily a pest of dogs, but also can infest cats and other carnivores. Several mosquito species can transmit the immature worms (microfilariae) from one host to another. Adult heartworms, which commonly reach a length of 12 inches, are found in the heart and pulmonary arteries of the host. If left untreated, they can cause death by embolism, asphyxia, and dilation of the heart.

Reduce heartworm infections by confining dogs indoors during periods of heavy mosquito activity and/or by reducing local mosquito populations. (For information on backyard mosquito control, see page 57.) Many Nebraska veterinarians recommend a daily dose of diethylcarbamazine (Filaribits, Pet-Dec) or a

monthly dose of ivermectin (Heartgard) to prevent heartworms. Before giving medication, the dogs should be tested by a veterinarian because a severe reaction can occur if the dog already has a heartworm infection when the drug is administered.

An existing heartworm condition can be controlled by a series of injections of an arsenical compound to destroy adult worms, followed by administration of another drug to kill the microfilariae in the blood. These treatments must be administered under the close supervision of a veterinarian since serious complications may follow treatment if large numbers of dead and dying worms block pulmonary vessels in the host.

Fred Baxendale

## *Eliminate Water to Eliminate Mosquitoes*

Mosquitoes not only cause discomfort as a result of their bites, but also are potential transmitters of infectious organisms which cause diseases such as encephalitis and dog heartworm. Mosquitoes are most abundant during the spring and summer in areas where standing water is present. Most early season mosquito problems are caused by flood-water mosquitoes which emerge from low-lying areas flooded by melting snow and rain. Later in the season, permanent water and artificial container mosquitoes become the major problem species. Any area or container that holds standing water is a potential breeding site for several kinds of mosquitoes. These areas include old tires, leaf-clogged house gutters, bird baths, rain pools, drainage ditches, sewage lagoons, cans, bottles and any other rain-catching receptacles.

Effective mosquito control is best achieved on a community-wide or regional basis and involves: source reduction (eliminating breeding sites through drainage and/or filling-in low-lying areas), larviciding (eliminating immatures) and adulticiding (eliminating adults). Control procedures that can be implemented by homeowners include:

- 1) Eliminate standing water in low-lying areas, drainage ditches and house gutters.
- 2) Remove all rain-catching receptacles and rinse out bird baths weekly.

- 3) Shrubbery (which often serves as a mosquito resting site) can be sprayed with a labelled insecticide such as malathion.

- 4) Aerosol space sprays containing pyrethrins and piperonyl butoxide effectively control mosquitoes in the home, garage, and/or animal premises. They also can be used in the yard, but will require repeated treatments, since they rapidly dissipate.

- 5) Physical barriers such as screens and netting effectively exclude mosquitoes from homes and outdoor patios.

- 6) Insect repellents containing DEET (N, N-diethyl-meta-toluamide) will deter mosquitoes from biting. These can be bought as sprays or lotions and are usually effective for four to six hours.

- 7) Mosquitoes are more readily attracted to dark colors than to lighter colors, so wearing tightly woven, light-colored clothing reduces one's attractiveness to mosquitoes.

- 8) Mosquitoes also are attracted to light; therefore, reducing unnecessary light will decrease the number of mosquitoes in the vicinity. Make sure window screens are in place in lighted rooms during the evening, and turn off porch and flood lights when not in use. If it is necessary to operate outdoor lighting throughout the night, use yellow lights which are less attractive to insects. Finally, remember that electrified "bug zappers" are not effective for controlling mosquitoes outdoors.

Fred Baxendale

## **WEED SCIENCE**

### **Beacon Receives Federal Registration**

The EPA has granted a federal label for the use of Beacon in field corn. While we have not yet received a copy of the federal label, the following information may serve as tentative guidelines until further information is received.

Beacon treatments should be made by ground applications to field corn only. The optimum application time is when corn is 4 to 20 inches tall and shattercane is 3 to 8 inches tall. Include a spray additive such as a nonionic surfactant, X-77, petroleum or vegetable oil concentrates. Beacon may be tank mixed with Banvel, Buctril, or 2,4-D. When Beacon is applied as a tank mix with the previously mentioned herbicides, use X-77 or a nonionic surfactant; but

do not use a vegetable or petroleum oil concentrate. Beacon can injure certain corn hybrids and Ciba Geigy is expected to issue a list of sensitive hybrids.

Beacon may not be applied if Counter was used as a soil insecticide treatment. Beacon may be used after other soil insecticides are applied; however, 20 days must elapse between insecticide application and treatment with Beacon. Where a foliar application of both Lorsban and Beacon is to be used, they cannot be tank mixed and there must be a 10-day interval between the Beacon and Lorsban applications. We will include updates in the IPW News as we receive additional information.

Bob Stougaard and Alex Martin



## *Rotary Hoe Can Be an Economical Method of Weed Control*

The rotary hoe, properly used, is an effective tool for weed control in row crops. Crop plants seeded 1 to 2 inches deep escape appreciable injury from a rotary hoe. For best results, weed seedlings should be in the "white stage," from germination to emergence. Timeliness is critical for success because emerged green weeds, even though small, are generally too well anchored for control. A second hoeing five to seven days after the first provides improved control. Hoeing requires a dry firm soil surface. A rain-free period of several hours after hoeing is needed to desiccate the weed seedlings. Hot windy conditions for a few hours after the operation are best. A rainy period of several days seriously reduces the effectiveness of a rotary hoe program. A rotary hoe will not satisfactorily control larger-seeded weed seedlings including shattercane and velvetleaf because they can germinate deeper in the soil and are more firmly anchored than small-seeded weeds such as pigweed and foxtails. Use operational speeds of 7-14 mph for rotary hoeing. Effectiveness is greater at faster speeds; however, injury to delicate crops increases with speed.

Crop safety is a consideration in rotary hoe timing. Take care not to cover the crop as it emerges. Corn can be hoed practically any time after planting until the crop reaches 4-5 inches. The exception would be to avoid hoeing corn planted in furrows from the spike to the one-leaf stage on loose soil to prevent covering the plants. A test strip can be hoed to evaluate damage. Sorghum should not be hoed between the spike and two-inch stages to avoid covering the small seedlings. Soybeans should not be hoed between the crook stage, just prior to emergence, and for approximately three days after emergence. Hoeing soybeans during emergence results in unnecessary stand loss. Stand losses of 5-10% are common with each hoeing of sorghum and soybeans. If necessary, increased planting rates can be used to compensate for stand loss.

With proper timing and operation, a rotary hoe can provide economical weed control with minimum crop damage. The key to success is understanding the factors involved.

**Alex Martin and Bob Stougaard**

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