Purpose of this Newsletter 1980 Pesticide Suggestions
1980 Vegetable Schools' Proceedings The IR-4 Program Report on Sandy Soil Research
24c and 18c Labels Recent Publications of Interest
Two New Faculty Members Vegetable Cultivar Trials, 1979
"Pick-Your-Own" Costs Observations on Cucumber Varieties, 1979

PURPOSE OF THIS NEWSLETTER, WHO RECEIVES IT
During the coming growing season, we will be sending you cultural
and pesticide suggestions and information about possible disease and
insect problems related to vegetable crops. Announcements will also
be included about the Field and Twilight Meetings in your area.

The 1980 issues of the Illinois Vegetable Farmers' Letter will be
sent to those who have subscribed. The subscription rate is $5 per
year. Send all subscriptions to the Agricultural Newsletter Service,
Cooperative Extension Service, 116N Mumford Hall, Urbana, IL 61801.
Make checks payable to University of Illinois Agricultural Newsletter
Service.

1980 PESTICIDE SUGGESTIONS
Enclosed are copies of Circular 907, Herbicide Guide for Commercial Vegetable
Vegetables; and Circular 999, 1980 Fungicide Guide for Commercial Vegetable
Growers. Included in each publication is a partial list of the chemicals (la­
beled for the various vegetable crops) that have been tested and that appear to
perform satisfactorily under Illinois conditions. These circulars will be revised
for 1981; therefore, the recommendations given are for the current year. Your
Extension Adviser has other, relevant publications and suggestions about pesticides.

Before using any pesticide, read the label on the container carefully. Make all
applications in accordance with the directions. Recommendations will sometimes
change during the year because of additional clearances by the Environmental Pro­
tection Agency. We report such changes in this newsletter as the information be­
comes available to us.

CHANGES AND REVISIONS IN CIRCULAR 907 FOR 1980
Herbicide suggestions are based on the active ingredients for overall coverage.
Adjustments for the concentration of commercial products and banding are neces­
sary. Where mixtures of chemicals are listed, remember that the USER is respon­
sible for freedom from residues, if such applications are not labeled by the EPA
as a mixture.

SUGGESTIONS ADDED FOR 1980
(See the detailed section in Circular 907)
Asparagus—Roundup Beets—Betanal
Beans, dry, lima, and snap—Roundup Popcorn—Bladex, Sutan+

State/County/Local Groups/U.S. Department of Agriculture Cooperating
The Illinois Cooperative Extension Service provides equal opportunities in programs and employment.
POSSIBLE CLASSIFICATION CHANGE FOR TOK

The Rohm and Haas Company has asked the U.S. Environmental Protection Agency to place TOK E-25 and TOK WP-50 in the Restricted Use classification, for application only by certified applicators. Labels since 1977 have included a warning against skin contact and have specified precautions to follow.

The company is asking users of TOK to emphasize that women of child-bearing age should be told that contact from a single exposure of TOK solutions has caused birth defects in experimental animals. Women should not operate sprayers where TOK is being applied.

In addition, ground applicators, mixers and loaders, and flag persons should wear long-sleeved shirts, long pants, and hats made of closely woven fabric. Heavy-duty rubber or neoprene gloves, aprons, and boots should be worn during mixing loading, and equipment cleanup; eye protection is also necessary.

INSECT CONTROL ON VEGETABLE CROPS IN 1980

There are very few changes in the control suggestions concerning vegetable crops for the coming season. Any label revisions in the months ahead will be listed in this newsletter.

THE IR-4 PROGRAM HELPS OBTAIN PESTICIDE CLEARANCE FOR USE ON MINOR CROPS

By law, a pesticide may only be used for the purposes stated on the label. Each separate label instruction must be registered by the U.S. Environmental Protection Agency or the Illinois Department of Agriculture.

Registration requires proof that the pesticide has been tested as safe and effective for that particular crop under the stated conditions. Pesticide manufacturers pay for the testing needed for the registration of most pesticide uses. They expect to sell enough pesticide to return a profit. However, many uses for pesticides are on such a small scale that the research and development costs for possible registration are greater than any possible return to the manufacturer.

The pesticides for most fruits and vegetables fall into this so-called "minor use" category. However, these crops are a source of livelihood for a number of farmers and are important to the overall economy in Illinois. Fortunately, there is a program to help secure registrations for pesticide uses that are important to farmers but do not represent a big enough usage to be worth the manufacturer’s time and money.

The IR-4 program is a nationwide, cooperative effort by the Cooperative State Research Service and Agricultural Research Service of the U.S. Department of Agriculture, the U.S. Environmental Protection Agency, the state agricultural experiment stations as well as individual researchers, manufacturers, and growers. IR-4...
steps in when losses are occurring because there is no acceptable, effective pesticide for a certain use, yet that use is so limited that commercial development would be unprofitable. IR-4 projects can be for (1) the development of new products; (2) changes in the amounts, timing, and types of applications for registered pesticide uses; as well as (3) the addition of new crops or pests to existing labels.

The University of Illinois staff members learn what minor-use pesticide registrations are needed through their contact with industry groups and growers. A request for a project is sent to the regional headquarters at East Lansing, Michigan and is then forwarded to the national IR-4 headquarters at Rutgers University. A check is made to find out whether an effective pesticide is already registered for the use requested. If not and if the manufacturer of the pesticide in question agrees to support the proposed registration, the personnel at national headquarters design an efficacy test with the cooperation of the manufacturer and the Environmental Protection Agency.

The projects to be pursued are selected by the state liaison representatives in each region. The representatives then find researchers to conduct the tests.

The final result are reviewed at the national headquarters and by the manufacturer and the Environmental Protection Agency. If deficiencies exist, further work may be required. A petition for registration is made when the data are complete.

The final result is a registration that will enable growers to solve the pest problem that has been hurting them. During the last six months of 1979, 69 percent of ALL EPA clearances were requests sponsored by IR-4.

STATE LABELS FOR LOCAL NEEDS (24c) OR THE EMERGENCY USE (18c) OF PESTICIDES

Another option open to growers of minor crops are labels issued for use in Illinois by the Illinois State Department of Agriculture. The requirement is that the need has a unique feature which is not of national scope. Vegetable-crop labels such as the broadcast use of Amiben on pumpkin, Lannate on horseradish, Premerge for the pea root-rot complex, Dow general (dinoseb) for onion set top kill, and Citcop-Bravo for tomato diseases have been issued by the Illinois State Department of Agriculture.

TWO NEW FACULTY MEMBERS TO WORK WITH VEGETABLE CROPS

With the retirement of Dr. J.S. Vandemark, DR. JOHN M. GERMER has joined the Department of Horticulture faculty to assume a coordinating role for the Vegetable Crops Extension Program and carry out soil-fertility research. Dr. Gerber is a native of New York State and received his degrees from Cornell University. He came to the UIUC after spending a year on the faculty at the University of the Virgin Islands. You have or will be hearing from John at regional vegetable meetings.

With the resignation of Dr. Fred Olday, DR. JOHN SWIADER has joined the Department of Horticulture faculty. Dr. Swiader is a native of New York State and received his degrees from Virginia Polytechnic Institute. He spent several years as an Air Force pilot before continuing his advanced studies. He will conduct studies on soil nutrients for vegetable crops and fertility studies and will teach the vegetable crops course.
PRODUCTION COSTS FOR "PICK-YOUR-OWN" OPERATIONS

Michigan State University has published a bulletin on computing operation costs for selected crops in "pick-your-own" operations—snap beans, strawberries, sweet corn, tomatoes, and cabbage. For a copy, send 35 cents (no stamps) to the MSU Bulletin Office, P.O. Box 231, East Lansing, MI 48824. Ask for MSU Extension Bulletin E-941.

1980 PROCEEDINGS, ILLINOIS VEGETABLE GROWERS' SCHOOLS, WITH GROWER SUGGESTIONS

The proceedings record information presented at the 1980 Illinois Vegetable Growers' Schools, report research from the University of Illinois, and provide Extension Service recommendations for vegetable growers. There are in-depth articles on: weather and climate related to their control; new developments in mechanical harvesting; the future of computers on the farm; and new developments in pesticide application as well as reports on variety trials.

The proceedings were available at the annual vegetable growers' meetings held in Champaign and at regional locations throughout the state. Copies of the proceedings are available at a cost of $3 each. Make checks payable to the University of Illinois. Send your order to the Department of Horticulture, 124 Mumford Hall, Urbana, IL 61801.

RESEARCH REPORT ABOUT STUDIES ON SANDY SOILS

Those growers who irrigate field or vegetable crops on sandy soils or who grow such crops without irrigation on sandy soils should be interested in a research report about the Illinois River Valley Sand Field at Kilbourne in Mason County. Areas of research include pesticides, fertility, varieties, etc. For a copy, send your request to Vegetable Crops Extension, 101 Vegetable Crops Building, Urbana, IL 61801.

RECENT PUBLICATIONS OF INTEREST

DIRECT MARKETING


Ball Blue Book and Ball Freezer Book. Ball Corporation, Box 2006, Muncie IN 47302.


ECONOMIC STUDIES


Kirschling, Patrick, J., and Glenn H. Sullivan. 1979. Small-Farm Costs and Returns: Pick-Your-Own Vegetables. Department of Horticulture, Station Bulletin No. 223, Purdue University, West Lafayette, IN 47907. 48 p. (Purdue also has similar studies on strawberries and apples.)

MARKETING


PUBLICATIONS FOR COMMERCIAL FRUIT AND VEGETABLE GROWERS

The following publications are Proceedings of Conferences and Schools held in Illinois for commercial producers and market operators. The subject matter is often applicable beyond the borders of Illinois. Copies are available as long as the supply lasts from Dr. Courter at Dixon Springs.

STRAWBERRIES

1978 Illinois Strawberries School (88 pages). Strawberry varieties and improvement in the U.S. and Canada; mechanization and cultural systems; U-pick management; irrigation; weed control; directory of plants, supplies, and equipment; and references on strawberry growing and marketing. $2.


1979 Illinois Small Fruit School (58 pages). Culture and breeding of blueberries, blackberries, and grapes in Arkansas; grape performance in Illinois; fall raspberries and thornless blackberries for Illinois; cultivar recommendations, spray schedules, and cultural suggestions. $2.50.

1980 Illinois Strawberry School (54 pages). How the strawberry grows, variety recommendations, retail trade areas for pick-your-own farms, advertising and promotion, consumer information, and 1980 pesticide recommendations. $3.

VEGETABLES

1979 Illinois Vegetable Growers Schools (124 pages). In-depth on quality of vegetables—nutritional importance and influence of soil fertility and pesticides on quality; sweet corn trials with emphasis on MDMV tolerance; vegetable research reports, new vegetable varieties, trial results, and pest control recommendations. $3.
MARKETING

1978 Illinois Community-Farm Market Conference (66 pages). Opportunities for farmers' markets in Illinois, with a complete list of markets; how farm markets serve communities and producers; how to organize and operate markets; methods of publication, promotion, display; and sales techniques. $2.

1979 Illinois Community-Farm Market Conference (59 pages). Direct-marketing alternatives; marketing in Wisconsin, Illinois and Massachusetts; Illinois food laws; weights, measures, and licenses; produce liability insurance; emergency preparedness for farmers' markets. $3.

TO ORDER: Make checks payable to University of Illinois and mail your order to Dr. J.W. Courter, Dixon Springs Agricultural Center, Simpson, IL 62985.

VEGETABLE CULTIVAR TRIALS, 1979

Commercial growers can often improve yields, time of harvest maturity, uniformity, quality, and disease resistance by their selection of cultivars. Reports of 1979 trials at the Dixon Springs Agricultural Center in southern Illinois and at the Mason County Land Field in central Illinois are included in the 1980 Proceedings of the Illinois Vegetable Growers' Schools. Copies are available at your county Extension Adviser's Office or by sending a check for $3 (made payable to the "University of Illinois") to the Department of Horticulture, 124 Mumford Hall, Urbana, IL 61801. Ask for Horticulture Series Publication 18.

Here are some comments on newer cultivars. Growers may wish to compare the newer cultivars with their standard ones.

MELONS

STAR TREK MUSKMELON—similar to Gold Star but slightly larger and 2 or 3 days later. Good quality for local markets.

SUMMET MUSKMELON—early and smaller than Gold Star.

IOPRIDE WATERMELON—consistently high yields and the size averages slightly larger than Crimson Sweet.

IMPERIAL WATERMELON—a new Crimson Sweet type of good quality, but slightly smaller than others in the Crimson Sweet group.

YELLOW BABY WATERMELON—an All-America Selection, a small early ice-box melon. Best of the early yellow-flesh melons, a good pollinator for seedless melons, and provides good quality when no other varieties are ready to harvest.

PEPPERS

NEW ACE—early, slightly small, top yields (limited trial only).

HYBELLE—early, TMV resistant, slightly smaller than Lady Belle in our trials.

MARKETMASTER—TMV resistant, small and low-grade No. 1 peppers in our trials.

BIG BERTHA—slightly tapered, very large, recommended for local sales or bedding-plant sales.
DEL RAY BELLE—a Tobacco-Etch-resistant pepper suggested for trial in southern Illinois where that virus has been a problem. Source: Florida Foundation Seed Producers, Box 309, Greenwood, FL 32443.

**TOMATOES**

SHOW-ME—vigorous indeterminate vine, VF-resistant; firm, crack-free, medium to large fruit. Top yielder in southern trials. Recommended for bedding plant sales and trial for local and wholesale marketing.

CASTLEX 105—one of several new semideterminate, firm, crack-resistant cultivars. Worthy of trial for early market.

ROYAL FLUSH—a new determinate cultivar with a good foliage cover and good fruit size. Widely adapted for fresh-market use.

JACK POT—an early determinate cultivar reported to be smoother than Royal Flush. Limited trial only.

COUNT, BARON, AND DUKE—early, determinate cultivars with medium to large, firm fruit. Limited trials only.

**SWEET CORN**

AZTEC, SUNDANCE, EARLIBLELLE, BELLRINGER, GOLD CUP, AND SILVER QUEEN continue as top performers in trials. COMANCHE, CHEROKEE, AND FLORIDA STAY SWEET (extra sweet) have promise for the fresh market.

Northrup-King has sold its bean, pea, and sweet corn business to Sun Seeds, Inc., 9301 Bryant Avenue South, Bloomington, MN 55420. The familiar NK seeds will still be available through most NK dealers during 1980. Growers in Illinois can also obtain NK cultivars from Seaboard Seed Co., Box 106, Bristol, IL 60512. Telephone 312/553-5801. Honeycomb (extra sweet) has looked promising at Dixon Springs and will be available in bulk quantities this year.

**OBSERVATIONS ON CUCUMBER VARIETIES, 1979**

The following notes are from a trial planting at the Dixon Springs Agricultural Center. Comments on disease resistance or susceptibility were provided by the seed companies.

HYSLICE—good straight shape with some taper, dark uniform color. Worthy of trial.

MARKETMORE 70—attractive, dark slicer with field resistance to CMV and Scab. Susceptible to powdery mildew.

MARKETMORE 76—improved Marketmore 70 with resistance to downy mildew and powdery mildew. Good color and somewhat earlier than Marketmore 70 in our trials.

PACER—dark color similar to Marketmore but earlier with a tendency toward light tips. Good CMV and scab resistance but no mildew tolerance. Worthy of trial.

PARKS WHOPPER—color too light for commercial shipping.

POINSETT 76—good shape and color, improved tolerance to scab and downy and powdery mildew over Poinsett. Not resistant to cucumber mosaic (CMV). Worthy of trial.
POINSETT 76-S—Harris selection of Poinsett 76 with the same shape and color. Tolerant to mildews and angular leaf spot, not to CMV.

RAIDER—early, a blockier shape than Hyslice and somewhat lighter in color. Field tolerance to CMV and scab. Worthy of trial.

SLICEMASTER—early, a gynoecious hybrid with high disease resistance. Color too light, speckled in our trials.

SPACEMASTER—early, short vines with tendency toward bush habit. Developed by Dr. Munger at Cornell. Suggest for home gardens or local markets, not shipping.

SUPER SLICE—early, but color is too light and speckled for commercial shipping.

SURE SLICE—early, poor shape and very light color.

TIPS FOR GROWING TRIPLOID HYBRID SEEDLESS WATERMELONS

Dr. O.J. Eigsti (American Seedless Watermelon Co., Goshen, Indiana) has informed us that the seeds for seedless watermelon varieties have been sold out at the propagator level. Supplies to retail seed houses are normal, but growers will want to take steps to obtain the maximum number of plants from their seeds. The following tips are offered to help growers of seedless watermelons.

Seedless watermelons are a favorite of growers who know how to grow them. They have a very good eating quality, and demand is increasing in local markets.

Triploid seedless watermelons are a hybrid cross between a diploid (standard normal type) watermelon and a tetraploid watermelon (double the normal number of chromosomes). Triploid hybrids are similar to mules in that they are hybrids between incompatible parents and, like mules, cannot reproduce themselves.

The triploid hybrids, grown from seed of the controlled cross, must be produced each year. The hybrid is sterile and does not produce pollen. Therefore, a regular diploid variety, such as Sugar Baby, must be planted in the field with the triploid hybrid plants as a pollinator.

HYBRIDS

Improved TRI X 313 is a blocky, green-striped melon weighing 14 to 20 pounds or more. The flesh is bright red, sweet, and crisp.

Triple Sweet is a round, light green-and-striped melon weighing 12 to 14 pounds. The flesh is bright red, sweet, and crisp.

TRANSPLANTS

Transplants are recommended because triploid watermelon seeds will germinate poorly in direct field planting. The following procedure of starting seeds in Jiffy 7 peat pellets is successful, although other potting procedures may work equally well.

1. Soak the peat pellets thoroughly and let them drain 24 hours before planting. Do not plant seeds in freshly expanded pellets or a water-soaked soil mix. Do not soak the seeds in water.
2. Plant 2 seeds per pellet at least 1/2 inch deep. Insert the seeds upside down (pointed end up). This helps the seedling to shed its seed coat more readily as it emerges.

3. Maintain a temperature of 85°F. for 48 hours—a critical period for germination. Do not allow the pellets to become dry, but do not soak them if water is needed. Do not place the pellets in a tray of water during the 48-hour germination period.

4. Grow the young seedlings in full sunlight at 75°F. Warmer temperatures stimulate spindly growth. The plants will be ready for transplanting in approximately 21 days. Do not grow plants larger than 3 true leaves.

TRANSPLANTING
1. Make sure the pellets are thoroughly wet. Handle the plants with care. Avoid windy, cold days for transplanting.

2. Use standard liquid starter fertilizer (such as 10-50-10 or 10-52-17) to get the plants off to a good start. Apply 1/2 to 1 cup per hill, keeping the fertilizer solution off of the leaves.

3. Space the hills 3 to 4 feet apart in the row. Do not thin the seedlings.

4. Space the rows 6 to 10 feet apart, depending on the tillage equipment used.

5. Plant a standard diploid variety (such as Sugar Baby) in every third row for pollination. The pollinator variety may be seeded directly or transplanted. Crimson Sweet is similar in appearance to Triple Sweet and may confuse some growers.

CULTURE
1. Watermelons, especially the seedless varieties, respond to soil-warming plastic mulch with increased growth and higher yields, particularly on heavier soils. Apply black, polyethylene mulch film 3 or 4 feet wide prior to transplanting. Installation a week before planting significantly warms the soil to benefit early growth and development.

2. Transplant with a commercial mulch-transplanter, or cut holes by hand through the film. Hand-planting is better if you use a bulb planter to make the holes.

3. Cultivate, spray, and irrigate the same as for standard watermelons.

4. Bees can help pollination at flowering time if the field is large.

HARVESTING
Pick the melons when they are fully mature. Seedless watermelons mature late, and it is more difficult to judge their ripeness. The underside of the melon becomes deep yellow to orange when fully ripe. Growers should cut enough melons to gain experience. The first melons will ripen 10 days, or more, AFTER Sugar Baby. The very first melons may contain small "vestigal" seeds, but subsequent pickings should be practically seed-free. Seedless melons will not continue to ripen after they are cut from the vine.
Triploid hybrid seedless watermelons are premium quality. They require care to grow and are a challenge to pick and market properly. The triploid hybrids have been extremely successful for some growers in Illinois. Make limited plantings for the first year or two until you have experience in growing and marketing this crop.

H.J. Hopen
Vegetable Crops Extension Specialist

J.W. Courter
Vegetable Crops Extension Specialist

Roscoe Randell
Extension Entomologist
BACK ISSUES OF THE NEWSLETTER

If you fail to receive all of the issues for 1980 of this newsletter, get in touch with the newsletter service and the back issues will be mailed to you. Contact Leann Topol, Agricultural Newsletter Service, 330 Mumford Hall, Urbana, IL 61801. Telephone: 217/333-1133.

NEW SYSTEM: ILLINOIS POISON CONTROL CENTERS

A new system, with three Poison Information and Resource Centers, is now operating in Illinois. These centers have 800 (toll-free) numbers. Trained specialists on poison information handle calls 24 hours a day. If necessary, the resource center will make referrals to local medical facilities for definitive treatment. Followup calls are made at 1/2-hour, 4-hour, and 24-hour intervals. Additionally, local physicians receive reports about the patient to assure proper notification and continuity of care for each poison contact. Staff members at the Poison Resource Centers are responsible for conducting public education and prevention presentations in each region on a routine basis.

Under the new system, the Illinois Department of Public Health has designated these hospitals as Poison Information and Resource Centers in Illinois:

Rush Presbyterian-St. Luke's Hospital, Chicago and Northeast Illinois Greg Magini, Director 1735 West Congress Parkway Chicago, Illinois 60612 Telephone: 312/942-5969*

St. Francis Hospital, Peoria, Central and Northern Illinois John Monroe, Director 530 Northeast Glen Oak Peoria, Illinois 61637 Telephone: 800/322-5330

St. John's Hospital, Springfield, Central and Southern Illinois Donald VanFossan, Director 800 East Carpenter Springfield, Illinois 62702 Telephone: 800/252-2022

*Request pending for same number to be used with the 800 prefix. (Call is now received without charge from within Area Code 312.)

THE MANY WAYS OF MAKING SWEET CORN SWEET

Sweet corn growers have always had many varieties from which to choose. Now there are many different varieties as well as several types of sweet corn. Cross-pollination must be considered when different types are planted adjacent to one another. The following simplified list shows the five types of sweet corn available and some examples of the varieties in each.
Sweet Corn

<table>
<thead>
<tr>
<th>Type</th>
<th>Variety</th>
</tr>
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<tbody>
<tr>
<td>1. Normal Sweet</td>
<td>Jubilee, Stylepak, Silver Queen, Rapidpak, and most hybrid varieties.</td>
</tr>
<tr>
<td>4. Gene combination, such as ADX Sweets</td>
<td>Pennfresh ADX.</td>
</tr>
<tr>
<td>5. Modified Sugary or EH Sweets.</td>
<td>Candy Corn EH, Mainliner EH, Golden Sweet EH, Tender Treat EH.</td>
</tr>
</tbody>
</table>

[from Penn State Hort News]

The sweet corn types 2 and 4 must be isolated from other types of sweet corn and also from each other. Pollen from other types will make the kernels of types 2 and 4 starchy and no different from field corn. If a super sweet pollinates ADX or vice versa, the kernels will be starchy. Also, pollen from type 2 or type 4 will make normal sweet corn (type 1) starchy.

Extra sweet types 3 and 5 will develop normal sweetness when pollinated by type 1 sweet corn. The pollen from types 3 and 5 does not affect type 1. Isolation distances of 700 feet or more will give complete isolation, but may be impractical. A distance of 250 feet will allow some contamination, but not enough to materially affect quality. Wind direction should be considered when arranging isolation patterns. Barriers or border rows are helpful. Where possible, use the "isolation" that can be provided by time of maturity. At minimum, there should be a 14-day difference between the maturities of the different types to be sure of providing time isolation.

TRUCK RATE AND COST REPORTS

The USDA's Truck Rate Report is issued weekly; the Truck Cost Report, monthly. The Truck Rate Report primarily covers rates for fresh products. If you want to get your name on the mailing list, write to the U.S. Department of Agriculture, Office of Transportation, Room 1405, Auditors Building, Washington, D.C. 20250. [from Ohio Veg Newsletter]

WATER STRESS INCREASES THE EFFECTS OF MAIZE DWARF MOSAIC VIRUS ON SWEET CORN

Growers of sweet corn for the fresh market and for processing have suffered yield losses and lowered quality from infections by maize dwarf mosaic virus (MDMV) during the last 3 years in Illinois. In 1978, 61 cultivars of sweet corn were evaluated by researchers in horticulture and plant pathology at Urbana. Each cultivar was inoculated with strain B of MDMV and compared with noninoculated (control) plants. Tolerance ratings were given to each cultivar according to the degree to which certain plant characteristics were affected by the virus.

Because growing conditions were so favorable during 1978, the researchers thought that disease expression was not as great as it might have been in a less-optimum environment. To test this hypothesis, a preliminary study involving sweet corn, MDMV, and water stress was conducted at the Illinois River
Valley Sand Field in 1979. Because of its low water-holding capacity and rapidly permeable subsoil, the Plainfield sand at the field provided a suitable environment for producing water stress in plants by withholding irrigation during dry periods.

Two cultivars of sweet corn, Gold Cup (considered to be susceptible to MDMV), and Golden Gleam (thought to have more tolerance), were subjected to three irrigation treatments: (1) optimum water during all physiological stages; (2) water withheld to produce early stress (5- to 7-leaf stage); (3) water withheld to produce late stress shortly before silking (post-pollination and grain-filling period). Plants of each cultivar within each irrigation treatment were inoculated with MDMV (strains A and B) and were compared with noninoculated plants.

Symptoms of MDMV infection were present soon after inoculation. The virus-infected plants were shorter, lighter green, and showed more leaf curling when the early water stress was created. Early stress delayed development more than late stress.

Water stress alone had no effect on seed set at early and late stages of growth in noninoculated plants. All irrigation treatments received plentiful rainfall during silking, the physiological stage in which seed set would be most affected by water stress. Virus-infected plants showed considerable kernel-blanking at the center and butt of the ears. Kernel-blanking in infected plants was increased by water stress.

Early and late water stress had no effect on ear length, but virus infection caused a slight reduction. Acting together, water stress and MDMV caused greater reductions than either factor alone. With 'Gold Cup,' water stress without MDMV and MDMV without water stress reduced ear weight to the same degree. With 'Golden Gleam,' MDMV without water stress caused a greater loss in weight than water stress without MDMV. Again, the combination of limiting factors caused greater reductions in weight than either factor alone.

Considering ear characteristics further, MDMV plots of 'Gold Cup' were about equally affected by early and late stress. The MDMV plots of 'Golden Gleam' tended to be more affected by late stress than by early stress. In the 1978 trial at Urbana, 'Golden Gleam' showed more tolerance to strain B of MDMV than did 'Gold Cup.' In the 1979 study, both cultivars were adversely affected to about the same extent by Strains A and B of MDMV. The addition of water stress at early and late stages of growth increased the effects of the virus.

More detailed information and data for this experiment can be found in the 1979 Progress Report of the Illinois River Valley Sand Field, Horticulture Series 19. [Prepared by L.R. Nelms, Jr., Assistant Horticulturist.]

ROOT ROT CONTROL ON PEAS

By this time, most fields have been indexed and contracted for pea plantings. The field-indexing method of assessing the potential for root rot will predict root losses under ideal conditions for the disease. However, cool temperatures and dry conditions will permit economic pea production in fields with high root rot indices since warm, wet soils favor the growth of the primary root rot pathogen, the Aphanomyces fungus.

Research at the University of Illinois and the University of Wisconsin showed the chemical control of pea root rot with Premerg 3 and Treflan to be economically feasible in fields with a moderately high potential for root rot. In
Illinois research, Premerg 3 incorporated preplant has given root rot control superior to that obtained with Treflan. The Premerg 3 treatment is recommended for use on pea fields with a moderately high potential for root rot. Fields with indices of over 75 to 80 are now considered to have too high a loss potential, even with chemical controls. Most severe damage is likely on peas that are planted late since the warmer soil temperatures are more favorable for disease development.

RISK OF STEWART'S BACTERIAL WILT ON SWEET CORN

The risk of Stewart's bacterial wilt can be calculated by averaging the high and low temperatures for each day in December, January, and February and then summing the average temperatures for each of these months. This index predicts how well the corn flea beetle will survive the winter. Based on data from the winter of 1979-80, the risk of Stewart's disease should be light north of Champaign (Index 85) and light to severe south of St. Louis (Index 95).

South of St. Louis, growers may want to provide flea beetle control on susceptible sweet corn hybrids. Even resistant (tolerant) hybrids may require some insecticide protection until the 3- to 5-leaf stage if the populations of flea beetles are high. Follow the recommendations by University of Illinois Entomologists for the control of flea beetles.

DIGEST OF NEW STATE AND FEDERAL LEGISLATION RELATING TO AGRICULTURE

AGRICULTURAL SEED

Illinois Seed Law. The Illinois Seed Law has been amended to require all seed permit holders who acquire agricultural seed for resale and conditioning from Illinois producers to document their seed acquisition transactions. This amendment specifies that seed contracts are to be used. The contracts must be specifically identified, and a complete record of such contracts must be retained by the seed permit holder. All contracts must clearly indicate that the contract consignment is for agricultural seed purposes only, with a clarifying description of the kind of agricultural seed dealt with in each contract. In addition, the amendment requires the seed permit holder to maintain a full accounting of the final disposition of all purchased seed. If any portion of the agricultural seed purchased from Illinois producers was disposed of in a form other than seed, the permit holder is to supply the Department of Agriculture with a summary. The amendment also requires all seed sold through grain marketing channels to be marketed through a person licensed under the Grain Dealers Act [Illinois Revised Statutes Ch. 111, §§301 et seq.]. The law now provides for a hearing upon permit suspension or revocation and applies the Administrative Procedure Act [Ill. Rev. Statutes Ch. 127, §1001 et seq.] to all administrative actions taken under the seed law [Ill. Rev. Statutes Ch. 5, §§411.1, 411.2, 411.3, and 416; Public Act 81-751.] Effective date: January 1, 1980.

FARM LABOR

Contractors. The General Assembly amended the Illinois Farm Labor Certification Act [Public Act 79-900; Ill. Rev. Statutes Ch. 111, §§801 et seq.] to grant farm workers a right to sue under the Act. The Act prescribes various duties of farm labor contractors and establishes regulations for the recruitment of farm workers by farm labor contractors. The duties include honoring contracts and displaying prominently in English and all other languages in
which the farm workers are fluent the rate of compensation the contractor is
receiving and the rate he is paying to the farm workers. Farm labor contrac-
tors are also obligated to keep payroll records showing each farm worker's to-
tal earnings for each payroll period and to furnish the farm workers with an
itemized statement detailing each and every deduction made from their wages.

The amendment provides farm workers who are aggrieved by the misconduct of farm
labor contractors with the right to bring suit for violation of the Act's pro-
visions in any court of competent jurisdiction for equitable relief, damages,
and costs. Damages are limited to actual damages or $500 per violation. Al-
though violations of the Act were subject to criminal penalties ranging from a
Class B misdemeanor to a Class 4 felony for repeated offenses, the addition of
a civil remedy may lead to better enforcement of the provisions of the Act.
[Ill. Rev. Statutes Ch. 111, §§804, 807, 814; Public Act 81-684.] Effective
date: September 16, 1979.

MOTOR VEHICLES

Code have been amended by the General Assembly. A vehicle may now qualify as
an implement of husbandry without regard to bushel capacity as long as its max-
imum gross weight does not exceed 36,000 pounds. Fertilizer spreader trailers
up to 36,000 pounds and field storage "nurse tanks" up to 2,000 gallons must
now be registered. Self-propelled agricultural fertilizer implements equipped
with flotation tires must be licensed if they are used to carry fertilizer on
the highways. These vehicles are limited to a maximum gross weight of 36,000
pounds, restricted to a highway speed of not more than 30 m.p.h. and a legal
width of not more than 12 feet. They are further restricted to operation within
a 50-mile radius of their point of loading. The registration fee for this
type of vehicle is $160 per year. A violation of these provisions is a petty
offense for which either the owner or the driver of the vehicle may be prose-
cuted. [Ill. Rev. Statutes Ch. 95-1/2, §§1-130, 3-809, 12-109; P.A. 81-327.]
Effective date: January 1, 1980.

PESTICIDES

The Illinois Pesticide Act of 1979. This Act is designed to regulate in the
public interest the labeling, distribution, use, and application of pesticides. The
Act provides for cooperation between the Director of the Illinois Department
of Agriculture and federal agencies to achieve uniform regulation of pesticides.
The federal government presently regulates pesticides under the Federal Insect-
cide, Fungicide and Rodenticide Act [7 U.S. Code, §136 et seq.]. The Illinois
Act requires certification of commercial and private applicators and authorizes
the Director to regulate the registration of certain pesticide dealers. In ad-
dition, it regulates the disposal of pesticide containers and the registration
of pesticides for sale. The Act repeals several laws regulating pesticides al-
though regulations adopted under those laws are to remain in full force and ef-
fect. [Ill. Rev. Statutes Ch. 5, §801 et seq.; P.A. 81-197.] Effective date:
July 1, 1980.

MINIMUM WAGE

The federally required minimum wage went up from $2.90 to $3.10 per hour for
the year beginning January 1. Both the Illinois Minimum Wage Law and the mini-
imum wage provision of the Federal Fair Labor Standards Act still exempt agri-
cultural employers who employed fewer than 500 man-days of labor during each
NEW CAULIFLOWER VARIETIES FROM MICHIGAN STATE UNIVERSITY

'Stovepipe' is a heat-tolerant cauliflower that is 3 weeks earlier than 'Self-Blanche' as a fall crop. 'Stovepipe' has a leaflet-free, creamy white head and can be used for fresh market or processing. For growers desiring a white head larger than 6 inches, MSU recommends tying the upright leaves with a rubber band.

'Mini-Spartan' tomato is a VF-resistant variety with jointless pedicels and concentrated fruit set. It has a determinate vine and produces 90 to 120 red, globe-shaped fruits from 3/4 to 1-1/2 inches in diameter.

'Superbb' is a butterhead type lettuce that can be used as a spring or fall crop. It is 8 to 10 days earlier than 'Bibb' and slightly larger at harvest. MSU says that 'Superbb' is less crisp than 'Bibb,' making it easier to handle at harvest.

These new varieties will be among those evaluated for use in Illinois during 1980. Variety trials will be conducted at Urbana on the Vegetable Research Farm; at the Dixon Springs Agricultural Center near Simpson; at the Illinois River Valley Sand Farm near Kilbourne; and at Downers Grove in DuPage County.

SOIL TESTS INCONCLUSIVE FOR USE ON VEGETABLE ACREAGES

An informal survey of soil-testing laboratories indicates the lack of reliable research data on which to base fertilizer recommendations. Of the 65 questionnaires sent to laboratories in Illinois and surrounding states, 30 have been returned to date. Individual laboratories reported receiving 1,500 to 95,000 soil samples annually. However, less than 1 percent of the samples were from vegetable growers.

Tests for pH, phosphorus, and potassium were most often requested, but a third of the laboratories also analyzed for the percentage of matter, soluble salts, exchange capacity, and other aspects including micronutrients.

Almost all of the replies indicated that fertilizer recommendations for vegetable crops were estimates, based on the best information available. Most laboratories expressed an interest in cooperating with the University to help develop the research data required to improve the accuracy of recommendations.

Although fertilizer recommendations based on soil tests are not precise, they are far superior to recommendations made without a soil test. Vegetable growers should continue to have their soil tested for pH, phosphorus, and potassium every 2 years.

REMEMBER: If you plan to use University of Illinois recommendations, you should have your soil tested by a laboratory approved by the University. Soil analysis procedures differ from one state to the next, and laboratory results may also differ. Check with your county Extension Adviser for an approved laboratory near you.
USE OF FRESH VEGETABLES ON THE RISE IN THE 1980'S

A recent special issue of The Packer entitled "Focus on the 80's" predicts an optimistic future for the vegetable industry. Vegetable consumption appears to be on the upswing, perhaps because of the renewed attention being paid to freshness and nutrition. The increasing number of salad bars in restaurants helps promote vegetable awareness and consumption. Although retailers have experienced a greater demand for almost all vegetables, Charles Porter, a USDA economist, predicts the greatest surge will be among those that can be eaten raw. Such salad vegetables include lettuce, tomatoes, cucumbers, peppers, onions, carrots, cauliflower, and broccoli.

A less-optimistic future is expected for some vegetables that must be cooked. However, novelty vegetables such as "spaghetti squash" may be an exception. Sweet corn is also expected to remain among the most popular vegetables.

According to statistics collected by the USDA for 1979, there was an increase of 2 percent in production and a 6-percent increase in the dollar value of 22 fresh market vegetables, compared to 1978. Some 12 million tons of vegetables, including melons, were harvested from 1.62 million acres. California, Florida, Texas, New York, and Arizona were the 5 leading states in the production of fresh vegetables, accounting for 77 percent of the production and 81 percent of the dollar value during 1979.

H.J. Hopen John M. Gerber
Vegetable Crops Extension Specialists
IN THIS ISSUE
Ohio State Bulletin on Specialty-Crop Enterprise Budgets for 1980
Pesticide Container Rinser
Increasing the Early Maturity of Vegetable Crops
Transportation and Energy May Create New Opportunities
Other University of Illinois Newsletters
Tips on Picking and Using Strawberries

OHIO STATE BULLETIN ON SPECIALTY-CROP ENTERPRISE BUDGETS FOR 1980

Costs for crop-enterprise budgets for several crops have been developed by the staff of Ohio State University. Although the costs were developed for Ohio, these budgets could be used as guidelines for Illinois growers. Crop budgets are included for dry beans, sugar beets, hand and machine-harvest processing, as well as staked tomatoes, pickling cucumbers, strawberry, sweet corn, blackberry, black and red raspberry, potato, tobacco, sunflower, Christmas trees, and popcorn. The publication is MM-389, available for $1 per copy from the Office of Information, 2120 Fyffe Road, Ohio State University, Columbus, OH 43210.

PESTICIDE CONTAINER RINSER

Jet Rinse is a new rinsing device for use with chemical containers. The device is attached to a garden hose or a hose from the nurse tank and is inserted into the bottom of the container. The manufacturer claims complete cleaning of the inside of the can through the jet rinsing procedure; also, that some chemical can be saved from each container emptied. For details, write to Select Styled Systems, Ltd., Dept. AA, Route 1, Box 75, Palmer, IA 50571.

INCREASING THE EARLY MATURITY OF VEGETABLE CROPS

Growers of vegetables for the fresh market often receive better prices for vegetables produced during periods of limited supplies. Such periods may be only 1 to 3 weeks long, occurring before the main production for a particular vegetable hits the market.

With the possibility of greatly increased returns from early production in mind, many growers attempt to have vegetables come into production early in order to increase their net returns. Several methods are used. Some of these are:

1. LAND SELECTION. Light, sandy soils are used, ones that have good drainage or that dry out and warm up faster than the heavier, poorly drained soils. The amount of water in the soil during the warmup period is one of the most important factors influencing the speed with which a field warms up. The amount of heat needed to warm a given amount of water 1°F will warm the
same volume of dry soil by 5° F. Dark-colored soils will warm slightly faster than light-colored soils containing the same amount of water.

2. **LAND SLOPE.** For maximum heat absorption, the surface of the soil should be perpendicular to the sunlight striking it. For example, early in the season land sloping 20° to the south absorbs about 6 percent more heat than level land, whereas a 20° slope to the north results in about 19 percent less heat absorption than would occur on level land. This could amount to a difference of several degrees in the soil temperature at seeding depth.

3. **VARIETY SELECTION.** The number of days from planting until maturity varies by the variety. It is important to select vegetables that mature early. Also, the varieties of some vegetables, such as sweet corn, differ in their ability to germinate at low soil temperatures.

4. **WINDBREAKS.** The practice of using windbreaks is increasing—not only to protect the plants, but also to reduce the soil loss caused by wind erosion. One effective technique for providing wind breaks is to leave rye strips every 50 to 70 feet when plowing under a cover crop of rye. The strips should run across the direction of the prevailing, early season winds. This would be a north-south direction, since most winds in the early spring are from the west. The rye strips can be cultivated later.

Many growers use natural windbreaks to advantage by locating small plantings and plant beds on the southern side of such barriers. Stands of trees 45 to 60 feet tall can provide wind protection for up to 300 feet; and soil temperatures may be 2 to 6 degrees higher for as much as 50 to 60 feet. Overgrown ditches and old fence rows can give wind protection for 60 to 80 feet, increasing the soil temperature as far away as 25 feet.

5. **FROST PROTECTION.** Some frost protection can be obtained by selecting sloping land. Air drainage on slopes helps prevent the development of cold air pockets caused by air stratification.

Another way of providing frost protection is to increase the amount of heat loss from a soil due to infrared radiation on nights when frost is likely. This can be accomplished by irrigating the day before a predicted frost. The additional water in the soil increases the amount of heat in a given volume of soil that can be radiated as infrared rays. That radiation can result in a few degrees of protection from frost injury for plants. Frost-sensitive plants growing on dry soil, especially soil that has been freshly cultivated, are much more likely to be injured or killed by frost.

Where irrigation is available, applying water at 50 pounds of pressure through sprinklers having a capacity of 2 to 6 gallons per minute, beginning when air temperature drops to 34° F., may prevent plants from being killed by frost. As the water freezes, it loses heat. Enough heat is provided by water freezing on plant leaves to keep the leaves at 32° F. Because of sugars and other soluble materials in the plant cells, the freezing point of the cell sap is somewhat lower than 32° F.; therefore, plants will not be killed by maintaining them at 32° F. It is very important to start irrigating as soon as the air temperature at the plant level gets to 34° F. and to continue the application until all ice has melted.
from the plants. If the sprinklers are stopped before all of the ice has melted, the melting of the remaining ice can remove enough heat from the plants to freeze them.

6. **PLANT PROTECTORS.** The use of plant protectors made of plastic and paper has been widespread in various parts of the United States. These methods increase labor costs, but are economically justifiable in many areas. For example, growers in San Diego County, California produce thousands of acres of cucumbers and tomatoes each spring under polyethylene plastic row covers. The use of such row covers in that area has resulted in harvesting these crops almost a month earlier.

7. **PLASTIC MULCH.** This is also widely used to increase the early and total yields of warm-season crops such as cucumbers, muskmelons, and summer squash. Experimental results and grower experience have shown in numerous areas that responsive crops mature 1 to 2 weeks earlier and that total yields, as well as the early yields, can be increased by using the plastic mulch.

8. **TRANSPLANTS INSTEAD OF DIRECT SEEDING.** This practice increases the maturity of many crops. Although a standard practice with crops such as tomatoes and peppers, relatively few growers use started plants of vine crops such as cucumbers and muskmelons.

Where transplants are set out, it is important to use properly grown plants and to set them in the field at the proper size and stage of growth. For example, research has shown that early yields from tomatoes are greatest with plants grown in 9 to 16 square inches of space per plant in the greenhouse. Therefore, plants for early production should be growing in 3- or 4-inch pots, rather than in smaller ones. Also, the plants should be healthy and vigorous, not excessively soft nor over-hardened, and should be set in the field before the flower buds open or the fruit sets.

Vine crops grown from transplants should be set out after the danger of frost has passed. Such plants should be 2 to 3 weeks old. Usually, 1 or 2 seeds are placed in 2-1/4 to 3-inch pots, germinated, and set in the field before the second true leaf is more than 2 to 3 inches in diameter.

With all transplanted crops, watering with a starter solution is advisable. For tomatoes and peppers, 3 pounds of 10-52-17, 10-40-10, or a similar high-phosphorus, water-soluble fertilizer should be dissolved in 50 gallons of water, with 1/2 to 1 pint of this solution poured around each plant at transplanting. For vine crops, 3 pounds of water-soluble fertilizer per 100 gallons of water is adequate.

9. **DISEASE AND INSECT CONTROL.** In addition to the previously discussed practices for increasing early maturity, a systematic procedure for disease and insect control is very important.

10. **SUPPLEMENTAL IRRIGATION.** This is often needed to ensure top yields of high-quality vegetables.

The possibility of high returns carries with it greater risks, but many growers find that their returns justify the financial risks involved. All of the factors listed are important. Neglecting any of them can result in a loss of potential profits. [From the Virginia Vegetable Growers’ News.]
TRANSPORTATION AND ENERGY MAY CREATE NEW OPPORTUNITIES

A recent survey by the United Fresh Fruit and Vegetable Association indicated that transportation would be the biggest problem for the produce industry during the next 5 years. The problem cited next and one closely related to transportation was that of energy costs and availability.

Industry spokesmen and economists agree that spiraling fuel costs could mean a shift in vegetable production areas to ones closer to the population centers. Speaking at the 1980 Illinois Vegetable Growers' School, Purdue economist Glenn Sullivan noted that two-thirds of the nation's population lives east of the Mississippi River and north of the Ohio River Valley. Yet, a majority of the fresh-market vegetable production occurs outside these boundaries in Florida, Texas, and California. Sullivan said, "The Midwest could be a major beneficiary of the relocation process, providing efforts are made early to accommodate these production shifts."

Illinois vegetable growers currently account for a very small portion of the total sales of fresh vegetables in the state. A representative of the U.S. Market News Service (USDA) estimates that 3 percent of the Chicago consumption is satisfied by Illinois growers. This could change as transportation costs increase, if growers are able to take advantage of the situation. However, in order to break into major local marketing outlets, growers will have to be better organized in their marketing efforts. Since large retail outlets require a consistently reliable source of produce, individual growers will have difficulty supplying the need. An innovative and possibly sophisticated distribution system may be needed before major changes occur. The 1980's should provide opportunities for an industry with foresight, drive, and a willingness to change.

PROMOTIONAL MATERIALS AVAILABLE

The Illinois Vegetable Growers' Association is making available promotion brochures for use at your retail outlets. The ones currently available are: Vegetable Selection and Care—The Joy of Fresh; Fresh Makes Sense; Tips on Melons; Broccoli; Tomatoes; Illinois Horseradish; Squash-Onions; Eggplant; and Sweet Corn. Contact Randy Klein for more information at P.O. Box 192, Burlington, IL 60109. Telephone: 312/683-3047.

OTHER UNIVERSITY OF ILLINOIS NEWSLETTERS

The Agricultural Newsletter Service at the University of Illinois has several newsletters, other than this one, that may be of interest to vegetable growers.

<table>
<thead>
<tr>
<th>Name</th>
<th>No. of issues per year</th>
<th>Cost per year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Illinois Irrigation Newsletter</td>
<td>10</td>
<td>$3.50</td>
</tr>
<tr>
<td>Bees and Honey</td>
<td>10</td>
<td>$4.00</td>
</tr>
<tr>
<td>Insect, Weed, Plant Disease</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Survey Bulletin</td>
<td>20</td>
<td>$7.00</td>
</tr>
<tr>
<td>Home, Yard, and Garden Pest</td>
<td>20</td>
<td>$6.00</td>
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For information about ordering these newsletters and others that are available, see the enclosed folder listing all of the newsletters.
TIPS ON PICKING AND USING STRAWBERRIES

Red, ripe, luscious strawberries—their nutritional value, how to pick them, how to care for them, and how to freeze and preserve them—are topics discussed in a 20-page circular just released by the University of Illinois Cooperative Extension Service. This colorful brochure will help consumers use strawberries wisely. Commercial strawberry growers may want to offer it to their customers. Perhaps one free circular could be given with each $10 purchase, or the circular could be sold at cost.

"Tips on Picking and Using Strawberries," Circular 1056, is available from the Office of Agricultural Publications, 123 Mumford Hall, Urbana, IL 61801. Single copies are free. Quantities are available for $20 per 100 copies. Make checks payable to the University of Illinois.

PROCEEDINGS AVAILABLE, STRAWBERRY SCHOOL AND SMALL FRUIT SCHOOL

Proceedings of the 1980 Illinois Strawberry School and the 1970 Illinois Small Fruit School are now available from Dr. J.W. Courter, Extension Specialist in Small Fruits and Vegetables. The two proceedings contain University of Illinois recommendations for varieties and for insect, disease, and weed control. In addition, cultural and management suggestions are given for strawberries, raspberries, grapes, blueberries, and blackberries.

Illustrated papers on how the strawberry plant grows in relation to its environment and the growth and fruiting habits of the red raspberry are featured in the 53-page Strawberry Proceedings and the 46-page Small Fruit Proceedings, respectively. The Strawberry Proceedings contain the results of a 1979 survey of pick-your-own strawberry farms and their retail trade areas. It also presents advertising and promotion ideas, as well as information for consumer use.

Copies are available at $3 for the Strawberry Proceedings and $2 each for the Small Fruit Proceedings from Dr. J.W. Courter, UI Dixon Springs Agricultural Center, Route 1, Simpson, IL 62985. Make checks payable to the University of Illinois and enclose your check with your order.

MARKETING ALTERNATIVES FOR SMALL FARMERS

The Tennessee Valley Authority has published an excellent proceedings covering a meeting held in Atlanta in February of 1979. The 162-page report contains papers and summaries presented by research and Extension Service workers from a wide area. Numerous articles pertain to roadside marketing and to direct marketing.

Cathy Sabota and Bill Courter presented a paper on "An Analysis of the Potential for Pick-Your-Own Marketing in a Rural Area." Their research was based on customer harvesting of plots at the Dixon Springs Agricultural Center. They found that customers drove average distances of 20 miles for sweet corn and 32 miles for blueberries. They discuss methods of determining the potential market in rural areas. For a copy of their paper write to Dr. J.W. Courter, UI Dixon Springs, Agricultural Center, Simpson, IL 62985.

DIRECT MARKETING FOR 1980

Direct markets may be more important for vegetable growers in Illinois during the 1980's. Several aids have been developed to benefit growers interested in direct markets as an alternative to their present marketing programs.

The following fact sheets are available from the Department of Horticulture, University of Illinois, 124 Mumford Hall, Urbana, IL 61801. There is no charge. They are in the Horticulture Facts series:

HM-1 Pick-Your-Own Marketing of Fruits and Vegetables
HM-2 Liability and Insurance for Pick-Your-Own Farms
HM-3 Net Weights and Processed Yields of Fruits and Vegetables in Consumer Retail Units

We are also in the final stages of printing three directories in cooperation with the Illinois Department of Agriculture, ones covering:

Pick-Your-Own Fruits and Vegetables
Illinois Roadside Markets
Illinois Farm-Community Markets

For copies of the directories, write to Mrs. Roberta Archer, Marketing Specialist, Emmerson Building, Illinois Department of Agriculture, Springfield, IL 62706. There is no charge for single copies.

PROCESSING ACREAGES DOWN FOR 1980

The Illinois Cooperative Crop-Reporting Service of the Illinois Department of Agriculture predicts a reduction of 32 percent in acreage contracted for snap beans in Illinois during 1980. Some 6,400 acres are contracted for this year, down from 9,400 acres in 1979. The prospective planted area for contract snap beans is estimated at 257,480 acres for the United States, down 8 percent from 1979. The area to be in processing sweet corn contracted for in 1980 is 45,500 acres, 6 percent below last year's figure. The U.S. sweet corn area is estimated at 419,000 acres, down 7 percent from last year's contracted acreage.

BLACK CUTWORMS

Will we have problems with black cutworms in corn again this year? The answer is still unknown. We can't predict cutworm outbreaks, so we rely on certain field characteristics that indicate potential cutworm problems. If corn planting is delayed by wet weather, cutworms will pose a threat once more. Late tillage and late planting allow weeds to grow in many fields, and such weeds provide ideal places for cutworm moths to lay their eggs. Reduced tillage and planting corn after soybeans are other characteristics associated with many fields and where cutworm problems occur. Fields with a combination of these factors are candidates for cutworm attacks and should be monitored closely.

Black cutworm moths enter Illinois in the spring from the Southern States. Because the cutworms don't overwinter in Illinois, we can't predict this year's population from the number that occurred in 1979. But the early spring flights can be monitored.
With the cooperation of the corn insect research team at the Illinois Natural History Survey and many county Extension Advisers, we have placed more than 100 black cutworm pheromone traps across the state. These traps contain a synthetic female cutworm sex pheromone, or "perfume," that attracts cutworm males. The number of moths captured in the traps will tell us when the peak moth flight occurs. Eventually, we hope we can predict cutworm outbreaks from the number of moths captured and the prevailing weather conditions.

Black cutworm moths have been captured in several pheromone traps located throughout the southern half of Illinois. A few male moths have been captured as far north as LaSalle County. The number of moths caught in the traps is still small, and peak moth flight is yet to come. Closely monitoring these traps, however, will allow us to report peak numbers and the locations where the flights are the heaviest.

Large numbers of another moth, *Lithophane laticineria*, have been captured in the black cutworm pheromone traps. This moth is one species of a large group of moths called green fruitworms. Apparently, they are attracted to the cutworm pheromone. The larvae feed on the leaves of deciduous trees. When the larvae occur in large numbers, as they did in 1979, they deplete their food supply and may feed on field crops, especially corn. The large number of moths flying now suggests that a high population of larvae may develop. The larvae complete their development by late May or early June, so the feeding on corn is seldom severe.

EUROPEAN CORN BORERS

Overwintering larval populations averaged about 1 borer per plant statewide last fall, only a third the size of the fall population in 1978. In general, the smaller the fall population, the lower the potential for damage by first-generation borers in June and July. The potential for damage in 1980 is light to moderate for all areas of Illinois, except in the northern third where the potential is moderate in most counties. Damaging numbers occurring anywhere this spring will depend on the survival of the overwintering population and environmental conditions early in the growing season.

A protozoan disease organism, *Nosema pyraustae*, that infects overwintering larvae will have some effect on the borers' survival. Dr. Joe Maddox, Illinois Natural History Survey Entomologist, has examined corn borer larvae from several areas of the state. The following table shows the relative incidence of the disease throughout Illinois.

<table>
<thead>
<tr>
<th>Crop-reporting district</th>
<th>Percent of corn borers infected</th>
</tr>
</thead>
<tbody>
<tr>
<td>NW</td>
<td>71</td>
</tr>
<tr>
<td>NE</td>
<td>3</td>
</tr>
<tr>
<td>W</td>
<td>78</td>
</tr>
<tr>
<td>C</td>
<td>54</td>
</tr>
<tr>
<td>E</td>
<td>19</td>
</tr>
<tr>
<td>WSW &amp; SW</td>
<td>53</td>
</tr>
<tr>
<td>ESE &amp; SE</td>
<td>51</td>
</tr>
</tbody>
</table>

The incidence of infection is generally higher in western Illinois.
Although no extensive information about the survival of overwintering borers is available, a small sample from Marion County revealed a survival rate of about 75 percent. However, the borers infected with *Nosema pyraustae* will not be as hardy as healthy ones.

**EMERGENCY-USE LABELING OF INSECTICIDES**

During the summer and fall of 1979 and again in last winter, University of Illinois entomologists attempted to secure temporary labeling for permethrin (Ambush) to be used on certain vegetable crops. We attempted to obtain labeling for use on cabbage to control cabbage loopers, on canning pumpkin for squash bug control, and on horseradish as a set dip for control of the imported crucifer weevil. The temporary label was requested under Section 18 of the Federal Insecticide, Fungicide, Rodenticide Act.

We never received approval on any of these proposals, even after resubmitting additional data. At present, we are continuing to secure labels under the minor crops use program, called IR-4.
IN THIS ISSUE

- New Policy Announced for this Newsletter
- 1981 Illinois Growers' Convention, January 13 and 14 in Champaign
- 1980-81 Regional Meetings
- Fall Control of Perennial Weeds
- Weed Control Now
- Soil Testing Now

NEW POLICY ANNOUNCED FOR THIS NEWSLETTER

The 1981 issues of the Illinois Vegetable Farmer's Newsletter will be sent free of charge to interested growers. The present subscription price is $5 for a 9-issue newsletter. Because of the rising costs of printing and mailing, that price would have been raised to $8.50 in order to continue under the current system. Since previous experience has shown that the number of subscribers declines as subscription costs increase, we decided not to take that additional step.

We will continue to send a newsletter to vegetable growers in Illinois from 4 to 6 times per year, as dictated by finances. However, the reduced schedule means that timely pesticide information and crop reports cannot be included. Growers who need up-to-date information about the pest situation in Illinois are encouraged to subscribe to the weekly report entitled "Insect, Weed and Plant Disease Survey Bulletin." It will be available for $8.50 for 20 issues, beginning in 1981, from the Agricultural Newsletter Service, 116-N Mumford Hall, Urbana, IL 61801. You can subscribe now. Make your check payable to the University of Illinois.

The Vegetable Farmer's Newsletter will continue to provide variety and cultural recommendations based on our research findings. News from vegetable-production areas in Illinois and around the nation and will be featured, along with legislative updates from Washington and Springfield.

In order to receive the 1981 Vegetable Farmer's Newsletter free-of-charge, you must fill out and return the form on the attached sheet. We would also appreciate receiving your comments about the content or format of the 1980 newsletters.

1981 ILLINOIS GROWERS CONVENTION, JANUARY 13 and 14 IN CHAMPAIGN

The 1981 Illinois Fruit and Vegetable Growers' Annual Meeting will be held at the Ramada Inn Convention Center, 1505 South Neil, Champaign, IL on January 13 and 14. As in previous years, educational programs by specialists and a horticultural trade show will be featured.

Labor and tax laws as they affect horticultural producers will be the theme for the joint Fruit and Vegetable Session during the morning of January 13. That afternoon, vegetable growers will hear from Bernarr Hall, long-time Farm Advisor in San Diego County, California. Bernarr is known internationally for his work on staking tomatoes, drip irrigation, and plastic mulch. "Mr. Tomato," as he is...
called by growers and shippers in California, was featured in a front-page article in the September 20 issue of The Packer.

On the first afternoon, there will also be talks about the precision seeding of vegetable crops and bacterial spot of peppers. Bernarr Hall will speak again on the morning of January 14, talking then about the use of plastics in agriculture. His presentation will be followed by educational sessions concerning growing vegetables on strip-mined land, the use of computers on the farm, and the feasibility of a farm-size alcohol plant.

The ladies program during the afternoon of January 13 will feature a talk by the President of Illinois Women for Agriculture. The IWA is involved in a number of projects designed to promote better understanding about agriculture and the family farm system.

A major effort has been made to enlarge the trade show and make it more complete. We expect seed dealers, pesticide companies, and machinery distributors to return; also, several new exhibitors. A special effort was made to attract seeding machinery companies, particularly those with precision seeders and gel seeders.

For more information, please contact Dr. John M. Gerber, 208 Vegetable Crops Building, Urbana, IL 61801 or call him at 217/333-1969. Programs will be available from your County Extension Office. A preliminary program is shown below.

1981 PROGRAM (SUBJECT TO CHANGE)

MONDAY, JANUARY 12
5-9 pm Registration
6-9 pm Trade Show

TUESDAY MORNING, JANUARY 13
8:00 Registration/Visit with Exhibitors

Joint Session
9:00 "Welcome," Dr. W.R. Oschwald, Director, University of Illinois Cooperative Extension Service.
9:15 "Keynote Address," (speaker to be announced).
10:00 "Labor Legislation—The Springfield Perspective," Mr. A.R. Gottschalk, lobbyist.
11:00 "Labor Law—A Growers Perspective," Mr. D. McGuire.
11:30 "Tax Legislation," Mr. Jerry Stewart, Illinois Department of Revenue.
12:00 noon Joint Luncheon and address. Speaker, Dr. W.L. George, Head, Department of Horticulture.

TUESDAY AFTERNOON
Vegetable Session
2:00 "Drip Irrigation on Vegetables," Mr. Bernarr Hall, Farm Advisor, San Diego County, California.
2:30   "Bacterial Spot on Peppers," Dr. B. J. Jacobsen, University of Illinois.
3:00   "Direct Seeding of Vegetable Crops," Dr. G. Wilcox, Purdue University.
3:30   "Precision Seeding of Vegetable Crops," Dr. Peer Jensen, Harris Seeds, Inc.
4:00   "Precision Seeding—A Grower's Experiences," Mr. Rousenelous, Plainfield.

Business Meeting, IVGA
Visit Exhibits
Ladies Program
2:00   "Illinois Women for Agriculture," Mrs. Jean Ibendahl of Tamarora.

TUESDAY EVENING
Annual Banquet
7:00 pm, food and entertainment

WEDNESDAY MORNING
January 14
Vegetable Session
9:30   "The Use of Plastics in Vegetable Production," Mr. Bernarr Hall, Farm Advisor, San Diego County, California.
10:00  "Growing Vegetables on Strip-Mined Soils," Dr. J. Swiader, University of Illinois.

Vegetable Session
10:30  "Computers on the Farm," Mr. Dave Peters, The Byte Shop, Champaign.
11:00  "The Feasibility of a Farm-Size Alcohol Plant," Dr. Robert Chambers, ACR Process Corporation.
11:30  "Experiences with Alcohol," Dr. Frank Andrew, grower and Agriculture Engineer (Prof. Emeritus).

1980-81 REGIONAL MEETINGS
The regional vegetable growers' schools will be held in several locations next year. Local needs and problems will be addressed. These meetings will NOT deal with the same issues as the Illinois Fruit and Vegetable Growers' Annual Meeting on January 13 and 14. Please plan to attend the most convenient regional meeting, as well as the state meeting.

December 4—Northeast Illinois Vegetable Growers' School, Kankakee. Contact Dave Whitson for information. (815/939-3626)

December 15—Southern Illinois Vegetable Growers' School, Cobden. Contact Bill Wagner for information. (618/833-5341)

December 16-17—Southwest Illinois Vegetable Growers' School, Collinsville. Contact Chris Doll for information. (618/656-9227)
January 5—Northern Illinois Vegetable Growers' School, (location to be announced). Contact Bill Whiteside for information. (312/584-6166)

January 6—Illinois-Indiana Vegetable Growers' School, Schereville, Indiana. Contact Bill Whiteside for information. (312/584-6166)


OTHER SCHOOLS

January 8—Southern Illinois Bedding Plant School, Belleville Area College. Contact Prof. Gail Fosler for program information. (217/333-2124) University of Illinois, 100 Ornamental Horticulture Building, Urbana, IL 61801.

March 2-3—Illinois Small Fruit School & Illinois Strawberry School, Holiday Inn, Mt. Vernon. Contact Dr. J.W. Courter, R.R. 1, Simpson, IL 62985 for program information. (Proceedings available)

FALL CONTROL OF PERENNIAL WEEDS

Such hard-to-control perennial weeds as horse nettle, bindweed, quackgrass, milkweed, thistle, and others tend to become more troublesome now because some of the more common herbicides miss these weeds. Before a freeze, a fall treatment of perennial weeds can be very successful after the crop has been removed. At this time of year, perennial weeds are "preparing for winter" by moving nutrients from leaves to the roots. This movement will help the movement of a translocating-type herbicide. (Extensive work for the past 2 years has shown this to be true in volunteer horseradish control.) Roundup, Banvel, and 2,4-D will control many broadleaf weeds; but only Roundup will kill perennial grasses such as quackgrass and Johnsongrass. Dalapon can also be used for quackgrass control, but results are usually better with a spring application.

ROUNDUP (glyphosphate) is nonselective—meaning that it will kill any plant that it touches, including crop plants or other desirable plants. Roundup has no soil activity and no residual activity.

Legally, the crops that may follow a Roundup treatment include corn (all types), alfalfa, peas, beans, small grains, and asparagus. The EPA is expected to clear Roundup for use in other crops, but as of now there is still a 12-month restriction on the planting of nonlabeled crops.

Roundup is a translocating-type herbicide, meaning that it moves from the leaves to the roots. In order to get as much of a translocating herbicide down to the roots as possible, the weeds should be healthy and growing and the weather should be sunny and warm. Also, 3 to 7 days should pass after the treatment before tillage, freezing, or other disturbances occur. If cool weather occurs, you may want to wait for up to 10 days.

Quackgrass could be treated with Roundup as late as mid-November, if the weather permits. While most weeds are killed by a freeze, quackgrass has the potential of producing regrowth after freezing weather. For a quackgrass treatment to be successful in that situation, the average 24-hour temperature should be 55°F. or higher and the plants should be green, healthy, and growing.
Do not use Roundup for nutsedge control in the fall. About mid-August, the underground tubers (or "nuts") turn from a white to a brown color, indicating that the tubers are independent of the mother plant and that Roundup will not kill them.

Roundup is a good herbicide; but it is expensive, so be sure to follow all label instructions and treat only actively growing perennials. Use spot treatments where possible. The usual rate of application is 2 to 3 quarts per treated acre (perhaps higher for difficult-to-control plants, such as horseradish).

BANVEL AND 2,4-D may have a place in your weed-control program in the fall. They are selective herbicides—that is, they kill broadleaf weeds but not grasses. Banvel is more effective than 2,4-D, especially on hard-to-control weeds such as milkweed, dogbane, horseradish, and thistle.

Use Banvel at about 1 quart per acre or 2,4-D at 1-1/2 pints to 1 quart per acre, depending on the concentration. Those rates should not be exceeded very much because like Roundup, Banvel and 2,4-D translocate into the roots. Unlike Roundup, however, if too much of either Banvel or 2,4-D is used, the foliage is burnt so quickly that there may not be enough time for the chemical to reach the root in a sufficient concentration to kill the weed. In order to reduce costs, a combination of Banvel and 2,4-D can be used. There should be no serious carryover next spring with either product. [Taken from materials issued by the New York and Ohio Cooperative Extension Services and revised for Illinois by H.J. Hopen]

WEED CONTROL NOW

In the fall as the vegetable season winds down, weeds seem to be ignored. A healthy crabgrass plant produces about 200,000 seeds. That is almost 5 per square foot per acre if uniformly dispersed. Can a grower ever afford to ignore weeds? Probably not. If all herbicides were 99 and 44/100 percent effective, a weed-seed population of several million per acre would still allow many escapes.

Growers can help herbicides do the job by reducing the number of weed seeds that are produced. Timely mowing and diskng of harvested fields before the weed seeds mature is a strong part of an integrated weed-control program. Leaving a field weedy while a few more crates of vegetables are gleaned may not be a paying proposition.

Start next year's weed control efforts now. Good sanitation practices with weeds also reduce the carryover of disease and insect organisms. [From the University of Massachusetts Northeast Regional Vegetable Letter 20]

SOIL TESTING NOW

Vegetable growers making plans for spring planting should have their soil tested before placing fertilizer orders. The ideal time for testing is as close to the planting date as possible. However, practical considerations usually determine when the samples are collected. Do not wait until spring. You will be too busy then. Do not try to collect samples in January, the ground will be frozen. Do it now!

The most critical tests for vegetable growers are pH, phosphorus, and potassium. Nitrogen and micronutrient analyses are of little value in making fertilizer
recommendations. Soils with an optimum pH (6.2 to 6.8) rarely require applications of micronutrients. Tests for phosphorus (P) and potassium (K) should be used to decide how much of those elements to apply. Many growers in Illinois have built up P and K to levels so that smaller applications will be adequate. Reducing or eliminating phosphorus and potassium fertilization is a real possibility for growers who have been making annual applications.

The results of analyses are only useful if the sample collected represents the entire field being tested. Since the laboratory may use less than a spoonful of soil for the test, the method in which that spoonful is collected becomes critical.

Each sample should represent a uniform field. Differences in previous cropping, color, productivity, or drainage should result in a separate sample. Check with your local soil-testing laboratory for instructions, or have them collect it for you.

VEGETABLE NEWS FROM THE NATION

A new law went into effect on October 1, requiring that fresh fruit and vegetables imported into FLORIDA from foreign countries be labeled with the place of origin. Others have suggested that the new law attempts to strike back at Mexican tomato growers, who were allegedly "dumping" produce across the border last winter.

The 37th Annual Meeting of the FLORIDA Fruit and Vegetable Association featured seminars on workman's compensation and taxes. Similar issues will be dealt with at the 1981 Illinois Fruit and Vegetable Growers' Meeting in Champaign on January 13 and 14. At the Florida meeting, a tax consultant reported that farmers are easy targets for the IRS because they are generally poor recordkeepers.

OREGON researchers are studying the effects of circulating air in onion-storage facilities. Early experiments indicate that air circulation during curing accelerates the rate of curing and adds to the storage life. Circulating air also helps remove pockets of humidity that may promote the growth of fungi or bacteria.

Faced with heavy competition from the West Coast, MICHIGAN asparagus growers are fighting back with the help of university research. A hybrid asparagus variety developed for the Midwest and East Coast will be available to growers in a few years. New Jersey/Michigan 202 already has received 12 years of testing and is said to out-yield current varieties by 20 to 30 percent. Plant breeders are working to develop all-male varieties by crossing rare hermaphoditic (supermale) plants with normal asparagus females. The result is a male asparagus plant that will out-yield female plants and will not produce troublesome seedling weeds. This research has been made possible by an assessment of $2 per ton on marketed and processed asparagus in Michigan.

There will be a meeting on hydroponics and greenhouse vegetable production at Purdue University in West Lafayette, INDIANA on November 15 from 9:30 a.m. to 3:30 p.m. The location will be Room 310, Stewart Center. A registration fee of $10 to $15 will be charged. Contact Dr. Romanowski, Department of Horticulture, Purdue University for more information.
VEGETABLE NEWS FROM HOME

December 31 is the deadline in Chicago for the South Water Street Market's Move the Market Committee to come up with a final plan for the proposed market. Opponents claim a renovation and expansion of the present market would be less expensive.

The 31st Annual Produce Marketing Association Convention and Exhibition was held in Chicago October 18-23.

Don Ahrens, manager of the 3,000-acre Twin Garden Farms near Harvard was the subject of an article in the October 4 issue of Prairie Farmer. The Ahrens have been leaders in the use of crop consultants, light traps, bacterial sprays, and infrared photography in Illinois vegetable production.

Governor Thompson has signed a bill that will phase out the sales tax on farm machinery costing more than $1,000. The bill includes machinery used to plant, cultivate, till, irrigate, apply pesticides, and harvest crops. Buildings, fences, silos, and barns were not included. Questions about the law should be directed to the Department of Revenue in Springfield.

The Illinois Vegetable Growers' Association plans to meet with University of Illinois administration and Extension Service personnel to discuss problems facing the vegetable industry. The meeting will be held on November 5 in Champaign.

VEGETABLE NEWS FROM WASHINGTON, D.C.

President Carter has signed the Federal Crop Insurance Act of 1980. Growers will be offered plans to cover 50, 65, or 75 percent of average crop yields. Details are not available yet, but the Federal Crop Insurance Corporation will administer the program.

Senator S.I. Hayakawa, (R.-California) has charged Secretary of Agriculture Bob Bergland with having a "myopic point of view" regarding the funding of mechanization research. Senator Hayakawa writes, "Mechanization in farming ultimately means more food and a higher-quality product at a lower cost to the consumer."

The fungicide Captan has been the target of an RPAR review. Both Chevron and Stauffer have encouraged growers who want to continue using Captan to write to the EPA. The deadline for all letters is November 30. They should contain the reference number OOP-30,000/34. Send to: Chemical Information Division, TS-793, Office of Pesticides and Toxic Substances, EPA, Room 447, East Tower, 401 "M" Street, S.W., Washington, D.C. 20460.

THE WEATHER WAS UNCOOPERATIVE IN 1980

Vegetable growers in Illinois have reported that 1980 has been too wet, too dry, too hot, and too cold—sometimes all on the same farm. Surely, this was a year of extremes, producing generally low yields vegetables with a lower quality than usual.

NORTHERN ILLINOIS was favored with a mild spring and generally good weather for planting. This was followed by several weeks of cold temperatures, resulting in slow growth and purple-colored plants. When the temperatures finally went up,
they kept on going. The extreme heat following the cold was moderated in some areas by adequate rainfall. However, where the rain was inadequate, pollinating conditions were poor. Three major crops—sweet corn, tomatoes, and peppers—all suffered in quantity and quality. When the rains finally arrived in August, they brought a severe problem with bacterial spot on peppers and tomatoes. Heavy rains and wet fields promoted the spread of bacteria and limited spray operations. The population of corn rootworm beetles was unchecked, so the silks were eaten and pollination was poor in sweet corn that was planted late.

CENTRAL ILLINOIS also experienced a hot, dry summer. Where irrigation was available, the yields of muskmelons and watermelons were nearly normal. Onion growth was slow during the hot summer months, but improved slightly when the rains came. In spite of a late flush of growth, onion sets should be dry going into storage because of the excellent drying conditions this fall.

SOUTHERN ILLINOIS started off with a cold, wet planting season. Crops that never developed an adequate root system experienced a long, hot, dry summer. Where irrigation was not available, the yields and quality were poor.

The good news in 1980 was prices, especially for potatoes and peppers. Unfortunately, few growers in Illinois planted potatoes and not many peppers were picked.

FAT SQUIRRELS, RED SKIES, AND ALL THAT ...

In order to prepare you better for next year's weather, we have reprinted an article from The Saturday Evening Post by J.K. Hanson. There's more down-home weather lore than just a lot of hot air. See if you can tell which of the old-fangled forecasts actually were based on scientific facts.

Low-flying bats, rainbows in the west, aching teeth, mackerel skies, fat squirrels, sundogs, red skies at night, croaking frogs, and the like have something in common. They are all staples of weather lore, some of it as old as the Bible but also as modern as today's amateur meteorologists.

Now, with weather satellites and the phalanx of computers at the National Weather Service, we may be able to scoff at ancient weather sayings as we sit in our sky-scraper offices and temperature-controlled houses. But the early farmers and ancient mariners who depended on them for livelihood—and even life—may have the last laugh yet.

Test your skills as a weather forecaster, scoring 1 point for each correct true-or-false answer. A score of 0 to 5 means you would have been a failure as an early farmer, 6 to 10 means you could have gotten along passably before this century (though you probably would have been rained on a few times), and 11 to 15 qualifies you to be a regular soothsayer or probably even a local TV weather forecaster.

1. A ring around the moon means rain will come. T  F
2. On spring and fall evenings, vapor rising from a river means a frost is coming. T  F
3. The winter will be colder if squirrels are fatter, rabbits' fur is thicker, tree bark is heaviest on the north side, wild horses have thicker coats,
hoot owls call late in the fall, cornhusks are heavier, chipmunks carry
their tails higher, holly bushes have more berries, and carrots grow deeper. T F

4. A morning rainbow in the west means rain is coming soon. T F
5. You can count on a January thaw. T F
6. A mackerel sky means rain within 36 hours. T F
7. Do business when the wind is from the northwest. T F
8. Swallows and bats fly lower before a storm. T F
9. Lightning never strikes the same place twice. T F
10. A cold winter means a hot summer. T F
11. Sundogs mean snow within 24 hours. T F
12. "Red sky at night, sailors' delight. Red sky at morning, sailors take warning." T F
13. Bones, corns, and teeth ache when a storm is coming. T F
14. An east wind blows no man good. T F
15. Frogs croak more before a rain. T F

Now for the answers and the reasons for them, according to George Freier, physicist-meteorologist at the University of Minnesota, and Bruce Watson, consulting meteorologist for the Minnesota Weatherguide/Calendar.

1. TRUE. The ring is created when tiny ice particles in fine cirrus clouds scatter the moon's light in all directions. These clouds form in the upper atmosphere as a warm front approaches cooler ambient air. Since a collision of fronts indicates changing weather, rain is quite likely, though not certain, and should arrive within 24 hours. Although the presence of a ring is a pretty good predictor of rain, not all rainstorms are preceded by a ring around the moon.

2. TRUE. The wisps of fog indicate radiant energy based on temperature differences. In the spring and fall this often means the land nearby is cooling and, if cooled enough, will frost.

3. FALSE. Plants and animals may be able to adapt well to the seasons, but they cannot predict them. Sayings such as these are not predictions at all, but signs that the winter is already cold. More investigation, however, is still needed in this area.

4. TRUE. Rainbows are created when the sun shines through raindrops acting as prisms; they are always opposite the sun and so can be in the west only in the morning. Since most weather comes from the west, the rain from the airborne raindrops is probably quite close. But this kind of rainbow is fairly rare—most of the rain-producing showers come at the end of the day.

5. TRUE. During any given month, several weather systems move across a region, each of them usually lasting 4 to 7 days. During most of these periods, the winds shift through all directions of the compass, including
the south. A south wind, combined with the higher angle of the sun toward the end of winter, will warm the air and the land, creating some degree of a January thaw.

6. TRUE. A mackerel sky is a system of very high cirrus or cirrocumulus clouds resembling fish fins. These clouds reflect the approach of a warm front. It will collide with and be pushed over the cooler, ambient air, reach its dew point, and form rain—usually within a day and a half.

7. GOOD ADVICE. Over most of the earth, northwest winds bring fair weather with a high barometer reading. This seems to put people in a better mood for everything, including business. But deserts, mountains, and oceans to the west can throw off basic wind patterns and sometimes invalidate this saying.

8. TRUE. The ears of swallows and bats are very sensitive to air pressure, and they feel more comfortable when it is constant. So when the barometer begins to fall, they must fly closer to the ground to equalize the pressure. Since the barometer begins to drop about 12 hours before a storm, their behavior can be a first indication of bad weather. A contributing factor is that insects, these animals' food supply, are also driven lower by a falling barometer.

9. FALSE. This not-so-apt apothegm probably originated in fear. Also, most things struck by lightning are destroyed and so are not again available at the same location. Lightning is selective, however; it usually strikes only one person in a large outdoor crowd. The electricity is grounded through this primary channel, often killing the person. But many more people can be killed by the ionization area around the main bolt, even though it is a million times weaker. The field of electric current causes shock and heart fibrillation, leading to death. Mouth-to-mouth resuscitation and heart massage can save these people, reducing the number of lightning deaths drastically.

10. FALSE. At some periods in the earth's history, all seasons have been relatively cold and, at other times, relatively warm. Physicists are still looking for good reasons or even just high correlations for other seasonal comparisons.

11. TRUE. Sundogs, seen only on very cold days, are rings around the sun or bright vertical lines at the sun's height in the sky. Much like rings around the moon, they indicate ice crystals that scatter light. Since the crystals are hexagonal, they can act as prisms and create colorful "dogs." The crystals usually descend as snow.

12. TRUE. This saying can be traced at least as far back as the New Testament. Matthew 16:2-3 reads: "... When it is evening, ye say, It will be fair weather: for the sky is red. And in the morning, It will be foul weather to day: for the sky is red and lowring..." The red sky is caused by airborne dust that intercepts the sun's shorter wavelengths, emphasizing the redder rays. Dust in the morning usually means a strong wind the previous night, indicating the arrival of a new weather system to collide with the present one. Dust, or a red sky, in the evening usually indicates that strong sunlight has evaporated water from the ground that has recondensed
around dust particles in the air. This sunlight will probably remain tomorrow, since most weather systems last several days.

13. TRUE. When the barometer begins to fall, gas pressure can build up around a sore bone or a decayed tooth root. This slight difference in pressure is what enables some people to detect a barometer drop, which usually, though not always, indicates an approaching storm.

14. TRUE. This saying originated in the North Atlantic States, where east winds bring moisture-laden air from the ocean; but it also is valid for the rest of the country, with the exception of the West Coast. East winds indicate that there is a low-pressure area to the south. When colder air from the north collides with the warm moist air, rain usually results.

15. TRUE. Frogs cannot tolerate much evaporation of their skin's moisture. So low-humidity days find them under water most of the time. Before a storm, when the humidity is higher (as in the morning and evening, generally), they are more eager to emerge from their ponds croaking.

Weather lore, then, is more than a lot of hot air. But note that it is most useful for predictions of less than 24 hours, must often by qualified because it tends to overpredict and works best for specific events, such as storms.

Longer-term and general forecasting are beyond the scope of lore,...but then they are often beyond the scope of professional meteorology, too.

J.M. Gerber

H.J. Hopen

J.W. Courter

Extension Specialists, Vegetable Crops
Please send me the 1981 edition of the Illinois Vegetable Farmers' Newsletter.

Name __________________________
Address __________________________
City __________ State ________ County ________ Zip ________

Please take a few minutes to give us your comments.

1. What type of information would you like to see in future newsletters? (please circle one or more).
   a. extension recommendations
   b. research results
   c. legislative updates
   d. general production information (i.e., insect and disease profiles, principles of crop production)
   e. your suggestions __________________________

2. How many times a year would you like to receive a vegetable newsletter? (circle one).
   a. none
   b. 4 - quarterly
   c. 6 - bi-monthly
   d. 9 - monthly during the growing season
   e. 12 - monthly

3. Should we be forced to return to a subscription charge, what would you consider a fair price? (Base this answer on the number of issues you choose in question 2).
   a. free
   b. $2.00
   c. $5.00
   d. $7.50
   e. $10.00

4. What are we doing wrong?

Please return to Dr. John M. Gerber, 208 Vegetable Crops Building, University of Illinois, Urbana, IL 61801.