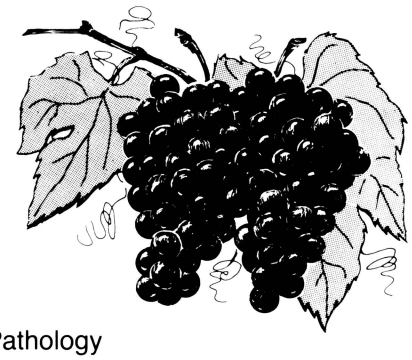
1985

Missouri Commercial Grape Spray Schedule



L. S. Lockshin and A. E. Gaus, Horticulture
E. W. Palm, Plant Pathology
W. S. Craig, Entomology
R. Skorepa, Extension Pest Management
M. Lachance, Extension Pest Management

University of Missouri-Columbia
Extension Division

J. F. Moore, Plant Pathology
H. Townsend, Entomology

State Fruit Experiment Station of
Southwest Missouri State University

MP 263 1/85 2M

These recommendations are intended to serve as guidelines for commercial grape growers in Missouri. The pesticides and application rates listed for any given pest problem are based on their effectiveness, economy, safety and general integration into control programs for other pests present at or about the same time. The choice of which chemicals to use, when to use them, and how they are applied must be made by the individual growers relative to their own experiences, equipment, and special problems associated with their vineyards. The effective and efficient use of all pesticides requires careful selection of the most appropriate material and the rate required, critical timing of the application(s), and uniform, thorough coverage of the vines. Home growers should consult *Grounds for Gardening* Guide 6010, "Home Fruit Spray Schedule."

Pesticide safety

Responsible use of pesticides also includes their safe storage and handling. Most pesticides are poisonous to people and animals. Handle them with care. Store them only in their original, labeled containers in a dry, locked location out of the reach of children and animals.

Read the label! Understand it. Know the toxicity of the material you are using and wear the appropriate protective clothing. The greatest hazard with most pesticides occurs during the loading operation before the spray is applied. With highly toxic wettable powder (WP) formulations, empty containers carefully into the tank to avoid undue exposure to the dust. With liquid formulations, avoid splashing and spillage while measuring or making additions to the spray tank.

Avoid contaminating lakes, streams or ponds with any pesticide. Do not clean sprayers or dump excess spray mixtures near any such water supply. Avoid contaminating any crop used for forage or feed by drift of sprays out of the vineyard.

Recommended rates of application

The correct amount of pesticide required for control in any given vineyard is the recommended rate contained in the recommended volume of water which, when applied as a foliar spray, is sufficient to allow some run-off. Amounts applied in excess of this volume are wasted, and volumes of dilute spray less than that required for run-off commonly result in reduced pest control.

Most vineyards require approximately 200 gallons of dilute spray liquid per acre (540 vines) to achieve run-off at full leaf. During the early season, however, substantially less volume is required per acre and adjustments need to be made accordingly with respect to either the pump discharge rate or the travel speed. In any case, travel speed should not exceed 3-4 mph in conventional applications or 2-3 mph in alternate row middle applications. Dilute sprays should be applied at 250-300 psi.

The same amount of chemical normally applied as a dilute spray can be applied as a low volume (LV) spray using 1/3 or less the normal dilute volume of water. However, since little or no run-off occurs in LV applications, less total chemical should be applied per acre than in dilute sprays to avoid deposits in excess of that needed for control. LV rates in these recommendations are generally calculated (with some exceptions) by multiplying the dilute rate by the gallons per acre of dilute spray required and then subtracting 25 percent to adjust for the lack of run-off. Amounts of water less than 35 gallons per acre are **not** recommended.

Excess run-off in dilute spraying and deposits in excess of that needed for control in low volume spraying are both economically and ecologically unsound.

Pesticide certification for growers

Missouri's pesticide law went into effect October 21, 1976. This law requires certification for commercial and private applicators to purchase and apply restricted-use pesticides as defined by the Environmental Protection Agency. Since several pesticides used routinely by fruit growers are potentially restricted-use materials, it is highly desirable that each grower becomes certified.

Commercial applicators (all applicators who apply pesticides for hire) must pass an examination administered by the Missouri State Department of Agriculture. Private applicators are required to attend a training program but are not required to pass an examination. Training sessions are offered to both commercial and private applicators by the University of Missouri Cooperative Extension Service. Contact your local extension specialist for further information.

Alternate row middle spraying

Alternate row middle (ARM) spraying is the practice of applying pesticide sprays from only one side of the trellis, alternating between odd and even numbered row middles in each successive spray treatment. Usually, the interval between these ARM sprays is reduced to five days compared with seven days for conventional sprays applied from each row middle. ARM spraying offers several important advantages: (a) vineyards can be sprayed in less time; (b) less total pesticide is used per acre; and (c) the shortened interval reduces the risk of foliar damage due to black rot or downy mildew fungi or to grape phylloxera on newly developed leaves.

There are several criteria which must be met if ARM spraying methods are to be successful: (a) it should be used only where low volume, concentrate sprays are employed; (b) it should be attempted only with airblast spraying equipment, preferably those sprayers with high volume airstreams (where sprayers with low volume airstreams are employed, travel speed should not exceed 2 mph); (c) it should be attempted in vineyards only where diseases or insect pests have been well controlled in the past; and, (d) the practice should be continued only as long as the spray droplets can be seen to penetrate the foliar canopy next to the sprayer and reach the near side of the next trellis (usually two to three weeks after bloom). ARM spraying should not be used for the initial application of the season because of the need to thoroughly cover all tissues susceptible to damage by flea beetles or to infection by the fungus causing Phomopsis cane and leaf spot.

Grape root borer

Lorsban 4E insecticide has been approved for grape root borer control on grapes east of the Rocky Mountains only. Use 2.25 pounds active ingredient per 100 gallons of water. Apply 2 quarts of diluted spray mixture to the soil surface on a 15 square foot area around the base of each vine. Apply just before grape root borers emerge from the soil. Do not allow spray to contact fruit. Make only one application per season. Do not apply within 35 days of harvest.

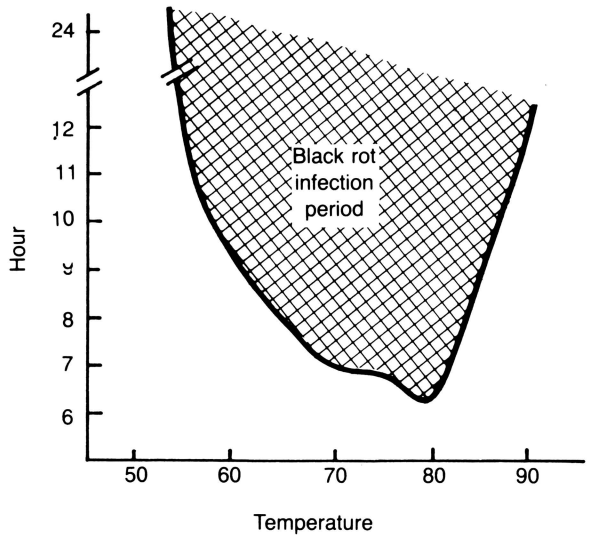
Research indicates that keeping the soil under the trellis free of grass and weeds during July and August may reduce the incidence of grape root borer by reducing the survival of eggs and new larvae.

Post-infection control of diseases

The strategy of post-infection disease control[1] is to apply a control measure only after disease development is known to have occurred or is predicted to occur in a crop. This strategy requires knowledge of how to predict development of a disease organism and the availability of a fungicide with 'curative' properties. Black rot is a common grape disease found in Missouri which can be controlled 'post-infection,' i.e., specific information exists to allow the prediction of disease development, and a curative-type fungicide to control it is available. Factors to consider when deciding whether to use this technique are: 1) effectiveness of your current spray program using 'protective' fungicides, 2) availability of weather recording equipment (thermograph and hygrometer or hygrothermograph), and 3) availability of time and equipment to make a fungicide application throughout entire infected area of a vineyard within 72 hours.

Black rot prediction program

Numerous laboratory and field trials have identified specific periods of leaf wetness which, at certain temperatures, will induce infection by the black rot disease organism; these periods are called "infection periods" (IP). The following graph identifies when an IP for black rot occurs. The first step in using this graph is to determine periods of "leaf wetness" equal to or greater than 6 hours in length. Leaf wetness is defined as the presence of free water on the leaf surface and can be identified in one of two ways: 1) by using commercially available leaf wetness meters, or 2) by using relative humidity readings of at least 90 percent or greater from hygrometers. Then, the temperature is averaged over the period of leaf wetness identified. If the period of leaf wetness has an averaged temperature which falls within the shaded zone, an IP has occurred. It is extremely important that leaf wetness and temperature readings are taken from within the vineyard proper.



Additional conditions to consider for predicting black rot: 1) physical presence of the disease organism in the vineyard is necessary—this generally occurs when infected, mummified clusters from previous black rot infections remain on or near the vine, and 2) a means of dispersing the inoculum to other plant parts is necessary—rain and/or strong winds are the most common and efficient methods.

Spray program

The prediction program should be started from the 6-inch shoot growth stage and continued throughout the season.

Disease control commences when the first IP is predicted.

1. Spray with Bayleton 50W at 4 oz. per acre after the beginning of a black rot IP.
2. Do not spray for next 10 days (Bayleton has a residual effect of 10-14 days).[2]
3. After 10 days, apply again at the next predicted IP.
4. Continue this schedule throughout the season, until grapes reach veraison (about 5% sugar) when grapes are no longer susceptible to black rot. No more than 18 oz. of Bayleton per acre may be applied in a single season.

Bayleton is also effective in controlling powdery mildew[3]; therefore additional sprays of Bayleton to control powdery mildew will **not** be necessary if post-infection sprays are already being used for black rot control[4]. If severe disease pressure from black rot or powdery mildew exists in a vineyard, the high rate (6 ounces per acre) of Bayleton is suggested. Severe disease pressure can be assumed to exist in a vineyard if disease development continues even after: a) having followed a protective fungicide spray schedule, or b) having used Bayleton as a post-infection spray at the low rate (4 ounces per acre).

Notes:

1. Post-infection disease control is a management-intensive practice.
2. Rains causing runoff after applying Bayleton may result in loss of effectiveness:
   - -rain at 1 hour past application = 40 percent loss of material.
   - -rain at 4 hours past application = 26 percent loss of material.
3. Bayleton **does not** control downy mildew—depend on Folpet 50W and Ferbam 76W or Dithane M22 Special 80W.
4. Grapes need to average about 8 percent sugar to be resistant to further infection by powdery mildew.

Grape pesticide tolerances, days to harvest, and other label restrictions[1]

Compound	Tolerance[2]	Interval[3]	Compound	Tolerance[2]	Interval[3]
Bayleton[6]	1	14	Folpet	25	NTL
Benomyl	10	7	Guthion[4,5]	5	10
Captan	—	NTL	Lorsban	2	35
Carbaryl	10	NTL	Malathion	8	3
Diazinon	0.75	10	Rovral	20	NTL
Dithane M22 Special	—	7	Sulfur	—	NTL
Ferbam	7	7	Zolone	—	14

[1]All references are for use on grapes only. Many compounds have different limitations on other crops. **READ THE LABEL!**

[2]Allowable residues at harvest expressed in parts per million (ppm). Copper is exempt from a tolerance.

[3]Time in days between last application and harvest. NTL = no time limitation.

[4]Do not permit workers to re-enter vineyard within 24 hours after applications of GUTHION or 48 hours after application of PARATHION unless they wear protective clothing. For all other pesticides, allow no unprotected farm worker re-entry until the spray dries or the dust settles.

[5]Don't apply GUTHION more than three times per season.

[6]Maximum of 18 ounces per acre per season.

Timing & major pests involved	Materials to use	Dilute rate per 100 gallons	Alternate row middle spray	Low volume rate per acre
Dormant sprays				
Anthracnose	Liquid lime-sulfur	8 gals.	No	NA
Early sprays				
Flea beetle Cutworms	Carbaryl 50W	3-4 lbs.	No	NA
Phomopsis Black rot Downy mildew Anthracnose	Folpet 50W	4 lbs.	No	NA
Anthracnose	Benomyl 50W	⅜ lbs.	No	NA
Pre-bloom sprays				
Black Rot Downy Mildew Phomopsis	Ferbam 76W + Folpet 50W[1] or	¾ lb. 1¼ lb.	Yes	1¼ lb. 1¾ lb.
	Dithane M22	1½ lb.		2½ lb.
	Special 80W		Yes	
Flea Beetles Mealy Bugs Grape berry moth	Diazinon 50W	1 lb.	Yes	1½ lb.
Immediately before first blooms open				
Phylloxera	Zolone EC or	1⅓-2 pints		2-3 pints
Grape berry moth	Diazinon 50W	1 lb.	No	1½ lb.
Bloom sprays				
Black Rot Downy Mildew Powdery Mildew	Ferbam 76W + Folpet 50W or Dithane M22	¾ lb. 1¼ lb.	Yes	1¼ lb. 1¾ lb.
	Special 80W	1½ lb.	Yes	2½ lb.

[1]Folpet may cause foliar burn on some cultivars, i.e., Norton/Cynthiana when used at highest labeled rates. Folpet may burn foliage at high temperatures also. Folpet does produce moderate control of powdery mildew.

Comments and special precautions

Apply after dormancy but before bud swell. Shoots with anthracnose cankers should be removed during pruning and destroyed.

Apply when buds are swelling, and again seven days later if pests are present. Extra applications may be necessary when cool weather delays growth, or when infestation level is high. Use a gun or directed nozzle spray to get thorough coverage and conserve spray. Apply 50-75 gallons per acre dilute spray to achieve 2 pounds of Carbaryl 50W per acre.

It is necessary to spray Folpet on vines before prolonged cool, wet weather for proper control of Phomopsis. Apply in early shoot growth stages - bud break to ½ inch and again at 5 inches if cool, wet weather persists. Partial dormant control can be achieved by removal of infected canes.

For severe anthracnose, Benomyl is more effective than Folpet.

Begin applications about seven days after last Folpet application. Repeat at seven-day intervals. Where phomopsis cane and leaf spot and/or anthracnose are problems, Folpet must be used.

Use Diazinon in one spray for mealy bugs, flea beetles (adults and larvae), and berry moth. May be mixed with fungicides.

For Zolone, use lower rate for prevention, higher rate for severe infestation. Repeat applications as desired, but do not use more than 21⅓ pints per acre per season. If using Zolone for phylloxera, Diazinon is not needed.

Apply at start of bloom and continue at seven-day intervals until end of bloom. **Note:** Dithane M22 Special will not control powdery mildew or anthracnose. See powdery mildew below.
See also "Post-infection control of diseases."

Timing & major pests involved	Materials to use	Dilute rate per 100 gallons	Alternate row middle spray	Low volume rate per acre
Bloom sprays continued				
Anthracnose Botrytis Rot	Benomyl 50W	⅜ lb.	No	⅝ lb.
	Rovral	¼ lb.	No	⅜ lb.
Powdery Mildew	Benomyl 50W or	⅜ lb.	Yes	⅝ lb.
	Bayleton 50W	1½ oz.	Yes	2 oz.
Post bloom sprays				
Downy Mildew Black Rot Powdery Mildew	Folpet 50W + Ferbam 76W or Dithane M22 Special 80W	1 lb. 1 lb. ¾ lb.	 No No	1½ lb. 1½ lb. 1¾ lb.
Anthracnose	Benomyl 50W	⅜ lb.	No	⅝ lb.
Botrytis Rot	Rovral	¼ lb.	No	
Powdery Mildew	Sulfur 95% mfw or	2 lbs.	No	3 lbs.
	Bayleton 50W	1½ oz.	No	2 oz.
Berry Moth Mealy Bugs Scale Leafhoppers	Diazinon 50W or Guthion 50W or	1 lb. ¾ lb. 	No No 	1½ lbs. 1⅛ lbs.
	Malathion 25W or	2 lbs.	No	3 lbs.
	Carbaryl 50W	2 lbs.	No	3 lbs.

Comments and special precautions

Apply in addition to regular fungicides to susceptible varieties (see TABLE) at no later than 5 percent bloom. Repeat this spray if bloom period extends 10 days beyond first application or if cool temperatures (60-72° F) and rainfall persist for 10 days after first application. Thorough coverage of bunches is essential. Benomyl is also effective for control of anthracnose.

Wait until FULL BLOOM (60-70 percent caps off) before applying Rovral. Follow repeat-spray schedule as above. For Botrytis rot only.

Apply Benomyl at seven-day intervals to mildew susceptible varieties when Dithane M22 Special is used as a regular fungicide. Resistance to Benomyl has been found in other states. Do not use Benomyl all season long. Alternate it with other fungicides for powdery mildew. Bayleton applied after an infection period may be more economical than at regular intervals. See also "Post infection control of diseases."

Fungicide applications (including those for powdery mildew, below) should be repeated at seven-10 day intervals or after heavy rains have washed them off until early July and at 10-14 day intervals thereafter. More sprays may be applied during wet weather.

The rate of Dithane M-22 Special decreases at this time. Remember that Dithane M22 Special has no effect on powdery mildew or anthracnose so another fungicide for that purpose should be added for susceptible cultivars.

Apply prior to bunch closing to ensure thorough coverage of clusters; this is an especially important spray if temperatures and rainfall as described in "Botrytis Rot-Bloom Spray" have persisted since bloom.

Do not use on cultivars susceptible to sulfur burn. Check chart. Sulfur must be applied at seven-10 day intervals.

Apply insecticides every 10-14 days. Insecticides can be mixed with the fungicides. Do not use Guthion more than three times during the season.

Remember to check the label for the interval between spraying and harvest to avoid applying materials later than the specified date.

Timing & major pests involved	Materials to use	Dilute rate per 100 gallons	Alternate row middle spray	Low volume rate per acre
Summer sprays				
Downy Mildew	Ferbam 76W	1¼ lb.	No	1¾ lb.
Black Rot	+ Folpet 50W	¾ lb.		1¼ lb.
	or			
	Dithane M22 Special	¾ lb.		1½ lbs.
Pre-harvest sprays				
Botrytis Rot	Benomyl 50W	⅜ lb.	No	⅝ lb.
	Rovral	¼ lb.	No	⅜ lb.
Post-harvest sprays				
Downy Mildew Powdery Mildew	Folpet 50W	1½ lbs.	No	2½ lbs.
	or			
	Tribasic Copper Sulfate	2 lbs.	No	3 lbs.
	+ lime	8 lbs.		12 lbs.

Herbicides for vineyards

Recommendations are given on the basis of the surface area sprayed. Therefore, spraying a 30-inch band in a vineyard with rows 10 feet apart is equivalent to ¼ acre sprayed for every acre of vineyard. The key to weed control is to know your weed problems and then apply the proper material or mixture at the proper times. Consult the label for list of weeds controlled at various rates.

Material to use	Rate per treated acre (of product)	Time of application
Surflan 75W	2⅔ lbs. (for short-term protection) 5⅓ lbs. (for longer protection)	Apply in spring just before weed emergence.
Diuron (Karmex 80W) or	2-3 lbs. (on soils low in clay or organic matter 1-2%) 3-6 lbs. (on soils high in clay or organic matter)	Apply in spring just before weed emergence.
Simazine (Princep 80W)	2-6 lbs.	Apply in spring before weed emergence.
Fusilade 4E (Fluazifopbutyl)	1 pt.	—

Comments and special precautions

Powdery Mildew: follow post bloom instructions.
Insects: follow post bloom instructions.

Apply spray at veraison or 5° Brix. If necessary (see note on Botrytis Rot on Bloom sprays), an additional spray of either fungicide can be used.
Do not apply Benomyl within 7 days of harvest

It is extremely important to maintain the leaf canopy as long as possible. Premature defoliation (leaf drop) can reduce winter hardiness and the crop in the following year. Many cultivars are harvested at least one month before frost.

This mixture is an effective and long-lasting preventative. However, foliar damage will result. Tribasic Copper Sulfate must be safened with lime and used only as a late season spray.

Comments

A single ½-inch rain or irrigation is required within 21 days to activate. Do not apply to newly planted vineyards until soil has settled and cracks have disappeared. Can be tank mixed with Paraquat and applied to newly emerged weeds. Mainly effective for grass control.

Do not apply to vines under three years old. Can be tank mixed with Paraquat and applied to newly emerged weeds.

Do not apply in vineyards less than three years old. Do not apply on gravelly, sandy or loamy sand soils. Can be tank mixed with Paraquat and applied to newly emerged weeds.

A post-emergent herbicide for the control of grasses in non-bearing vineyards. Apply to annual grasses less than 8 inches tall and perennial grasses less than 6 inches tall. Use either 1 quart of crop per acre or ½ pint of non-ionic surfactant per acre mixed with the herbicides.

Herbicides for vineyards, continued

Material to use	Rate per treated acre (of product)	Time of applicatio
Poast (Sethoxydim)	1.5-2.5 pts.	
Paraquat CL (Restricted use pesticide)	1-2 qts. plus 8 oz. non-ionic surfactant per 100 gal. Such as charger E or X-77.	Apply to weeds when growth is succulent. Retreatment may be necessary on large or woody weeds.
Glyphosate (Round-up)	Rate depends on method of application and type of weeds. Use booklet enclosed with product.	Apply to actively growing weeds. See booklet enclosed with product for specific directions.

Relative disease susceptibility under Missouri conditions and sulfur sensitivity of grape cultivars

	Susceptibility[x]					
Cultivar	Black rot	Downy mildew	Powdery mildew	Botrytis	Anthracnose	Sulfur sensitive[y]
Catawba	+ + +	+ + +	+	+	+	no
Cayuga White	+ + +	+ +	+ +	+	+ + +	no
Chambourcin	+	+	+ +		+	
Chancellor	+ +	+ + +	+ + +	+	+ +	yes
Chelois	+	+	+ +	+	+	no
Concord	+ + +	+	+ +	+	+	yes
DeChaunac	+ +	+	+ +	+	+ +	
Delaware	+ + +	+ + +	+ +	+ +	+ +	no
Foch	+ +	+	+ +	+	+ +	yes
Leon Millot	+ + +	+ +			+	
Niagara	+ + +	+ + +	+ +	+		no
Vignoles[z]	+ + +	+ + +	+ +	+ + +	+ + +	no
Seyval Blanc	+ +	+	+ + +	+ +	+	no
Vidal Blanc	+ +	+	+ +	+	+ + +	no
Villard Blanc	+ + +	+	+ + +		+ + +	

[x] + = slightly susceptible, + + moderately susceptible, + + + extremely susceptible, blank = relative susceptibility unknown.

[y] Sulfur injury may occur on tolerant cultivars above 85° F.

[z] Fruit of Vignoles extremely susceptible to anthracnose while foliage and shoots are only slightly susceptible.

Comments

Apply 1.5 pints per acre for post-emergent control of grass less than 6 inches tall. Use 2.5 pints per acre rate for grasses up to 12 inches tall. Use 2½ pints per acre of oil concentrate mixed with the herbicide. For non-bearing vines only. Do not harvest fruit within 1 year of treatment.

Do not apply to leaves or fruit. Do not apply during windy conditions. Do not graze treated areas. Wear goggles and safety respirator when handling or applying. Can be applied with a pre-emergent when weeds are 1-6 inches high. May be reapplied alone as necessary.

Round-up is a highly effective herbicide that moves through the plant and kills it, including the roots. Do not contact any green part of the vines or injury will result. It is most effective as a directed spray in a band below overhanging grape leaves or as a spot treatment for problem weeds. Round-up is usually used in addition to other herbicides. Read the label and accompanying booklet for further instructions.

Effectiveness of fungicides for control of grape diseases

Fungicide*	Black rot	Downy mildew	Powdery mildew	Botrytis	Phomopsis cane and leaf spot
benomyl (Benlate)	+ +	0	+ + +	+ + +	+
captan	+ +	+ +	0	+	+ + +
ferbam (Fermate, Carbamate)	+ + +	+	0	0	0
folpet (Phaltan)	+ +	+ + +	+	+	+ + +
Mancozeb (Manzate 200, Dithane M-45)	+ + +	+ + +	0	0	+
Maneb + zinc (Dithane M-22 Special, Manzate Flowable + zinc	+ + +	+ + +	0	0	+
sulfur	0	0	+ + +	0	0
triadimefon (Bayleton)	+ + +	0	+ + +	0	

Blank = effectiveness not known; + = slightly effective; + + = moderately effective; + + + = highly effective; 0 = not effective.

*Mention of a brand name is not an endorsement of that company's product but is included for the grower's convenience.

Missouri poison control centers*

City	Poison Control Center	Telephone
Cape Girardeau	Southeast Missouri Hospital 701 Lacy 63701	(314)651-5555
Columbia	University of Missouri-Columbia Hospital and Clinics One Hospital Drive 65212	(314)882-4141
Hannibal	St. Elizabeth's Hospital 109 Virginia Street 63401	(314)221-0414 Ext. 101/183
Jefferson City	Charles E. Still Osteopathic Hospital 1125 So. Madison 65101	(314)635-7141 Ext. 215
Joplin	St. John's Hospital 2727 McClelland Blvd. 64801	(417)781-2727 Ext. 393
Kansas City	Children's Mercy Hospital 24th & Gilham Road 64108	(816)234-3000
Kirksville	Kirksville Osteopathic Hospital 800 W. Jefferson St. 63501	(816)626-2266
Poplar Bluff	Lucy Lee Hospital 330 N. 2nd Street 63901	(314)785-7721
Rolla	Phelps Co. Memorial Hospital 1000 W. 10th Street 65401	(314)364-3100 Ext. 136 or 137
Springfield	Lester E. Cox Medical Center 1423 N. Jefferson St. 65802	(417)831-9746 or 1-(800)-492-4824
	St. John's Hospital 1235 East Cherokee 65802	(417)885-2115 Emer. Rm.
St. Joseph	Methodist Hospital and Medical Center 7th to 9th on Faraon Streets 64501	(816)271-7580 or 232-8481
St. Louis	Cardinal Glennon Children's Memorial Hospital 1465 S. Grand Blvd. 63104	(314)772-5200
	St. Louis Children's Memorial Hospital 500 S. Kingshighway 63110	(314)454-6099
West Plains	West Plains Memorial Hospital 1103 Alaska Avenue 65775	(417)256-9111 Ext. 258 or 259

*In the case of accidental poisoning involving a pesticide, follow the first aid directions printed on the label of the container, and consult your physician immediately. Additional information concerning treatment and course of action can be obtained from your nearest poison control center.

■ Issued in furtherance of Cooperative Extension Work Acts of May 8 and June 30, 1914 in cooperation with the United States Department of Agriculture. Leonard C. Douglas, Director, Cooperative Extension Service, University of Missouri and Lincoln University, Columbia, Missouri 65211. ■ An equal opportunity institution.

University Libraries
University of Missouri

Digitization Information Page

Local identifier	MP263-1985

Source information

Format	Book
Content type	Text with images
Source ID	Gift copy not added to collection
Notes	Contains some tables that spread two pages.

Capture information

Date captured	September 2019
Scanner manufacturer	Fujitsu
Scanner model	fi-7460
Scanning system software	ScandAll Pro v. 2.1.5 Premium
Optical resolution	600 dpi
Color settings	8 bit grayscale
File types	tiff

Derivatives - Access copy

Compression	Tiff: LZW compression
Editing software	Adobe Photoshop CC
Resolution	600 dpi
Color	color cover; grayscale for other pages
File types	pdf created from tiffs
Notes	Images cropped, straightened, and brightened