

# Maleic Hydrazide Tested on Ivy

growth inhibitor applied by foliar sprays maintained ground and fence covers of ivy for an entire summer without pruning

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**Cover plants**, such as ivies, honeysuckle, and Star Jasmine, may be controlled readily by maleic hydrazide—MH—applied as a spray to new growth.

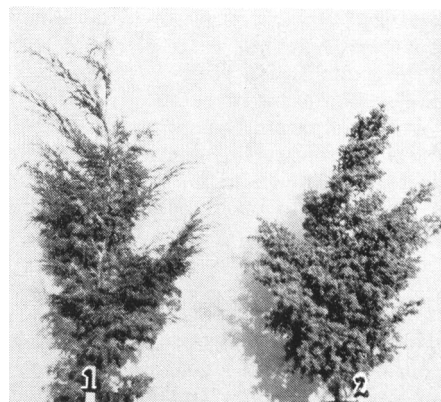
In experiments at Los Angeles, Hahn's Ivy was trimmed the first week of June, 1957, and after new growth had covered the trimmed edges, MH-30—diethanolamine salt solution, 30% maleic hydrazide—was applied to the entire leaf surface. The June treatment inhibited growth until the first week of August, when much new growth indicated a retreatment was required. Four resprays were sufficient to restrict the ivy to the desired area until March, 1958. In other experiments, MH-40—sodium salt powder, 40% maleic hydrazide—as well as MH-30 was tried on Algerian Ivy and Star Jasmine—*Trachelospermum jasminoides*—and both plants were maintained in much the same manner as Hahn's Ivy.

The most satisfactory control was obtained by trimming the plant to the desired size and letting new tips grow until the trimmed edges were covered before

spraying with MH. When new growth appeared again the spraying was repeated.

Hedge and foundation plants—such as *Eugenia*, *Myrtus*, and *Xylosma*—were treated with MH and the results indicated that those plants and many others can be maintained with a minimum of pruning.

The period of growth inhibition—during the warm season—was 4–6 weeks on all plant varieties treated when a non-damaging concentration was used. Growth inhibition was evident over a rather wide concentration range of MH-30 and MH-40. However, concentrations that are too high result in excessive leaf drop and a delay of many months before growth is resumed. The concentrations listed in the accompanying table were used under coastal conditions and—under different climatic conditions—more or less MH may be absorbed by the plant. Therefore effective and damaging concentrations in particular climatic areas may not be the same as those given in the table. Particular caution is



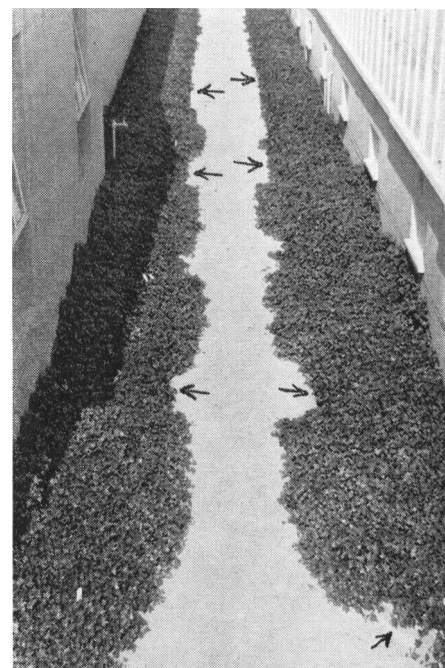
Chinese Juniper. 1. untreated; 2. treated.

necessary when treating herbaceous plants and citrus.

The general effect of MH on the growth of many broadleaf, evergreen plants was to produce a more dense and bushy plant by inhibiting the apical bud so that the first three or more lateral buds below the apical bud grew. The lateral buds were also partially inhibited on some plants. However, bud inhibition on some plants diminished with distance from the shoot tip so that the remote

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Hahn's Ivy controlled June 1957 to March 1958. Arrows indicate treated portions.



Control Treatments for Shrubs and Ground Covers

Plant	% MH, effective concentrations***		% MH, damaging concentrations***
	as MH-30*	as MH-40**	
Eureka Lemon <i>Citrus limon</i>	0.09	0.05–0.10	0.12 MH-40
Capt. Rawes Camellia <i>Camellia reticulata</i>		0.35–0.375	0.40 MH-40
Eugenia <i>Eugenia myriophylla</i>	0.20		
Indian laurel <i>Ficus nitida</i>	0.30		0.30 MH-30 near damaging
Fuchsia <i>Fuchsia</i>	0.10		0.20 MH-30
Algerian Ivy <i>Hedera canariensis</i>	0.25–0.31	0.30–0.35	
Hahn's Ivy <i>Hedera helix</i>	0.25	0.25–0.35	
Chinese Juniper <i>Juniperus chinensis mas</i>	0.20		
Common honeysuckle <i>Lonicera japonica Halliana</i>	0.20		
Orange Jessamine <i>Murraea exotica</i>	0.10–0.20		
Italian true myrtle <i>Myrtus communis Italica</i>	0.20		
True myrtle <i>Myrtus communis microphylla</i>	0.20		
Firethorn <i>Pyracantha</i>	0.30		
Star Jasmine, old clone <i>Trachelospermum jasminoides</i>		0.20–0.30	0.35 MH-40 very damaging
Star Jasmine, seedlings <i>Trachelospermum jasminoides</i>		0.20–0.30	
Shiny Xylosma <i>Xylosma senticososa</i>	0.30		

\* MH-30: Diethanolamine salt solution, 30% maleic hydrazide. Contained wetting agent.

\*\* MH-40: Sodium salt powder, 40% maleic hydrazide. Contained wetting agent.

\*\*\* Percentages in table are actual maleic hydrazide applied in the form indicated.

meats were smaller than those with three or more employees in each of the counties—61% to 82%.

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lateral buds grew sooner and more rapidly than those close to the tip. In some cases the apical bud was inhibited for several weeks after the lateral buds started growth.

Stem terminals of certain plants may abscise with even moderate concentrations of MH but such abscission is not serious. The young terminal leaves of some plants have poor color and may be unsightly if they remain on the plant for the period of the inhibition. Young terminals of *Pyracantha* and other plants that do not abscise may not develop good green color until after the MH effect has been dissipated.

Nondamaging concentrations of MH did not appear to suppress the development of blossoms of those plants investigated but some distortion of leaves and blossoms has been reported on chrysanthemum.

Several resprays have not shown adverse effects on lemons, ivy and Star Jasmine.

The Chinese Juniper—*Juniperus chinensis* variety *mas* or variety *foemina*—normally produces a small amount of needle-like juvenile type foliage on some parts of the plant, but after being sprayed with 0.20% MH as MH-30 it produced the juvenile type foliage on all parts of the plant. That effect lasted for more than a year before the mature, scale-like foliage that is closely appressed to the stem was again produced. The MH treatment completely changed the appearance of the foliage and also suppressed length growth, which resulted in a more compact plant than those not treated.

The young leaves and shoots of camellia—*Camellia reticulata*, Capt. Rawes—did not show immediate and extremely diminished growth after treatment with 0.35%–0.375% MH as MH-40 but only slight or no inhibition, even though the concentration was almost damaging. Later it was apparent that the tip leaves on some shoots had not expanded to normal size or developed a normal green color. The buds on these shoots showed inhibition nine months later, but buds on older portions of the plant resumed growth so that a more branched and dense plant resulted.

Limited trials have indicated that 0.25% MH-30 is compatible with insecti-

cides: DDT 50% wettable powder at two pounds per 100 gallons; diazinon 25E at three pints per 100 gallons; and malathion 25% wettable powder at 2–3 pounds per 100 gallons. Very high concentrations of malathion seemed to nullify the effect of MH-30. MH-40 was not tried in combination with insecticides.

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## EARTHMOVING

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arms provide reach for starting to dig, and to carry the removed soil, or spoil. With the pull-type bulldozer the ditch is excavated, cleaned, or trimmed with the machine moving backwards so the tractor does not tread on the wet portion of the ditch. Also, by graded dumping from the blade, the pull-blade machine can spread the spoil as it backs away from the ditch. Because the bulldozer is used for so many various jobs and production depends on the type of work being done figures can not be stated easily.

### Graders

Graders or motor patrols are land smoothing tools not normally used for earthmoving but for earth spreading. Their flexibility permits them to be used for earthmoving by plowing ditch excavations into windrows and then spreading the spoil. Primarily distance type machines, graders have a poor turning radius—compared to other earthmovers—and are not economical as substitutes. Also, their production capacity is low for earthmoving, especially when used for short length production because their size limits adaptability.

### Scrapers

Scrapers are semiself-loading and unloading earthmovers. Designed for surface removal of soil—rather than for pit or ditch work—production is controlled by scraper bowl size and length of travel in the work cycle of loading, hauling, unloading, and returning to reload.

Total production of scrapers can be increased by lowering the time consumed in any part of the cycle. The haul and return distances have as much effect because they are fixed for a given job and the machine has a limited top speed.

Thus rapid loading and unloading and short hauls will maximize their production. Pusher tractors are normally used during loading to increase scraper production in general construction. Limited space in a drainage channel might prohibit the use of pushers for rapid loading.

The per foot cost for drainage ditch construction can be estimated from a comparison of the production rates of the various machines and their suitability to the working conditions.

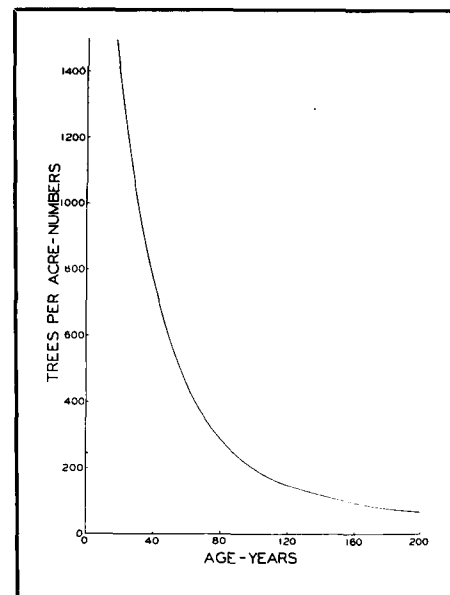
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## TIMBER

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fiber market—will result in a general practice of harvesting younger trees, which will aggravate the forest management problem. The required number of trees per acre at the time of harvest will be greater than it is now in the virgin forest and the number of years necessary for regeneration will become a significant part of the time a tree needs to grow to harvestable age.

Ponderosa pine trees required per acre at time of harvest to fully utilize a good site in the Sierra.



Planned research on the role of fertilizers in the production of timber trees should determine how the soil fertility level affects the potential yield, the initial survival of the seedling, and what relative advantage the seedling may—or may not—gain from fertilizer applications over the associated brush species found on good and poor sites.

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