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The control of weeds in lawns

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THE CONTROL OF WEEDS IN LAWNS

By G. A. PEARCE, Adviser, Biological Services Division

MOST lawns have weeds growing in them at some time during the year and in some lawns weed control becomes a major problem.

To the many people who like to keep a weed-free turf it is therefore encouraging to know that nearly all weeds can be controlled with herbicides.

While herbicides can usually give good weed control, it should be remembered that an unthrifty lawn usually becomes a weedy lawn. The importance to weed control of practices which produce a vigorous turf cannot be overemphasised.

During the winter, conditions are less favourable for lawns and the rate of growth slows considerably. Because of the reduced competition, weeds are able to establish themselves more easily and it is noticeable that nearly all lawn weeds are winter growing.

The vigorous competition of weeds such as winter grass can stop the growth of the lawn grass completely. After the weeds have died, bare patches appear and provide ideal conditions for establishment of summer growing weeds.

The idea of using a chemical to kill weeds in lawns is not new. For many years chemicals such as sulphate of ammonia, copper sulphate, arsenic pentoxide and sulphide of iron have been used, often to the disadvantage of the lawn. The herbicides now available are much more effective and are rarely recommended if the turf is likely to suffer.

Origin of weeds

In newly established lawns the main source of infestation is from seed present in the virgin topsoil. Plants whose seed is carried by the wind are particularly prevalent. Common examples include flatweed, thistles and annual grasses.

A good practice to overcome this problem when first establishing a lawn is to prepare the seed bed, water it well so as to encourage the germination of weed seeds, and then destroy the seedlings as soon as they are through the ground. This can be done by spraying with kerosene, although the use of a rake has the additional advantage of inducing a further germination. If this procedure is repeated several times before the lawn is planted, the soil should be relatively free of weed seeds. Lawns planted in the autumn are invariably faced with this problem.

With established lawns, weed seeds are continually being brought onto the turf in a variety of ways, including topdressing soil or animal manures, machinery (particularly mowers), animals and people. Moreover, wind-carried seeds are continually blowing from neighbouring infestations.

Effect of herbicides on lawn grasses

There are a number of grasses used for lawns and because of their different characteristics the problem of weeds is not always the same. Similarly their reaction to herbicides differs widely.

With all lawn grasses damage can be caused if higher rates of application are used than those recommended. For this reason it is better to give a second application of herbicide 21 days after the initial spraying, if necessary, than to attempt to obtain complete control with a single treatment.

Buffalo

Buffalo is the most common grass used for household lawns. The wide coarse leaves form a dense turf in which weeds do not easily establish themselves. It is probably the only lawn grass which, when kept in good condition, will check the growth of vigorous weeds like crabgrass.

All the herbicides mentioned can be used on buffalo, but in the case of DSMA some slight scorching may be experienced. However, this is usually not noticeable 10-14 days after spraying.

Couch (Bermuda)

Most playing fields and a large number of household lawns are grassed with couch. This withstands hard wear, and, because of its
vigorous summer growth, under proper management, provides keen competition for weeds. However, its lack of growth during the winter allows weeds to readily establish themselves. Its ability to persist under adverse conditions often means it is neglected, and this allows weeds to invade the turf.

Herbicides can be used with greater safety on couch than any other lawn grass. When growing under highly artificial conditions, however, such as in a bowling green, great care must be exercised to avoid causing damage. Under this situation the rooting system is often very shallow and therefore vulnerable, while the rapid growth of the foliage renders the leaf liable to contact damage.

**Couch (Queensland Blue)**

This more recently available turf grass spreads from stolons on the surface of the soil rather than shooting from the root system. The root system is shallower and, generally speaking, is not as resistant to herbicides. This only means that the usual care should be taken when spraying weeds present.

**Bent, Fescue and Kentucky Blue**

These grasses are often planted in association with couch because they make active growth during the winter. Their root system is very shallow and they are readily damaged by herbicides. Unless a weed infestation is very serious chemicals should not be used on them. Where it is felt necessary to treat the weeds, several applications of a weak mixture of the herbicide should be used rather than one at the normal rate of application.

**Kikuyu**

In heavy soils, or where water is not available during the summer, kikuyu is often planted. Under these conditions its spread can be restricted, and weeds are not often a problem. Selective herbicides can readily be used where required.

**Eradication of lawns**

Occasionally it is desired to kill a lawn and replant with a different grass. A common method of doing this is simply to cease watering. Eventually when this is not completely successful, consideration is given to using a herbicide.

A better approach is to use the herbicide immediately. It should be remembered that an actively growing, well watered lawn is more susceptible to herbicides than an uncared-for turf. For this reason watering should be continued even after the herbicide has been applied. This also induces any dormant runners to shoot after most of the grass has been killed. Any new growth should be treated as it appears. Once the grass appears completely dead the remains of the turf should be removed. This can be done by rotary hoeing which will mix the organic matter into the soil, and also induce growth of any dormant runners and seed.

A suitable herbicide for this purpose is 2,2-DPA applied at the rate of 6 ounces of 85 per cent. material in one gallon of water per 30 square yards. The addition of a wetting agent helps the chemical stick to the leaf.

**RESISTANT WEEDS**

There are still some weeds found in lawns which cannot be controlled selectively with herbicides.

1. **Guildford grass** reproduces from seed and also from corms formed at the base of the growing plant. Picking the flowers, and thus preventing the formation of seed, will not control this weed.

   Mowing regularly at weekly intervals and preventing the formation of both seeds and corms, will control guildford grass. However, the leaf must be cut at ground level each time rather than rolled over. A rotary type mower is ideal for this purpose.

   Guildford grass can also be controlled by spraying with an oil such as kerosene. This treatment discolours the lawn completely, and to be effective should be applied six weeks after the general emergence of the weed in the autumn. A second application is often required five or six weeks after the initial spraying to control any later germination. Following the treatment the turf usually remains dormant during the winter but makes a complete recovery during the spring. This oil treatment for guildford grass is very severe and is only recommended for extreme cases.

2. **Native wood sorrel** (often called sour-sob), a species of oxalis, is a winter growing perennial which roots from the joints.

   Repeated spraying is required to kill this species under any situation, and when growing
An even coverage of spray material is essential. The dark strips are patches of winter grass missed at the time of spraying.

in a lawn, a herbicide cannot be recommended for its control which would not seriously affect the lawn grass. Repeated short mowing will keep the weed from spreading rapidly but will not lead to eradication.

3. **Nut grass** cannot be controlled selectively with herbicides. The true nut grass has nut-like structures along the root system and these can remain dormant for a number of years. Unless the root joining the “nuts” is broken, each one will not germinate until the one closer to the parent plant has sprouted.

Hand pulling can be quite effective for small infestations provided this is done regularly and persisted with until the supply of dormant “nuts” is exhausted.

Some degree of control can be obtained with regular applications of 2,4-D, but the repeated spraying required usually proves detrimental to the lawn.

The other species of Cyprus scaly sedge, which does not have the “nuts”, is more readily handled. This should be cut out with a sharp implement just below ground level, and provided the crown is removed the plant will not grow again. This method is too tedious for large areas, and only the regular application of 2,4-D can be suggested for its control.

4. **Kyllinga weed** is a perennial sedge which has become common in lawns in the metropolitan area.

Because of its strong root system and active growth during the whole year, it spreads readily through lawns and is difficult to control.

Where it occurs in small patches, complete removal and returfing is advisable.

There is no chemical treatment which can be applied to the lawn to kill the weed without affecting the turf grass.

**CHEMICALS**

The use of chemicals for the control of weeds in lawns is not new. Sulphate of ammonia, copper sulphate, arsenic compounds and many more dubious substances have been used for many years with varying degrees of success, often at the expense of the lawn.

The modern herbicide is more effective against weeds, and is seldom recommended if damage to the turf is likely. Despite this, care is needed to ensure that the spray is correctly mixed and that it is used at the proper rate of application.

**Damage to gardens**

All the chemicals recommended will cause damage to garden plants, particularly annuals, if sprayed directly onto the foliage. For this reason care must always be taken to prevent the spray drifting onto garden areas.

Any spray equipment used should be thoroughly washed, immediately after use, with a warm soapy solution.
Typical damage on a grapevine caused by 2,4-D or 2,4,5-T. Note the narrowing, feathering and curling of the leaves. Great care should be taken when using these sprays near garden plants.

Hormone damage
When using the hormone-like herbicides 2,4-D or 2,4,5-T, extra care should be taken to avoid spray drift damage. It is desirable to keep a special spray for applying this type of herbicide. When this is not practical it is essential to replace the rubber or plastic parts of a spray before using the equipment for other garden spraying.

1. Bromoxynil—
   Jo Jo (or Onehunga)
This chemical is a quick acting contact herbicide which is particularly effective for controlling Jo Jo. Although this weed is readily killed by 2,4-D, most people do not become aware of its presence until the spiny seed case has begun to form in the spring. By then it is important to kill the weed quickly before seed is formed, so that bromoxynil is then the best chemical to use.

One and a half fluid ounces of 20 per cent. bromoxynil in 3 gallons of water is sufficient to treat 100 square yards. The optimum time to spray is during the winter but a good kill can still be obtained right up to the end of the growing season.

Bromoxynil is not a hormone type spray and, providing there is not too much wind, is quite safe to use amongst garden plants. It is not harmful to any lawn grass at the recommended rate of application.

2. Nabam—
   Moss
   Algae
The presence of moss and algae in a lawn often indicates a soil condition which should be rectified at the same time as the chemical control treatment is applied. These weeds are most likely to become a problem in areas which are shaded and poorly drained. To overcome this condition the soil surface should be vigorously raked to break the organic seal and allow aeration. The moss or algae present should then be sprayed with a solution made by mixing 1 fluid ounce of Nabam in two gallons of water and applying this quantity to 30 square yards. The treated area should be well watered after spraying so that the chemical will be moved into the root zone. Follow-up treatments should be applied at monthly intervals as required to cope with any further emergence.
3. Dicamba + MCPA—
   Clovers
   Trefoils
   Flatweed

The different types of clovers are readily killed with dicamba, while the addition of MCPA to the mixture will give control of a number of broad-leaved weeds.

One fluid ounce of the mixture dissolved in one gallon of water is sufficient to treat 30 square yards. The same precautions mentioned in relation to hormone-like herbicides must be exercised when using this chemical. Perennial clovers may require a second treatment.

4. DNOC—
   Annual clovers
   Trefoils
   Capeweed
   Carrot weed
   Funnel weed

This yellow dye material (sodium dinitro orthocresylate) is the safest herbicide which can be used on lawns. Although messy to handle, DNOC has the advantage of faintly colouring the lawn so that the area treated is quite obvious. The weeds listed above are readily controlled but other annual and perennial weeds are less affected. A number of applications can be made, if necessary, at weekly intervals without damaging the lawn.

*Mixture*: Six fluid ounces of 30 per cent. DNOC dissolved in 3 gallons of water is sufficient to treat 100 square yards. The addition of a teaspoonful of sulphate of ammonia per gallon of solution increases the effectiveness of the treatment.

5. 2,2-DPA—
   Kikuyu
   Couch
   Parramatta

2,2-DPA + Amitrole—
   Paspalum

Amitrole TL—
   Water couch

These herbicides are harmful to grasses and cannot be used selectively on a lawn. Where only small infestations are present the affected area can be carefully treated with a solution containing the appropriate herbicide. An old paint brush is ideal for this purpose.

The herbicide, 2,2-DPA, is available under a variety of trade names, while 2,2-DPA + amitrole is sold only under the name of Weedazol Total. Amitrole TL has the trade name of Weedazol TL. The first two of these herbicides are powders and 6 ounces should be dissolved in 1 gallon of water. For water couch, Weedazol TL is used at the rate of 8 fluid ounces per gallon of water.

The alternative to these treatments is to remove the affected area of lawn completely and returf.

6. DSMA—
   Crabgrass
   Caustic weed

DSMA has proved effective for the control of caustic weed and crabgrass in lawns. It only acts on plants present at the time of spraying, and seedlings which appear later will not be affected by the treatment. For this reason more than one spraying is usually required during the summer period.

A suitable mixture is made by dissolving 1 ounce of 80 per cent. DSMA in 1 gallon of water, and this is sufficient to treat 30 square yards. (This is equivalent to an application of 10 pounds of 80 per cent DSMA per acre.) The addition of a small quantity of wetting agent helps the chemical stick to the leaf.

Young plants are more readily killed than well established plants, so that control measures should be undertaken as soon as a general emergence has taken place. The area treated should be inspected three weeks after the initial application and, if the plants have not been killed, or have commenced to make new growth, a second treatment should be applied.

For well established plants, a second application is often needed.

A number of advantages are obtained if the chemical is applied through a high volume boom spray unit. However, careful hand spraying can give the same results.

Because the chemical acts against the leaf of the plant, it is not advisable to spray immediately after mowing. It is also best to water the lawn the day before the herbicide is applied, so that the treatment will have the maximum time possible to take effect before the next watering.
Spraying during the heat of the day increases the effect on the weed but the lawn is also likely to be scorched; however, this will be back to normal in 10 to 14 days.

DSMA can be used on couch and buffalo lawns, but is very severe on bent, fescue, Queensland blue and Kentucky blue grasses.

7. Kerb—Winter grass

Kerb is the most effective herbicide yet tested for the control of winter grass. The chemical should be applied in April or early May and is effective against emerged plants or germinating seeds. The rate of application should be one-half an ounce in 3 gallons of water per 100 square yards. If the plants have begun to flower (6 weeks after germination), the rate should be doubled.

This treatment will prevent the establishment of winter grass for the rest of the year. It is safe to apply to couch, buffalo and Queensland blue couch, but should not be applied to Kentucky blue grass.

For large areas the rate of application should be one pound per acre.

8. Simazine—Winter grass

Simazine has given very good pre-emergence control of a number of annual winter-growing weeds, particularly winter grass. A thin layer of herbicide is applied to the soil surface and this kills the weed seeds as they germinate. A suitable mixture is made by dissolving 1 ounce of 50 per cent. Simazine in 3 gallons of water; this is sufficient to treat 100 square yards. Great care is required to obtain an even application and it is well worth while to mark off convenient areas with string. The treatment should be applied immediately the first plants of winter grass are seen; this is usually during April or early May. Simazine should not be applied to bowling greens as damage is likely due to the shallow root system present.

The herbicide is gradually washed out of the surface layer and a second treatment is often desirable 10 to 12 weeks after the initial application. This should be made wherever a general germination of the weed is seen.

Simazine should not be applied to bent, fescue and Kentucky blue grasses.

9. 2,4-D—Capeweed

Flatweed

Funnel weed

Jo Jo (Onehunga)

Starwort

Fleabane

There are two common types of 2,4-D used for weed spraying. These are the amine and ester derivatives, and although the latter type is the more effective, some caution must be exercised when using it, because of its volatility.

Where weeds growing near garden areas are to be sprayed, the amine should be used, while for areas such as playing fields, the ester type is preferred.

Rate: Three gallons of water containing 1¼ fluid ounce of 50 per cent. 2,4-D is sufficient to treat 100 square yards. If the plants are not dead within two or three weeks, a second application can be given. Care should be taken to prevent the spray drifting into garden areas. Spray equipment should be thoroughly washed immediately after use.


This herbicide only kills seeds as they germinate and is effective against winter grass and crabgrass. The treatment should be applied in mid March for winter grass control and mid November for crabgrass. Unfortunately, the cost of the treatment is high compared with alternative chemicals. However, it is safe on the usual turf grasses and has been used extensively on bowling greens and golf greens without causing damage.

IN BRIEF

- Know the name of the weed. This can be obtained from the Bulletin, “Identification of Weeds in Lawns”, or by forwarding a specimen to the Department of Agriculture.
- Check Table 1 for the recommended chemical.
- Read the section of the text describing the use of the recommended herbicide. Precautions and rates of application are given.
- Check Table 2 for the trade name of the herbicide required and where it can be obtained.
# Table 1: Common weeds found in lawns and the recommended herbicide for their control

The text should be consulted concerning precautions in applying the treatment. In column 3 the herbicides are listed in order of preference.

<table>
<thead>
<tr>
<th>WEED</th>
<th>BOTANICAL NAME</th>
<th>HERBICIDE</th>
<th>TIME TO SPRAY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Algae</td>
<td>(Trifolium spp.)</td>
<td>Nabam</td>
<td>Optional</td>
</tr>
<tr>
<td>Annual birdsfoot trefoil</td>
<td>(Medicago spp.)</td>
<td>Dicamba + MCPA, DNOC</td>
<td>Autumn or winter</td>
</tr>
<tr>
<td>Annual clovers</td>
<td></td>
<td>Dicamba + MCPA, DNOC</td>
<td>Autumn or winter</td>
</tr>
<tr>
<td>Burr trefoil</td>
<td>(Medicago denticulata)</td>
<td>Dicamba + MCPA, DNOC</td>
<td>Autumn or winter</td>
</tr>
<tr>
<td>Capeweed</td>
<td>Cryptostemma calendula</td>
<td>Dicamba + MCPA, DNOC, 2, 4-D</td>
<td>Winter</td>
</tr>
<tr>
<td>Carrot weed</td>
<td>Cotula australis</td>
<td>Dicamba + MCPA, DNOC, 2, 4-D</td>
<td>Autumn or winter</td>
</tr>
<tr>
<td>Caustic weed</td>
<td>Euphorbia drummondii</td>
<td>DSMA, 2, 4-D</td>
<td>Autumn or winter</td>
</tr>
<tr>
<td>Crabgrass</td>
<td>Digitaria sanguinalis</td>
<td>DSMA, 2, 4-D</td>
<td>Winter</td>
</tr>
<tr>
<td>Flatweed</td>
<td>Hypochoeris spp.</td>
<td>2, 4-D</td>
<td>Early summer</td>
</tr>
<tr>
<td>Fleabane</td>
<td>Erigeron spp.</td>
<td>2, 4-D</td>
<td>Optional</td>
</tr>
<tr>
<td>Funnel weed</td>
<td>Cotula tibinata</td>
<td>2, 4-D, DNOC</td>
<td>Summer</td>
</tr>
<tr>
<td>Guildford grass</td>
<td>Romulea rosea</td>
<td>Resistant</td>
<td>Winter</td>
</tr>
<tr>
<td>Jo Jo (Onehunga)</td>
<td>Soliva pterosperma</td>
<td>2, 4-D or bromoxynil</td>
<td>Winter</td>
</tr>
<tr>
<td>Kikuyu grass</td>
<td>Pennisetum clandestinum</td>
<td>2, 2-DPA*</td>
<td>Optional</td>
</tr>
<tr>
<td>Kyllinga weed</td>
<td>Kyllinga intermedia</td>
<td>2, 2-DPA* + Amitrol</td>
<td>Optional</td>
</tr>
<tr>
<td>Moss</td>
<td>Otais corniculata</td>
<td>Resistant</td>
<td>Optional</td>
</tr>
<tr>
<td>Native wood sorrel</td>
<td>Cyperas rotundas</td>
<td>Resistant</td>
<td>Optional</td>
</tr>
<tr>
<td>Nut grass</td>
<td>Sporobolus capensis</td>
<td>2, 4-D</td>
<td>Optional</td>
</tr>
<tr>
<td>Parramatta grass</td>
<td>Paspalum dilatatum</td>
<td>2, 2-DPA* + Amitrol</td>
<td>Optional</td>
</tr>
<tr>
<td>Paspalum grass</td>
<td>Cyperus tenuiflorus</td>
<td>Resistant</td>
<td>Optional</td>
</tr>
<tr>
<td>Scaly sedge</td>
<td>Aster subulatus</td>
<td>2, 4-D</td>
<td>Summer</td>
</tr>
<tr>
<td>Starwort</td>
<td>Paspalum distichum</td>
<td>Amitrol TL</td>
<td>Optional</td>
</tr>
<tr>
<td>Water couch</td>
<td>Trifolium repens</td>
<td>Dicamba + MCPA</td>
<td>Optional</td>
</tr>
<tr>
<td>White clover</td>
<td>Poa annua</td>
<td>Simazine, Kerb, Presan</td>
<td>Autumn</td>
</tr>
<tr>
<td>Winter grass</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Will damage turf
Table 2.—The herbicides listed are available in small packs from most florists and hardware stores. The same chemical is often available under several trade names (column 2). Column 4 shows the required amount of chemical and the cost to treat 100 square yards.

<table>
<thead>
<tr>
<th>HERBICIDE</th>
<th>TRADE NAME</th>
<th>DISTRIBUTOR</th>
<th>QUANTITY TO 3 GALS.—COST</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amitrole TL</td>
<td>Weedazol TL Plus</td>
<td>Geigy</td>
<td>24 fl. ozs., $1.92</td>
</tr>
<tr>
<td>Bensulide</td>
<td>Presan</td>
<td>Blue Cross</td>
<td>9 fl. ozs., $2.31</td>
</tr>
<tr>
<td>Bromoxynil</td>
<td>Weedoben</td>
<td>Geigy</td>
<td>1½ fl. ozs., 37 cents</td>
</tr>
<tr>
<td>Dicamba + MCPA</td>
<td>Banweed</td>
<td>Blue Cross</td>
<td>3 fl. ozs., 45 cents</td>
</tr>
<tr>
<td>DNOC</td>
<td>Lanes Dinoc</td>
<td>Amalgamated Chem.</td>
<td>6 fl. ozs., 38 cents</td>
</tr>
<tr>
<td>2, 2-DPA</td>
<td>Dowpon</td>
<td>David Gray</td>
<td>18 ozs., $1.41</td>
</tr>
<tr>
<td>2, 2-DPA + Amitrole</td>
<td>Terrapon</td>
<td>Blue Cross</td>
<td>18 ozs., $1.47</td>
</tr>
<tr>
<td>2, 4-D Amine</td>
<td>Weedazol Total</td>
<td>Terra Trading</td>
<td>18 ozs., $1.51</td>
</tr>
<tr>
<td>2, 4-D Ester</td>
<td>2, 4-D Amine</td>
<td></td>
<td>18 ozs., $2.20</td>
</tr>
<tr>
<td>DSMA</td>
<td>Crabgrass Killer 60</td>
<td>Blue Cross</td>
<td>1½ fl. ozs., 20 cents</td>
</tr>
<tr>
<td></td>
<td>Crabgrass Killer 100</td>
<td>Amalgamated Chem.</td>
<td>6 fl. ozs., 20 cents</td>
</tr>
<tr>
<td></td>
<td>Pasma</td>
<td>Terramine</td>
<td>1½ fl. ozs., 17 cents</td>
</tr>
<tr>
<td></td>
<td>Passtox</td>
<td></td>
<td>1½ fl. ozs., 20 cents</td>
</tr>
<tr>
<td></td>
<td>Terra DSMA</td>
<td>Clover Killer</td>
<td>3 fl. ozs., 24 cents</td>
</tr>
<tr>
<td>Kerb</td>
<td>Kerb</td>
<td>Blue Cross</td>
<td>3½ fl. ozs., 10 cents</td>
</tr>
<tr>
<td>Nabam</td>
<td>Poakil</td>
<td>Amalgamated Chem.</td>
<td>1½ fl. ozs., 19 cents</td>
</tr>
<tr>
<td>Simazine</td>
<td>A103</td>
<td>Terra Trading</td>
<td>4½ ozs., 71 cents</td>
</tr>
<tr>
<td></td>
<td>Gesatop</td>
<td>I.C.I.</td>
<td>3 ozs., 52 cents</td>
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<tr>
<td></td>
<td></td>
<td>Amalgamated Chem.</td>
<td>4½ ozs., 72 cents</td>
</tr>
<tr>
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<td></td>
<td>Terra Trading</td>
<td>3 ozs., 52 cents</td>
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<td></td>
<td>Amalgamated Chem.</td>
<td>3 ozs., 52 cents</td>
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<td></td>
<td>I.C.I.</td>
<td>½ oz., 31 cents</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Amalgamated Chem.</td>
<td>½ oz., $3.11</td>
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<tr>
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<td></td>
<td></td>
<td>3 fl. ozs., 9 cents</td>
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<td></td>
<td></td>
<td>1 oz., 40 cents</td>
</tr>
</tbody>
</table>