Copper, zinc and molybdenum fertilizers for new land crops and pastures: 1969

J W. Gartrell
R. N. Glencross

Follow this and additional works at: https://researchlibrary.agric.wa.gov.au/journal_agriculture4

Part of the Geology Commons, Materials Chemistry Commons, and the Soil Science Commons

Recommended Citation
Available at: https://researchlibrary.agric.wa.gov.au/journal_agriculture4/vol9/iss11/4

This article is brought to you for free and open access by Research Library. It has been accepted for inclusion in Journal of the Department of Agriculture, Western Australia, Series 4 by an authorized administrator of Research Library. For more information, please contact jennifer.heathcote@agric.wa.gov.au, sandra.papenfus@agric.wa.gov.au, paul.orange@dpird.wa.gov.au.
Four years of intensive research into soil deficiencies in developing areas have resulted in a more comprehensive understanding of the need for trace elements in Western Australia.

So that farmers can readily determine fertiliser requirements of their new land, the south-west of Western Australia has been divided into the 17 new-land fertiliser zones shown on the map on page 518. Within each zone, new land has the general requirements indicated by the relevant recommendations in this article.

For example, a farmer with a property in zone 17, that is on the coastal strip between Geraldton and Busselton, needs to apply 180 lb. of super copper zinc A, plus 5 lb. bluestone per acre in the northern portion of the zone. In zone 4 however, he would need 220 lb. of super, copper, zinc, molybdenum No. 2.

In some cases, for particular circumstances on individual properties, special recommendations may be needed which differ from the general recommendations for each zone. Research is continuing to determine such special requirements, and to find the need for repeat applications in the different zones. Until such information is available, farmers are advised to contact their local Department of Agriculture advisers, whose knowledge of local soils and conditions enables them to fit recommendations to individual farm situations.

The fertilisers mentioned in the recommendations are commercially available mixtures with the analyses shown in the table below:

<table>
<thead>
<tr>
<th>Fertiliser Mixture</th>
<th>Super (based on 22% P₂O₅)</th>
<th>Copper Sulphate</th>
<th>Zinc Oxide</th>
<th>Molybdenum Trioxide</th>
</tr>
</thead>
<tbody>
<tr>
<td>Super, copper, zinc, molybdenum No. 1</td>
<td>170</td>
<td>5</td>
<td>2½</td>
<td>2</td>
</tr>
<tr>
<td>Super, copper, zinc, molybdenum No. 2</td>
<td>174</td>
<td>2½</td>
<td>2½</td>
<td>2</td>
</tr>
<tr>
<td>Super, copper, zinc A</td>
<td>170</td>
<td>5</td>
<td>1½</td>
<td></td>
</tr>
<tr>
<td>Super, copper, zinc B</td>
<td>174</td>
<td>2½</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Mr. Gartrell was responsible for research in the wheatbelt zones shown on the accompanying map and Mr. Glencross for research in the higher rainfall areas.
ZONES FOR RECOMMENDED FERTILISERS
ON NEW LAND – 1969

[Map showing zones for recommended fertilisers on new land with various locations labeled.]

Scale

50 30 10 0

50 40 20
**Repeat applications**

Recommendations in these notes apply to initial applications only. **Repeated** applications of trace element mixtures are not recommended, although in Zones 1, 2, 10, 12 and 17 repeat applications of copper may be necessary on some soil types. Farmers should always consult their agricultural advisers before repeating trace element applications.

**Recommendations**

Soils marked with an asterisk need the recommended super rates, but can give maximum yields with less trace elements than supplied by the recommended rates.

Loam and clay soils, other than those mentioned in some zones, do not require copper, zinc or molybdenum fertiliser.

### COPPER, ZINC AND MOLYBDENUM FERTILISERS

**FOR NEW LAND CROPS AND PASTURES—1969 RECOMMENDATIONS**

To be used in conjunction with the map opposite

<table>
<thead>
<tr>
<th>Soil and vegetation</th>
<th>Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Zone 1—Gingin-Dandaragan</strong>&lt;br&gt;Red-brown and yellow sands, grey brown loams carrying redgum, flooded gum</td>
<td><strong>Crop</strong>—Mix A super copper zinc 180 lb. per acre plus 5 lb. per acre copper sulphate or a 1% neutralised copper sulphate spray.&lt;br&gt;<strong>Pasture</strong>—Mix A super copper zinc 270 lb. per acre.</td>
</tr>
<tr>
<td><strong>Zone 2—Western Grey Sands</strong>&lt;br&gt;Deep, dark grey sands carrying banksia, woollybush, scrub, blackbutt, and redgum, jarrah, banksia in the south&lt;br&gt;Black sands varying to peaty sands carrying paper bark and ti-trees, with kangaroo grass in south</td>
<td><strong>Crop and pasture</strong>—Mix No. 2 super copper zinc molybdenum 180 lb. per acre. Other fertiliser: cobalt sulphate 6 oz. per acre; potash 70 lb. per acre in north; super-potash 300 lb. per acre after winter in south.&lt;br&gt;<strong>Pasture</strong>—Mix A super copper zinc 360 lb. per acre. Other fertiliser: Ground limestone 1 ton per acre; cobalt sulphate 6 oz. per acre; 5 : 1 super-potash 180 lb. per acre after winter.</td>
</tr>
<tr>
<td><strong>Zone 3—West Midland-Allanooka</strong>&lt;br&gt;Grey sands and brown sandy gravels carrying blackboy, low scrub, scattered banksia, mallee and blackbutt</td>
<td><strong>Crop</strong>—Mix A super copper zinc 220 lb. per acre. Super molybdenum 180 lb. per acre in second year.&lt;br&gt;<strong>Pasture not preceded by a crop</strong>—Mix No. 2 super copper zinc molybdenum 180 lb. per acre in first year.&lt;br&gt;Mix B super copper zinc 180 lb. per acre in second year.</td>
</tr>
<tr>
<td><strong>Zone 4—Midlands-Mingenew-Eradu-Ajana</strong>&lt;br&gt;Yellow sands carrying blackbutt, banksia, pine, wattle scrub&lt;br&gt;<strong>N.E. Wheatbelt</strong>&lt;br&gt;Yellow and brown loamy sands and gravels carrying wodgil, tamma, mallee, broombush, ti-tree, flame grevillea</td>
<td>Mix No. 2 super copper zinc molybdenum 220 lb. per acre.</td>
</tr>
</tbody>
</table>
# Copper, Zinc and Molybdenum Fertilisers for New Land Crops and Pastures—1969 Recommendations

<table>
<thead>
<tr>
<th>Soil and Vegetation</th>
<th>Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Zone 5—Central Wheatbelt</strong></td>
<td>Mix No. 1 super copper zinc molybdenum 220 lb. per acre.</td>
</tr>
<tr>
<td>Yellow and brown loamy sands and gravels carrying wodgill, tamma, mallee</td>
<td>Mix A super copper zinc 220 lb. per acre in first year. Super molybdenum 180 lb. per acre in second year.</td>
</tr>
<tr>
<td>Grey sands and gravelly sands carrying blue mallee, tamma, wodgill, mallee</td>
<td>Mix B super copper zinc 220 lb. per acre.</td>
</tr>
<tr>
<td>Grey-brown sands over clay carrying mallee, broombush</td>
<td></td>
</tr>
<tr>
<td><strong>Zone 6—Gnowangerup-Pingrup-North Ravensthorpe</strong></td>
<td>Mix B super copper zinc 220 lb. per acre.</td>
</tr>
<tr>
<td>Grey-brown sands over clays and domed clays and shallow clays carrying mallee, broombush, moort</td>
<td>Mix No. 1 super copper zinc molybdenum 220 lb. per acre.</td>
</tr>
<tr>
<td>Brown and yellow loamy sands and gravels carrying mallee, wodgill, tamma</td>
<td>Mix A super copper zinc 220 lb. per acre.</td>
</tr>
<tr>
<td>Grey sands and sandy gravels carrying blue mallee, tamma, scrub</td>
<td></td>
</tr>
<tr>
<td><strong>Zone 7—Western Wheatbelt</strong></td>
<td>Mix A super copper zinc 220 lb. per acre.</td>
</tr>
<tr>
<td>Brown and grey sands and gravelly loams carrying wodgill, tamma, whitegum, sheoak</td>
<td></td>
</tr>
<tr>
<td><strong>Zone 8—Northern Whitegum</strong></td>
<td>Mix B super copper zinc 360 lb. per acre.*</td>
</tr>
<tr>
<td>Coarse gravelly grey and brown loamy sands carrying whitegum</td>
<td>Mix B super copper zinc 360 lb. per acre. (Other for crop—Manganese sulphate 14 lb. per acre or 4% spray, sulphate of ammonia as nitrogen source.*)</td>
</tr>
<tr>
<td>Brown sandy loamy gravels (fluffy buckshot gravels) carrying powder bark wandoo-redgum</td>
<td></td>
</tr>
<tr>
<td><strong>Zone 9—Southern Whitegum</strong></td>
<td>Mix No. 2 super copper zinc molybdenum 360 lb. per acre.*</td>
</tr>
<tr>
<td>Coarse gravelly grey loamy sands—sandy loams carrying whitegum, sheoak</td>
<td>Mix B super copper zinc 360 lb. per acre.</td>
</tr>
<tr>
<td>Grey and brown sand gravels carrying jarrah</td>
<td></td>
</tr>
<tr>
<td><strong>Zone 10—Jarrah-Redgum, Karri Forest</strong></td>
<td>Mix B super copper zinc 360 lb. per acre.</td>
</tr>
<tr>
<td>Grey and brown sandy and sandy loam gravelly soils carrying jarrah-redgum, karri</td>
<td>Mix B super copper zinc 360 lb. per acre.</td>
</tr>
<tr>
<td>Grey sands—loamy sands over gravel or clay carrying redgum, jarrah</td>
<td>Mix No. 2 super copper zinc molybdenum 180 lb. per acre. Plain super 180 lb. per acre.</td>
</tr>
<tr>
<td>Red-brown loams and loamy sands carrying jarrah, blackbutt</td>
<td></td>
</tr>
<tr>
<td><strong>Zone 11—Plantagenet-Albany</strong></td>
<td>Mix No. 2 super copper zinc molybdenum 360 lb. per acre.</td>
</tr>
<tr>
<td>All soils carrying redgum, jarrah</td>
<td></td>
</tr>
</tbody>
</table>

---

*Other for crop—Manganese sulphate 14 lb. per acre or 4% spray, sulphate of ammonia as nitrogen source.*
**COPPER, ZINC AND MOLYBDENUM FERTILISERS**
**FOR NEW LAND CROPS AND PASTURES—1969 RECOMMENDATIONS**

<table>
<thead>
<tr>
<th>Soil and vegetation</th>
<th>Recommendation</th>
</tr>
</thead>
</table>
| **Zone 12—Kalgan-Bremer River Plains**  
Brown and grey sands and gravels over clay carrying mallee, stunted jarrah | Mix A super copper zinc 360 lb. per acre first year.  
ON KALGAN R. super molybdenum 180 lb. per acre second year. |
| **Zone 13—South Jerramungup-Lower Fitzgerald**  
Grey sands over clay carrying mallee | Mix B super copper zinc 360 lb. per acre. |
| **Zone 14—Esperance Plain—South Stirlings**  
Grey sands over gravel or clay carrying blue mallee, chittick  
Grey brown sandy gravels carrying mallee | Mix B super copper zinc 270 lb. per acre.  
Mix B super copper zinc 360 lb. per acre. |
| **Zone 15—Scaddan-Hopetoun**  
Brown sandy loams and gravelly sandy loam crabholes and domed clay carrying mallee  
Brown sandy gravels carrying mallee | Mix B super copper zinc 270 lb. per acre.*  
Mix B super copper zinc 270 lb. per acre. |
| **Zone 16—Scaddan-Salmon Gums**  
Grey brown sands over domed clays carrying mallee | Mix B super copper zinc 210 lb. per acre.* |
| **Zone 17—West Coastal**  
Yellow and brown sands, grey calcareous sands North of Yanchep—Banksia, parrot bush, blackbutt, scrub, wattle  
South of Yanchep—Tuart, banksia, redgum, peppermint | Crop—Mix A super copper zinc 180 lb. per acre plus 5 lb. per acre copper sulphate or a 1% neutralised copper sulphate spray.  
Pasture not preceded by a crop—Mix A super copper zinc 270 lb. per acre.  
Pasture—Mix A super copper zinc 360 lb. per acre plus cobalt sulphate 6 oz. per acre. |

* These soils need the recommended rate of superphosphate but can give maximum yields with lower trace element applications than supplied by the recommended fertiliser rates.
What do you mean, Grandpa - the Southern Cross pays for itself?

A small boy wants an answer to a question like that. So his Grandpa would tell him how the Southern Cross water supply equipment makes the crops grow better so that Dad can earn more money. That's why a Southern Cross installation is an investment that pays for itself. In results, in efficiency. Southern Cross means bigger profits for you. The Southern Cross representative will call... advise you on the right choice of water supply equipment for your property. Southern Cross experience (almost a century of it!) backs every installation. And when you buy, Southern Cross credit facilities are at your service. Or open a monthly account. Benefit from specialised Southern Cross sales and service now. For complete, correct advice on all water supply problems, contact the Southern Cross representative in your area.

WEST AUSTRALIA:
MAYLANDS:
280-298 Whatley Crescent.
Ph. 71 6141.

FIELD REPRESENTATIVES:
BUNBURY:
Mr. A. Trainer, Box 296.
Ph. 2207.

GERALDTON:
Mr. G. Swepestone, Box 903.
Ph. 21 2897.

SOUTHERN CROSS MACHINERY PTY.LTD.
WATER WHEN & WHERE YOU WANT IT

Please mention the "Journal of Agriculture of W.A.," when writing to advertisers
Lay-by—Plan now for Xmas and avoid disappointment

### Fans
- 7" personal Model: $11.95
- 12" oscillating from: $19.95
- 16" 3-speed oscillating: $49.95
- 18" top quality Bar-B-Q: $9.95
- 2-burner L.P. Gas camping stove: $14.00

### Mowers
- 14" heavy duty reel type: $159.00
- 20" reel type, well-known brand: $297.00
- 'Spacemaker' rotary, complete with catcher, 2 or 4 stroke: $150.30
- Another model by same manufacturer, complete: $85.00
- Lawn Edger, large 6-wheel model: $89.00
- Lawn Edger, robust construction: $79.00

### TV & Stereo
- 11" Portable, 3 months' Free Service: $162.00
- 25" Lawboy with 12 months' Free Service: $329.00
- Combination 25" TV with Stereo and Radio: $670.00
- HiFi Stereogram with moveable speaker: $204.00
- Beautiful solid state Stereogram: $199.00

### Cameras
- Film, all types—Black & White 126: $.50
- Take 16 B/White OR Colour Prints OR SLIDES for only: 5.95
- 35mm automatic with flash: $89.95
- Automatic Super 8 with zoom lens: $99.95
- Super 8 dual projector, zoom lens: $130.00

### Bicycles
- "Whizzas"—Girls' $41.95—Boys': $39.90

### Washing Machines
- Automatic. Can be operated manually. Heater optional: $399.00
- Wringer model with pump, good brand: $225.00
- Twin Tub, large capacity. Heater optional extra: $248.00

### Refrigeration
- Dual operation, gas/electric, 8 cu. ft.: $119.00
- Frost-free 14 cubic ft. from well-known manufacturer: $709.00
- 13 cubic ft. standard. Top brand: $400.00
- 9 cubic ft. standard. Another leading make: $355.00
- Deep Freeze Unit, 10 cubic ft. Upright model—a leader: $382.00

### Airconditioners
- 1 1/2 h.p. refrigerated, 11500 BTU output: $487.00
- New evaporative model with trolley: $355.00

### Stoves
- Full size, plug-in, does everything: $83.00
- Boil—Fry—Grill—Toast, a very useful unit: $27.95
- Wall Oven with separate Hot Plate Section, complete: $95.00
- 21" Auto-rotisserie. Single or 3-phase: $330.00

### Hot Water Systems
- Oil-fired, 40 gallon, square unit. Free tank: $182.00
- Solid fuel complete with Flue Set, 30 gallon: $129.00
- Instantaneous electric multi-point unit: $59.00
- Stainless Steel Sinks: $27.40
- Rotary Clothes Hoists: $32.75
- Ironing Tables, adjustable: $11.25

### TV Hire

| LARGE | $5.95 |
| SCREEN and FROM | $6.95 per month |
| AT PERTH'S LOWEST RATES | |

Terms available—trade-ins reduce prices further

**PARRY'S DEPARTMENT STORE**
443 Albany Highway VICTORIA PARK
6 6244
FREE CUSTOMER PARKING
25 Sutherland St. WEST PERTH 28 5344

Please mention the "Journal of Agriculture of W.A." when writing to advertisers

Journal of Agriculture, Vol 9 No 11 1968
Basfapon is the grass killer with long-lasting effectiveness.

- Basfapon is absorbed by leaves and trans-located to the roots, or taken up directly from soil by the roots.
- Does not persist for long periods in the soil.
- Maximum effect obtained in six weeks.
- Is not hazardous to stock.
- Mixes readily with water.
- Effective against a wide range of annual and perennial grasses.
What's your loss in plant wear and tear?

That much!

With Mobil Lubricants you effectively reduce this loss.

How?

**Delvac 20W-40 engine oil:**
With Delvac, you get fast starts from cold, improved wear resistance for cylinders and heavily loaded parts.
And you buy only one oil instead of several.
In 4, 13 and 45 gallon drums.

**Mobilube GX80-90 transmission oil:**
Mobilube gives easier gear changing in all weathers. Gives top protection for gear boxes, final drives and worm drives. In quart, gallon, 4-gallon containers. 13 and 45 gal. drums.

**Mobilgrease MP chassis grease:**
This multi-purpose grease protects chassis, wheel bearings, universal joints and water pumps.
Mobilgrease has **high water ash-out resistance**, **high load-carrying capacity** and **excellent shock-load displacement resistance**.
In 1 lb. cartridges, 5 lb. tins, 45 lb. pails, 110 lb. kegs and 400 lb. drums.

**Rust and Corrosion:**
For a protective coat against rusting or corrosion, use **PRESERVAC OPAQUE**; suitable on all external surfaces where protection is required.
Whatever your lubrication requirements, Mobil can simplify them and effectively reduce plant wear and tear.
Contact your local Mobil agent.

Mobil