Metric conversion for agriculture

Department of Agriculture, Western Australia

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Farmers are already becoming involved with metric units and by 1974 conversion of the farming industry will be well advanced. Wool sales converted to metric measurements in August, 1971, and sales by the various grain marketing boards will be largely in metric terms in the 1972 harvest. Weather information to the public has been given in metric terms since September 1.

Rural industry—in common with other sectors—will have to think increasingly in metric terms. An experienced farmer can guess fairly accurately a steer or lamb's live weight, or a ripening crop's likely yield in bushels per acre. This ability will need to be translated into metric terms.

Farmers will use the metric system in buying goods, selling their produce and running their farms. Generally they will be concerned with common units only—length, area, volume, mass (weight) and weather details.

There is no direct relationship between imperial and metric units and it will be important to forget the imperial system completely as soon as a "feel" for metric quantities is attained. The following examples show the approximate relationships between the two systems. The commonly used dividers and multipliers used to make larger and smaller units from base units are milli (thousandth; 1 millilitre = 0.001 litre) and centi (hundredth; 1 centimetre = 0.01 metre).

**Length**

<table>
<thead>
<tr>
<th>Imperial Unit</th>
<th>Metric Equivalent</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 millimetres (mm)</td>
<td>1 centimetre (cm)</td>
</tr>
<tr>
<td>100 centimetres</td>
<td>1 metre (m)</td>
</tr>
<tr>
<td>1,000 millimetres</td>
<td>1 kilometre (km)</td>
</tr>
<tr>
<td>1,000 metres</td>
<td>1 kilometre (km)</td>
</tr>
</tbody>
</table>

A metre is 39.37 inches—a little longer than a yard.
A kilometre is about \(\frac{3}{4}\) of a mile (0.62 mile).
A chain (22 yards) is very close to 20 metres in length.
A furlong (220 yards) is very close to 200 metres in length.
An inch contains 25.4 mm.
A "hand" (4 inches) is about 100 mm or 10 cm. Therefore, a 14-hand horse is 140 cm tall at the withers.
A 4 in. x 2 in. scantling is 100 mm x 50 mm.
A 300 mm rule is roughly the size of a conventional foot rule.

**Area**

<table>
<thead>
<tr>
<th>Imperial Unit</th>
<th>Metric Equivalent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,000 square metres</td>
<td>1 hectare (ha)</td>
</tr>
</tbody>
</table>

In Europe the term "are" has had long standing use as the description of an area of 100 square metres. Australia will adopt the hectare (100 "ares"; or 10,000 m\(^2\)) in place of the acre. Areas less than a hectare will be expressed in square metres.

A hectare contains almost 2\(\frac{1}{4}\) acres (2.47 acres).

A 100-acre paddock is a 40-hectare paddock.
A 25-acre paddock is a 10-hectare paddock.

**Volume (Dry)**

<table>
<thead>
<tr>
<th>Imperial Unit</th>
<th>Metric Equivalent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,000,000 cubic centimetres</td>
<td>1 cubic metre (m(^3))</td>
</tr>
</tbody>
</table>

There will be no equivalent to the bushel in the metric system.

As we now use the bushel it is in fact a measure of mass (weight). In the metric system weights will be measured in kilograms (see below) and dry volumes in cubic metres or decimal fractions thereof.

Grain densities now expressed in pounds per bushel will be expressed in kilograms per hectolitre, as this is international practice.

**Volume (Liquid or Gas)**

<table>
<thead>
<tr>
<th>Imperial Unit</th>
<th>Metric Equivalent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,000 millilitres (ml)</td>
<td>1 litre (l)</td>
</tr>
<tr>
<td>1,000 litres</td>
<td>1 cubic metre (m(^3))</td>
</tr>
</tbody>
</table>

A litre contains 1\(\frac{3}{4}\) pints. It is somewhat smaller than a quart.
A gallon contains approximately 4\(\frac{1}{2}\) litres.
A 4-gallon can holds 18 litres.
A 44-gallon drum holds a little more than 200 litres.
A 7-ounce beer glass holds 200 millilitres.

**Mass**

<table>
<thead>
<tr>
<th>Imperial Unit</th>
<th>Metric Equivalent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,000 grams (g)</td>
<td>1 kilogram (kg)</td>
</tr>
<tr>
<td>1,000 kilograms</td>
<td>1 tonne (t)</td>
</tr>
</tbody>
</table>

One ton (avoirdupois) contains 2,240 lb.
One tonne contains 2,204 lb.
One pound is one-tenth (10 per cent) less than a half a kilogram.

An ounce is 28.4 grams.

One hundredweight is very close to 50 kilograms (50.8).
Half a hundredweight is very close to 25 kilograms.

**Weather reports**

Temperatures will be measured in degrees Celsius (°C).

<table>
<thead>
<tr>
<th>Temperature</th>
<th>Celsius</th>
<th>Fahrenheit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hot</td>
<td>30°C</td>
<td>86°F</td>
</tr>
<tr>
<td>Warm</td>
<td>20°C</td>
<td>68°F</td>
</tr>
<tr>
<td>Mild</td>
<td>15°C</td>
<td>59°F</td>
</tr>
<tr>
<td>Cold</td>
<td>5°C</td>
<td>41°F</td>
</tr>
<tr>
<td>Freezing</td>
<td>0°C</td>
<td>32°F</td>
</tr>
</tbody>
</table>

Temperatures below freezing have a minus sign; for example —5°C (23°F).

Rainfall will be measured in millimetres.

1 millimetre = 4 points
25 millimetres = 100 points = 1 inch.

**Handy rules**

1 ton per acre = 2\(\frac{1}{2}\) tonnes per hectare.
1 lb. per acre is a little more than 1 kilogram per hectare.
1 gallon per acre is 11 litres per hectare approximately.
10 metres is 11 yards approximately.
10 square metres is 12 square yards approximately.
10 cubic metres is 13 cubic yards approximately.

Metric Conversion Board