

Soil Testing Kit instructions



Thank you for purchasing from the Worth Gardening range.

Worth Gardening have a range that spans general household use through to garden and greenhouse.

Our comprehensive soil testing range encompasses soil test kits and meters - designed with the home gardener in mind. They offer easy to use accuracy and 'take the guesswork out of gardening'

pH

When buying new plants for an established or new garden, it is important to test the pH of your soil to ensure the acidity levels are correct. Your soil's pH may be quite different in various parts of your garden, and therefore each area that you intend to plant should be tested.

Nitrogen (N)

This is essential for the growth of vegetation, especially grass and leafy plants. The right amount of nitrogen will affect the plants & allow for healthy growth but too much is equally damaging and will affect the plant structure.

Phosphorus (P)

This is necessary for strong root growth and root vegetables. It helps in the formation of buds and healthy stems. A lack of phosphorus will stunt the growth of a plant.

Potassium (potash, **K**)

This nutrient is important in the development of flowers and shrubs, the correct potassium levels ensure flowers become more fragrant and have improved colour. In vegetables it ensure a better quality crop and also makes plants more resistant to disease.

pH and your soil

pH describes how acid or alkaline a soil is. A reading of pH7 is neutral, above means chalky, alkaline soil. Whilst readings below pH7 down to pH4 indicate an acidic soil.

Plants vary in their preferences towards a high, neutral or low pH and you can see at a glance what your plants prefer in our Plant pH Preference list. By using our pH soil meter you can now decide either to alter your soil or whether to buy plants which are suitable for the type of soil you already have.

Preparing the soil sample

- (i)** Remove the top 5cm (2") of soil and break up the soil underneath to a depth of approximately 12cm (5"). Place some of the soil into a container and remove all stones and debris such as leaves and twigs. Break the soil up and leave to dry naturally.

- (ii)** Find a suitable container with a lid - like a jam jar.



- a. *Take one part soil, the larger the representative sample the better.*
- b. *Add 4 parts water, preferably distilled, rain or finally tap water. For example measure 50ml or grams of soil and add 200ml / grams of water.*
- c. *Seal the container and shake for 30 seconds to a minute.*
- d. *Allow the sample to settle which could take 30 minutes to 24 hours depending on the soil type.*

Carrying out the test

- a. *Using the pipette supplied draw up a sample of the clear liquid. (It does not matter if the liquid is still cloudy).*
- b. *Fill a clean dry test tube to the 3ml mark from the pipette.*
- c. *Add 0.5ml (to the next graduation mark) of either pH, N1, P1, or K1 depending on the test being carried out.*
- d. *Add one heaped scoop of pH, N, P or K powder.*

Replace the test tube cap & shake for 30 seconds.

Taking the reading

- a. *Allow the powder to settle over a 5 minute period allowing the colour to develop.*
- b. *Then compare the colour of the liquid in the test tube by holding it against the appropriate colour chart.*
- c. *Take a note of the reading*

When testing liquids only for the pH N,P and K just fill the test tube with the sample to the 3 ml mark and carry out the same procedure from step 2(ii) 'Carrying out the Test'

Soil types

Sandy Soils

A light, coarse soil comprised of sand and silt

Loam Soils

A medium 'crumbly' soil which consists of a blend of sand and fine clay mixed with a little lime and humus.

Clay soils

A heavy 'lumpy' soil comprised with small amounts of lime and humus which tends to be waterlogged in the winter months and very dry in the summer months.

Altering the pH

Compare your test results for each area of soil in relation to the pH of the plants that you are going to plant (see *Plant pH preference list*). Most plants have a reasonably wide tolerance of at least 1 pH point, and will be comfortable with a pH of around 6.5 but certain plants require an alkaline soil or a particularly acid soil.

The type of soil in your garden will influence the amount of mixture needed to make a change to your soil's pH level.

TO INCREASE SOIL ALKALINITY - GROUND LIMESTONE (per g/m²)

SOIL TYPE	pH CHANGE 6.0 - 6.5			
Sandy Soil	146	238	434	621
Loam Soil	187	383	621	961
Clay Soil	238	476	816	1200

To increase soil acidity; add Sulphate of Ammonia or Flowers of Sulphur in the quantities recommended by the manufacturers. The addition of Garden Compost or manure will often increase a soils acidity level.

Lawns

Preparing a new lawn - Ideally you need a loam soil with a pH of between 6 and 7. Grass seeds do not germinate easily with a pH below 6 and the majority of grasses are not lime lovers. The addition of lime may be required if pH levels are below 6. Clay soils will often be found to have a low pH level.

An established lawn - Do not add lime unless your soil pH is low but remember that the annual addition of Sulphate of Ammonia, Garden Compost and / or manure will tend to reduce the pH level over time making the addition of lime necessary.

Altering nutrient levels

The easiest way to increase your soil's nutrient level is to add a fertiliser. There are many on the market and in all cases you should follow the manufacturers recommendations for best results. Nitrogen is best applied in Spring as this will encourage the growth of grass and leafy plants. Fast acting phosphorus and potash fertilisers may also be applied in Spring. Slow release phosphorus and potash should be applied in Autumn.

Safety & Hygiene

All the liquids and powders are safe if used correctly. Keep out of reach of children and animals and ensure that you wash your hands thoroughly after each test. In the event the liquid or powder is swallowed, drink plenty of water and seek medical advice. **Keep away from all food and drink.**

Cleaning & Storage

It is important to wash out all test tubes in warm soapy water immediately after each test - rinse well and leave to dry. The kit should be stored in a clean and dry environment, preferably in a sealed container. Make sure all the bottles are properly sealed and that storage conditions are not subject to extremes of hot or cold.

Once opened the liquids and powders should be used within a 12 month period.



pH reading chart



ph 7.5 - **Alkaline**



ph 7.0 - **Neutral**



ph 6.5 - **Slightly acid**



ph 6.0 - **Acid**



ph 5.5 - **Acid**



ph 5.0 - **Very acid**



ph 4.5 - **Very acid**

nitrate reading chart



High



High to medium



Medium



Medium to low



Low



phosphorus reading chart



High



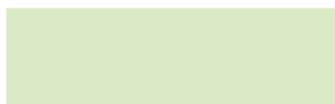
High to medium



Medium



Medium to low



Low



potassium **reading chart**



High



High to medium



Medium



Medium to low



Low



pH preference list

flowers, ornamental trees and shrubs

Name	pH Range	Name	pH Range
Abelia	6.0 - 8.0	Cerastium	6.0 - 7.0
Acacia	6.0 - 8.0	Chrysanthemum	6.0 - 7.0
Acanthus	6.0 - 7.0	Cissus	6.0 - 7.5
Aconitum	5.0 - 6.0	Cistus	6.0 - 7.5
Adonis	6.0 - 8.0	Clarkia	6.0 - 6.5
Ageratum	6.0 - 7.5	Cleanthus	6.0 - 7.5
Ailanthus	6.0 - 7.5	Clematis	5.5 - 7.0
Ajuga	4.0 - 6.0	Colchicum	5.5 - 6.5
Althea	6.0 - 7.5	Columbine	6.0 - 7.0
Alyssum	6.0 - 7.5	Convolvulus	6.0 - 8.0
Amaranthus	6.0 - 6.5	Coreopsis	5.0 - 6.0
Anchusa	6.0 - 7.5	Coronilla	6.5 - 7.5
Androsace	5.0 - 6.0	Corydalis	6.0 - 8.0
Anemone	6.0 - 7.5	Cosmos	5.0 - 8.0
Anthyllis	5.0 - 6.0	Cotoneaster	6.0 - 8.0
Arbutus	4.0 - 6.0	Crab Apple	6.0 - 7.5
Ardisia	6.0 - 8.0	Crocus	6.0 - 8.0
Arenaria	6.0 - 8.0	Cynoglossum	6.0 - 7.5
Aristia	6.0 - 7.5	Daffodil	6.0 - 6.5
Armeris	6.0 - 7.5	Dahlia	6.0 - 7.5
Arnica	5.0 - 6.5	Day Lily	6.0 - 8.0
Asperula	6.0 - 8.0	Delphinium	6.0 - 7.5
Asphodeline	6.0 - 8.0	Deutzia	6.0 - 7.5
Aster	5.5 - 7.5	Dianthus	6.0 - 7.5
Astilbe	6.0 - 8.0	Dogwood	5.0 - 7.0
Aubretia	6.0 - 7.5	Edelweiss	6.5 - 7.5
Avens	6.0 - 7.5	Elaeagnus	5.0 - 7.5
Azalea	4.5 - 6.0	Enkianthus	5.0 - 6.0
Beauty Bush	6.0 - 7.5	Erica	4.5 - 6.0
Bergenia	6.0 - 7.5	Euphorbia	6.0 - 7.0
Bleeding heart	6.0 - 7.5	Everlasting	5.0 - 6.0
Bluebell	6.0 - 7.5	Firethorn	6.0 - 8.0
Broom	5.0 - 6.0	Forget-me-not	6.0 - 8.0
Buddleia	6.0 - 7.0	Forsythia	6.0 - 8.0
Buphthalmum	6.0 - 8.0	Foxglove	6.0 - 7.5
Calendula	5.5 - 7.0	Fritillaria	6.0 - 7.5
Camassia	6.0 - 8.0	Fuchsia	5.5 - 6.5
Candytuft	6.0 - 7.5	Gaillardia	6.0 - 7.5
Canna	6.0 - 8.0	Gazania	5.5 - 7.0
Canterbury Bells	6.0 - 7.5	Gentiana	5.0 - 7.5
Carnation	6.0 - 7.5	Geum	6.0 - 7.5
Catalpa	6.0 - 8.0	Gladioli	6.0 - 7.0
Celosia	6.0 - 7.0	Giobularia	5.5 - 7.0
Centaurea	5.0 - 6.5	Godetia	6.0 - 7.5

Name	pH Range	Name	pH Range
Goldenrod	5.0 - 7.0	Pansy	5.5 - 7.0
Gourd	6.0 - 7.0	Passion Flower	6.0 - 8.0
Grass Bent	5.5 - 6.5	Pasque Flower	5.0 - 6.0
Clover	6.0 - 7.0	Paulownia	6.0 - 8.0
Fesau	6.0 - 7.5	Pea - Sweet	6.0 - 7.5
Meadow	6.0 - 7.5	Penstemon	5.5 - 7.0
Pampas	6.0 - 8.0	Peony	6.0 - 7.5
Rye	6.0 - 7.0	Periwinkle	6.0 - 7.5
Gypsophila	6.0 - 7.5	Petunia	6.0 - 7.5
Hawthorn	6.0 - 7.0	Pinks	6.0 - 7.5
Helianthus	5.0 - 7.0	Pittosporum	5.5 - 6.5
Helleborus	6.0 - 6.5	Plantain	6.0 - 7.5
Holly	5.0 - 6.5	Poligonum	6.0 - 7.5
Hollyhock	6.0 - 8.0	Polyanthus	6.0 - 7.5
Honeysuckle	6.0 - 7.5	Poppy	6.0 - 7.5
Hydrangea (<i>Blue</i>)	4.0 - 5.0	Portulaca	5.5 - 7.5
Hydrangea (<i>Pink</i>)	6.0 - 7.0	Primrose	5.5 - 6.5
Hydrangea (<i>Wht</i>)	6.5 - 8.0	Primula	6.0 - 7.5
Hypericum	5.5 - 7.0	Privet	6.0 - 7.0
Iris	5.0 - 6.5	Prunella	6.0 - 7.5
Ivy	6.0 - 8.0	Prunus	6.5 - 7.5
Juniper	5.0 - 6.5	Pyracantha	5.0 - 6.0
Kalmia	4.5 - 5.0	Pyrethrum	6.0 - 7.5
Kerria	6.0 - 7.0	Red Hot Poker	6.0 - 7.5
Laburnum	6.0 - 7.0	Rhododendron	4.5 - 6.0
Laurel	4.5 - 6.0	Rose: <i>Hybrid Tea</i>	5.5 - 7.0
Lavender	6.5 - 7.5	<i>Climbing</i>	6.0 - 7.0
Liatris	5.5 - 7.5	<i>Rambling</i>	5.5 - 7.0
Ligustrum	5.0 - 7.5	Salvia	6.0 - 7.5
Lilac	6.0 - 7.5	Santpaulia	6.0 - 7.0
Lily of the Valley	4.5 - 6.0	Scabiosa	5.0 - 7.5
Lithospermum	5.0 - 6.5	Sea Grape	5.0 - 6.5
Lobelia	6.0 - 7.5	Sedum	6.0 - 8.0
Lupinus	5.5 - 7.0	Snapdragon	5.5 - 7.0
Magnolia	5.0 - 6.0	Snowdrop	6.0 - 8.0
Mahonia	6.0 - 7.0	Soapwort	6.0 - 7.5
Marguerite	6.0 - 7.5	Spirea	6.0 - 7.5
Molinia	4.0 - 5.0	Spruce	4.0 - 5.0
Moraea	5.5 - 6.5	Stock	6.0 - 7.5
Morning Glory	6.0 - 7.5	Stonecrop	6.5 - 7.5
Moss	6.0 - 8.0	Sumach	5.0 - 6.5
Moss, sphagnum	3.5 - 5.0	Sunflower	6.0 - 7.5
Myosotis	6.0 - 7.0	Sweet William	6.0 - 7.5
Narcissus	6.0 - 7.5	Syringa	6.0 - 8.0
Nasturtium	5.5 - 7.5	Tamarix	6.5 - 8.0
Nicotiana	5.5 - 6.5	Tobacco	5.5 - 7.5
Pachysandra	5.0 - 8.0	Trillium	5.0 - 6.5
Paeonia	6.0 - 7.5	Tulip	6.0 - 7.0

Name	pH Range	Name	pH Range
Viburnum	5.0 - 7.5	Water Lily	5.5 - 6.5
Viola	5.5 - 6.5	Weyela	6.0 - 7.0
Violet	5.0 - 7.5	Wistine	6.0 - 8.0
Virginia Creeper	5.0 - 7.5	Zinna	5.5 - 7.5
Wallflower	5.5 - 7.5		

pH preference list vegetables and herbs

Name	pH Range	Name	pH Range
Artichoke	6.5 - 7.5	Millet	6.0 - 6.5
Asparagus	6.0 - 8.0	Mint	7.0 - 8.0
Basil	5.5 - 6.5	Mushroom	6.5 - 7.5
Bean (Runner, French, Broad)	6.0 - 7.5	Mustard	6.0 - 7.5
Beetroot	6.0 - 7.5	Olive	5.5 - 6.5
Broccoli	6.0 - 7.0	Onion	6.0 - 7.0
Brussels Sprout	6.0 - 7.5	Paprika	7.0 - 8.5
Cabbage	6.0 - 7.5	Parsley	5.0 - 7.0
Calabrese	6.5 - 7.5	Parsnip	5.5 - 7.5
Carrot	5.5 - 7.0	Pea	6.0 - 7.5
Cauliflower	5.5 - 7.5	Peanut	5.0 - 6.5
Celery	6.0 - 7.0	Pepper	5.5 - 7.0
Chicory	5.0 - 6.5	Peppermint	6.0 - 7.5
Chinese Cabbage	6.0 - 7.5	Pistacio	5.0 - 6.0
Chives	6.0 - 7.0	Potato	4.5 - 6.0
Corn - Sweet	5.5 - 7.5	Potato- Sweet	5.5 - 6.0
Cress	6.0 - 7.5	Pumpkin	5.5 - 7.5
Courgettes	5.5 - 7.0	Radish	6.0 - 7.0
Cucumber	5.5 - 7.0	Rice	5.0 - 6.5
Fennel	5.0 - 6.0	Rosemary	5.0 - 6.0
Garlic	5.5 - 7.5	Sage	5.5 - 6.5
Ginger	6.0 - 8.0	Shallot	5.5 - 7.0
Horseradish	6.0 - 7.0	Sorghum	5.5 - 7.5
Kale	6.0 - 7.5	Soyabean	5.5 - 6.5
Kohorabi	6.0 - 7.5	Spearmint	5.5 - 7.5
Leek	6.0 - 8.0	Spinach	6.0 - 7.5
Lentil	5.5 - 7.0	Swede	5.5 - 7.0
Lettuce	6.0 - 7.0	Thyme	5.5 - 7.0
Majoram	6.0 - 8.0	Tomato	5.5 - 7.5
Marrow	6.0 - 7.5	Turnip	5.5 - 7.0
		Water Cress	6.0 - 8.0



pH preference list

fruit

Name	pH Range	Name	pH Range
Apple	5.0 - 6.5	Lychee	6.0 - 7.0
Apricot	6.0 - 7.0	Mango	5.0 - 6.0
Avocado	6.0 - 7.5	Melon	5.5 - 6.5
Banana	5.0 - 7.0	Mulberry	6.0 - 7.5
Blackberry	5.0 - 6.0	Nectarine	6.0 - 7.5
Cherry	6.0 - 7.5	Papaw	6.0 - 7.5
Cranberry	5.5 - 6.5	Peach	6.0 - 7.5
Currant: Black	6.0 - 8.0	Pear	6.0 - 7.5
Red	5.5 - 7.0	Pineapple	5.0 - 6.0
White	6.0 - 8.0	Plum	6.0 - 7.5
Damson	6.0 - 7.5	Pomegranate	5.5 - 6.5
Gooseberry	5.0 - 6.5	Quince	6.0 - 7.5
Grapevine	6.0 - 7.0	Raspberry	5.0 - 6.5
Grapefruit	6.0 - 7.0	Rhubarb	5.5 - 7.0
Hazelnut	6.0 - 7.0	Strawberry	5.0 - 7.5
Hop	6.0 - 7.5	Watermelon	5.5 - 6.5
Lemon	6.0 - 7.0		



pH preference list house & greenhouse plants

Name	pH Range	Name	pH Range
Abutilon	5.5 - 6.5	Coral Berry	5.5 - 7.5
Acorus	5.0 - 6.0	Coffee Plant	5.0 - 6.0
Aechmea	5.0 - 5.5	Coleus	6.0 - 7.0
African Violet	6.0 - 7.0	Columnnea	4.5 - 5.5
Amaryllis	5.5 - 6.5	Crassula	5.0 - 6.0
Anthurium	5.0 - 6.0	Creeping Fig	5.0 - 6.0
Apostle Plant	5.5 - 6.5	Croton	5.0 - 6.0
Aralia	6.0 - 7.5	Crown of Thorns	6.0 - 7.5
Arrowhead	5.0 - 6.0	Cuphea	6.0 - 7.5
Asparagus Fern	6.0 - 7.0	Cyclamen	6.0 - 7.0
Azalea	4.5 - 6.0	Cyperus	5.0 - 7.5
Baby's Breath	6.0 - 7.5	Daphne	6.5 - 7.5
Baby's Tears	5.0 - 6.0	Devil's Ivy	5.0 - 6.0
Begonia	5.5 - 7.0	Dieffenbachia	5.0 - 6.0
Bird of Paradise	6.0 - 6.5	Dipladenia	6.0 - 7.5
Bishop's Cap	5.0 - 6.0	Dizygotheca	6.0 - 7.5
Black-eyed Susan	5.5 - 7.5	Dracanea	5.0 - 6.0
Blood Leaf	5.5 - 6.5	Dragon Tree	5.0 - 7.5
Bottle Brush	6.0 - 7.5	Dutchman's Pipe	6.0 - 8.0
Boxwood	6.0 - 7.5	Easter Lily	6.0 - 7.0
Bougainvillea	5.5 - 7.5	Elephant's Ear	6.0 - 7.5
Bromeliads	5.0 - 6.0	English Ivy	6.0 - 7.5
Butterfly Flower	6.0 - 7.5	Episcia	6.0 - 7.0
Boston	5.5 - 6.5	Eucalyptus	6.0 - 8.0
Button	6.0 - 8.0	Fan Iris	6.0 - 8.0
Cactus	4.5 - 6.0	Feather	5.5 - 7.5
Calceolaria	6.0 - 7.0	Feijoa	5.0 - 7.5
Caladium	6.0 - 7.5	Ferns: Bird's Nest	5.0 - 5.5
Calla Lily	6.0 - 7.0	Fig (<i>Ficus</i>)	5.0 - 6.0
Camelia	4.5 - 5.5	Fittonia	5.5 - 6.5
Capsicum Pepper	5.0 - 6.5	Freesia	6.0 - 7.5
Cardinal Flower	5.0 - 6.0	French Marigold	5.0 - 7.5
Cast Iron Plant	4.0 - 5.5	Gardenia	5.0 - 6.0
Castor Oil Plant	5.5 - 6.5	Genista	6.5 - 7.5
Century Plant	5.0 - 6.5	Geranium	6.0 - 8.0
Chinese Evergreen	5.0 - 6.0	Gloxinia	5.5 - 6.5
Chinese Lantern	6.0 - 7.5	Grape Hyacinth	6.0 - 7.5
Chinese Primrose	6.0 - 7.5	Grape Ivy	5.0 - 6.5
Christmas Cactus	5.0 - 6.5	Grevillia	5.5 - 6.5
Cineraria	5.5 - 7.0	Hedera (<i>Ivy</i>)	6.0 - 7.5
Clerodendrum	5.0 - 6.0	Heliotropium	6.0 - 8.0
Clivia	5.5 - 6.5	Hens & Chickens	6.0 - 7.0
Cockscomb	6.0 - 7.5	Herringbone Plant	5.0 - 6.0
		Hyacinth	6.5 - 7.5

Name	pH Range	Name	pH Range
Hoya	5.0 - 6.5	Patient Lucy	5.5 - 6.5
Ice Plant	6.0 - 8.0	Peacock Plant	5.0 - 6.0
Inch Plant	5.0 - 6.0	Pelargoniums	6.0 - 7.5
Impatiens		Pellonia	5.0 - 6.0
<i>(Busy Lizzie)</i>	5.5 - 6.5	Peperomia	5.0 - 6.0
Indigofera	6.0 - 7.5	Philodendron	5.0 - 6.0
Iresine	5.0 - 6.5	Phlox	5.0 - 6.0
Ivy Tree	6.0 - 7.0	Pitcherplant	4.0 - 5.5
Jacaranda	6.0 - 7.5	Pilea	6.0 - 8.0
Japanese Sedge	6.0 - 8.0	Plumbago	5.5 - 6.5
Jasminum	5.5 - 7.0	Podocarpus	5.0 - 6.5
Jerusalem Cherry	5.5 - 6.5	Poinsettia	6.0 - 7.5
Jessamine	5.0 - 6.0	Polyscias	6.0 - 7.5
Kaffir	6.0 - 7.5	Pothos	5.0 - 6.0
Kalanchoe	6.0 - 7.5	Prayer Plant	5.0 - 6.0
Kangaroo Thorn	6.0 - 8.0	Puncia	5.5 - 6.5
Kangaroo Vine	5.0 - 6.5	Rabbits Foot	6.0 - 7.5
Lace Flower	6.0 - 7.5	Rubber Plant	5.0 - 6.0
Lantana	5.5 - 7.0	Sansevieria	4.5 - 7.0
Laurus <i>(Bay tree)</i>	5.0 - 6.0	Saxifraga	6.0 - 8.0
Lemon Plant	6.0 - 7.5	Schizanthus	6.0 - 7.0
Mimosa	5.0 - 7.0	Scilla	6.0 - 8.0
Mind your own		Selaginella	6.0 - 7.0
Business	5.0 - 5.5	Senecio	6.0 - 7.0
Monstera <i>(Swiss</i>		Shrimp Plant	5.5 - 6.5
<i>Cheese Plant)</i>	5.0 - 6.0	Spanish Bayonet	5.5 - 7.0
Mother-of-		Spider Plant	6.0 - 7.5
Thousands	5.0 - 6.0	Star of Bethlehem	6.0 - 8.0
Myrtle	6.0 - 8.0	Succulents	5.0 - 6.5
Maidenhair	6.0 - 8.0	Thunbergia	5.5 - 7.5
Nephtytis	4.5 - 5.5	Turk's Cap	6.0 - 7.0
Never Never Plant	5.0 - 6.0	Umbrella Tree	5.0 - 7.0
Nicodernia		Velvet Plant	5.5 - 6.5
<i>(Indoor Oak)</i>	6.0 - 8.0	Venus Flytrap	4.0 - 5.0
Nicotiana	5.5 - 6.5	Verbena	6.0 - 8.0
Norfolk Island		Vinca	6.0 - 7.5
Pine	5.0 - 6.0	Violet Flame	6.0 - 7.0
Oleander	6.0 - 7.5	Wandering Jew	5.0 - 6.0
Oplisemenus	5.0 - 6.0	Weeping Fig	5.0 - 6.0
Orange Plant	6.0 - 7.5	Winter Creeper	5.5 - 7.0
Orchid	4.5 - 5.5	Yucca P	6.0 - 8.0
Oxalis	6.0 - 8.0	Zebra Plant	5.0 - 6.0
Painted Lady	6.0 - 7.5		
Palms	6.0 - 7.5		
Pandanus	5.0 - 6.0		



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