SWEP PTY. LTD
ANALYTICAL LABORATORIES

FACTSHEET 1

USING SWEP SERVICES

Few laboratories can match the service and support provided by SWEP. No others match our performance guarantees – and ensure you get value for money. SWEP tests are essential to gaining optimum results for your soil, plants and production. The following covers how this can be achieved.

A balanced, well managed property and a solid strategy are the basis for success.

Regardless of whether you want to convert to certified organic production, or gain that competitive edge as a conventional, commercial grower, SWEP services benefit all growers.

SWEP deliver solutions for all your analytical needs, providing:

- soil testing
- plant tissue testing
- water testing
- fertiliser testing
- soil ameliorant (lime, dolomite & gypsum) testing

SWEP can help you address all property management issues including:

- soil structure
- crop yield
- farm water quality
- identifying fertiliser composition and
- lime calcium content

These services are available year round, worldwide.

Soil

The soil is your most important asset – balance it with The Mikhail System

To get the most out of your soil, it needs to be managed properly, because Aussie soils and conditions are unique. SWEP Laboratories are the only laboratory to use The Mikhail System – a revolutionary and progressive soil balance system with almost 50 years of research, based on Australian soils and Australian conditions. Develop a record of your soil productivity by soil testing annually with SWEP. The returns from soil testing are clear with a SWEP soil test. Fertilising without soil testing is comparative to herd testing by sight. Your results provide you with the means to cater to your individual requirements, so you can make informed and responsible decisions.

Soil verses plant requirements

SWEP soil test results are based on structural, nutritional and, where applicable, biological requirements relevant to that soil. Any plant requirements will be added to the soil requirements as a total, according to the nominated land use on the submission form.

SWEP receive a lot of questions regarding soil test recommendations and how they apply to this seasons' crop. It must be stressed that the recommendations for soil tests relate to that particular soil, and what it should be ***at its optimum whilst supporting that crop type.*** For specific plant nutritional requirements, we recommend having a SWEP plant tissue test taken and attending to the crop's seasonal needs according to these results.

Plant

Plant monitoring and diagnostics

Plant tissue testing is a valuable diagnostic and monitoring tool for your crop. SWEP can help you with nutritional decisions that are immediately relevant to the plant, at that stage of growth for monitoring. SWEP tissue tests can also assist with diagnosing nutritional imbalances that are often difficult to determine by observation alone.

Water

What is your water contributing to your property?

Ensure you know the quality of your irrigation, stock or drinking water by having it professionally analysed. Soil, plants and livestock can be affected by salts and nutrient levels in water. SWEP can analyse your water according to your needs, so you can be sure it is safe to use for your irrigation, livestock and farm.

Fertiliser and soil ameliorants

What fertiliser is that?

SWEP analyses have provided you with what your soil, water and plants require to reach their optimum – but what about the fertiliser products you use? Did you know that the composition of same label products can differ? Also, there are varying degrees of calcium content in different limes, and "biological stimulant" products are not necessarily appropriate for all soils. SWEP provide detailed analyses of fertilisers, composts, lime, dolomite and gypsum so that you can choose the right product for your situation, every time.

FAST - ACCURATE - RELIABLE

For samples sent directly to SWEP we guarantee return of Standard results in no more than 5 working days (or 10 working days for our Complete Soil Balance Analysis) from the date samples arrive at the laboratory. For samples sent &/or returned through one of our agents, allow 14 working days.

Please let us know if you have special time requirements, as results can also be faxed or e-mailed as soon as they are available in the laboratory.

Changing your farming practices can make a world of difference to your yield and management if the changes are practical and valid. Those who strive for true sustainability in farm production adapt their practices based on knowledge, rather than ego. Whatever your goals or beliefs, remember that change is a gradual process and should be undertaken with a long term view and professional support.

For further information please visit our website: www.swep.com.au or call us on 03 9701 6007.

SWEP PTY. LTD
ANALYTICAL LABORATORIES

FACTSHEET 2

COLLECTING SAMPLES FOR LAB ANALYSIS - SOIL

SWEP can send you a sample kit for all your soil analytical needs. Each kit contains sampling instructions, 2 sample bags and a reply paid express bag for your convenience. Please contact us if you would like a kit sent to you.

Sample depths

Sample to the appropriate depth according to land use or crop. Sample depth is set to match the typical depth of the feeder roots. As a guide, the following depths are commonly used:

Pasture 0-10cm

Vegetables/field crops (e.g. lucerne) 0-15cm

Tree and vine crops 0-25cm

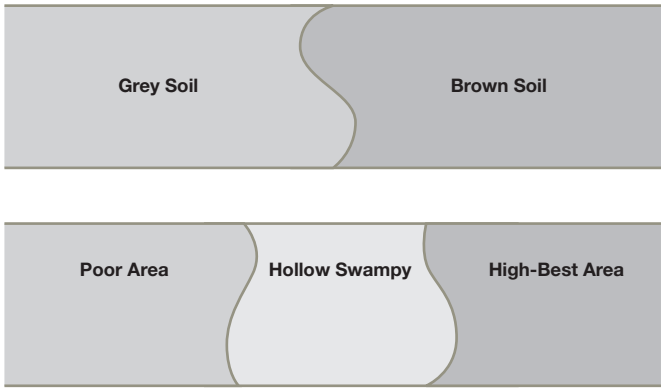

FIGURE 1: SELECTING THE AREA

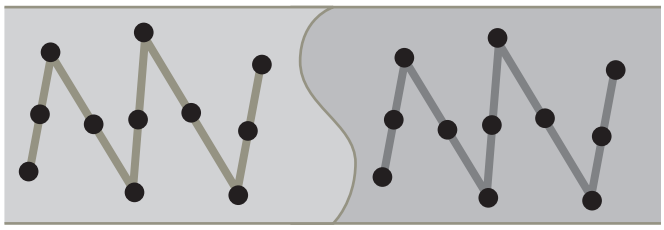

FIGURE 2: HOW TO COLLECT THE SAMPLES

Use a stainless steel core sampler

A stainless steel or PVC pipe are the preferred sampling tools, but you could also use an apple corer for shallow depths. As a last resort a clean, non-rusted shovel can be used, so long as you only collect soil from where the shovel hasn't touched the soil, as metals can distort results for trace element analyses. Make sure you are consistent with the sampling depth – take a ruler or tape with you to be certain.

Sample areas according to uniform features

Remember, you are looking to submit a 'representative' sample for a particular area. Any differences in soil type, topography, land use, crop variety or fertiliser history warrants separate samples **(see Figure 1)**. Observe where the soil changes in colour or texture or where growth patterns differ. These changes will often include hills, flats and fertiliser history. For uniform soils and land use/history, one 300g sample can represent up to 100 acres (40ha) of irrigated land, or up to 200 acres (80ha) of dry land.

Collect 20-30 cores per sample

The traditional method for collecting cores is by following a zig zag path **(see Figure 2)**. Most importantly though, choose a path so you can easily sample the same path next time. Ideally, you should retest every year following the same path, to the same depth at the same time of year. This way you can track changes over time. Avoid sampling patches of very good or very poor growth, e.g. near gates, troughs, livestock camps, dung or urine patches.

Mix the cores thoroughly in a clean plastic bucket or plastic bag

Remove any growing matter (grass etc.), mix the cores well and take a representative sample of 300 grams. Place this sample into a sealable plastic bag (either the SWEP issued sample bag or a zip lock lunch bag is ideal). Exclude as much air as possible and make sure each sample bag is labelled clearly.

Samples should be sent to the laboratory as soon as possible after collection.

It is recommended samples are sent via express post (included in SWEP sample kits) and early during the week for prompt results turnaround.

If you have any queries regarding sampling methods, techniques or preparation please contact us to discuss **prior to sample collection.**

Please be aware that samples are tested as received.

Preparation, collection, handling, labelling & transport of samples for analysis are fully and wholly the responsibility of the person or persons submitting the sample for analysis. The information provided in this factsheet is for use of a general nature only and is not intended to be relied upon as, nor to be a substitute for, specific professional advice. SWEP Pty Ltd will not be responsible for any loss or damage occasioned to any persons acting on or refraining from action as a result of any material in this publication.

For further information please visit our website: www.swep.com.au or call us on 03 9701 6007.

SWEP PTY. LTD
ANALYTICAL LABORATORIES

FACTSHEET 3

COLLECTING SAMPLES FOR LAB ANALYSIS – PLANT TISSUE

SWEP can send you a sample kit for all your analytical needs. Each kit contains sampling instructions, 2 sample bags and a reply paid express bag for your convenience. Please contact us if you would like a kit sent to you.

Crop health monitoring

Plants selected for crop health monitoring should provide a good representation of the total plant population for that variety, with samples gathered over a half to one hectare area. For monitoring, it is usual to make up the sample with fully expanded leaves (including the petiole) taken as close as possible to shoot tips.

However, there are a few special cases to remember:

- Spur-bearing deciduous fruit trees should be sampled using the "Mid-shoot" leaves from non-fruiting laterals of the current seasons growth. Lateral bearing fruit trees are sampled using the first fully expanded leaf behind the tip.
- Cereals are also sampled using the first fully expanded leaf, unless they are very young seedlings, in which case the whole plant is taken from just above the ground (high enough to avoid soil contamination).
- For plants with very large leaves (eg. Banana) collect only a narrow strip of tissue from across the mid portion of each leaf. In other cases, such as Walnuts, only a single leaflet from each leaf is required.
- Other special cases include Lettuce, which should be sampled by taking the outermost 'wrapper' leaf of the actual head, with 5 leaves per sample.

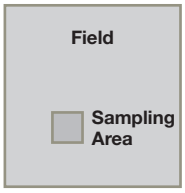

FIGURE 1

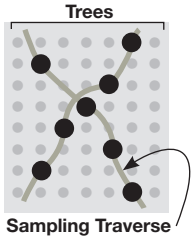

FIGURE 2

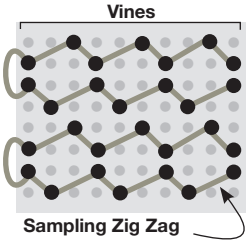

FIGURE 3

Sampling paths

For pasture or lucerne, the best approach is to sample from a representative area of 0.5 to 1.0 hectares within the paddock. **(See Figure 1)**.

For tree and vine crops, collect a selection of leaves so that the sample includes equal representation from each quarter of the plant (ie. North, South, East and West). Usually, a sample is comprised of 20-50 leaves (depending mainly on the leaf size). NB: Vines should be sampled at 75% flowering. Where possible, it is best to follow an 'X' or zig-zag path through the block **(Figures 2 & 3)**, placing leaves or other sample material directly into a plain brown paper bag.

Diagnosing nutrition problems

When sampling for a suspected deficiency, sample leaves from affected plants that display the worst symptoms. It is not necessary to follow a pattern in this instance, however it may be useful to note if there are any obvious groupings of plants or areas where symptoms are worse. A second sample of healthy leaves may also be useful for comparison.

General

Care should be taken not to let the sample make contact with any potential contaminant. The sample should be removed and handled with clean hands or gloves, (and stainless steel tools where applicable) and placed into a paper bag. They should then be refrigerated until ready to send to the laboratory. Don't allow the sample to have contact with soil, fertiliser/ chemicals or irrigation residue and avoid exposing the sample to temperature extremes – samples should not be frozen, or left for long periods of time in the sun or heat (including in transit to laboratory). If you think your sample may have to sit in the post all weekend, it may be better to leave the sampling until first thing Monday morning.

While tissue analysis is a useful tool for plant nutrient status, it should not replace soil sampling for the complete picture. Tissue analysis should be used to complement soil samples, but does not provide a basis for nutrient recommendations - only soil analysis can determine fertiliser requirements. Do remember when sampling soil and tissue for analysis to collect and send both samples at the same time, but make sure they are securely packaged separately.

Take special care of the following points:

- Do not sample from plants under temperature or water stress. Sampling before 10am is preferred.
- Where possible, avoid including leaves that are contaminated with soil in the sample.
- Avoid sampling leaves after flowering or after shoot growth has stopped, unless the particular crop has a specific time requirement (eg. Vines at 75% flowering).
- Before taking the sample, wash hands thoroughly or wear disposable plastic gloves.
- Do not send wet material as it may begin to rot in transit.
- Preferably send the material straight away. If this is not possible, refrigerate (but do not freeze) the sample in its paper bag until it can be sent.

If you have any queries regarding sampling methods, techniques or preparation please contact us to discuss **prior to sample collection.**

Please be aware that samples are tested as received.

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SWEP PTY. LTD
ANALYTICAL LABORATORIES

FACTSHEET 4

COLLECTING SAMPLES FOR LAB ANALYSIS – WATER

SWEP can send you sampling information for all your analytical needs. Please contact us if you would like some information sent to you.

General water test sampling

For general farm water samples, rinse a clean plastic water bottle (preferably a bottle having only ever held still water) three or four times with the water you want analysed.

Fill the bottle with 300ml of the water sample. If you are sampling a source where you can't get a continuous fresh flow, then do your rinsing in one spot and then move to another for the sample. Try to get the sample away from the bank, where mud or other materials could contaminate it. To avoid this you may need to use a container on a pole to sample from the middle of dams or water bodies with steep banks etc.

If you are taking the sample from a tap or valve, run some water through it first for a couple of minutes (before rinsing) to clear any sediment or other potential contaminants from the pipes.

Seal the bottle firmly and check that it does not leak. It is advisable to secure the seal with strong packing tape to prevent leakage during transit. Label it using a permanent marker with your name, the sample name and test required.

Biological water test sampling

For biological tests, please prepare a sterile bottle for collection of samples (total bacteria, total coliform and/or *Escherichia coli* analyses) by rinsing it with boiling water **prior to sample collection.** Please note, in this instance the sample container must be suitable for holding hot liquids; boiling water may distort some plastics.

There are various water sampling methods and preparation techniques depending on the type of analytes being tested for. If you have any queries regarding sampling methods, techniques or preparation please contact us to discuss **prior to sample collection.**

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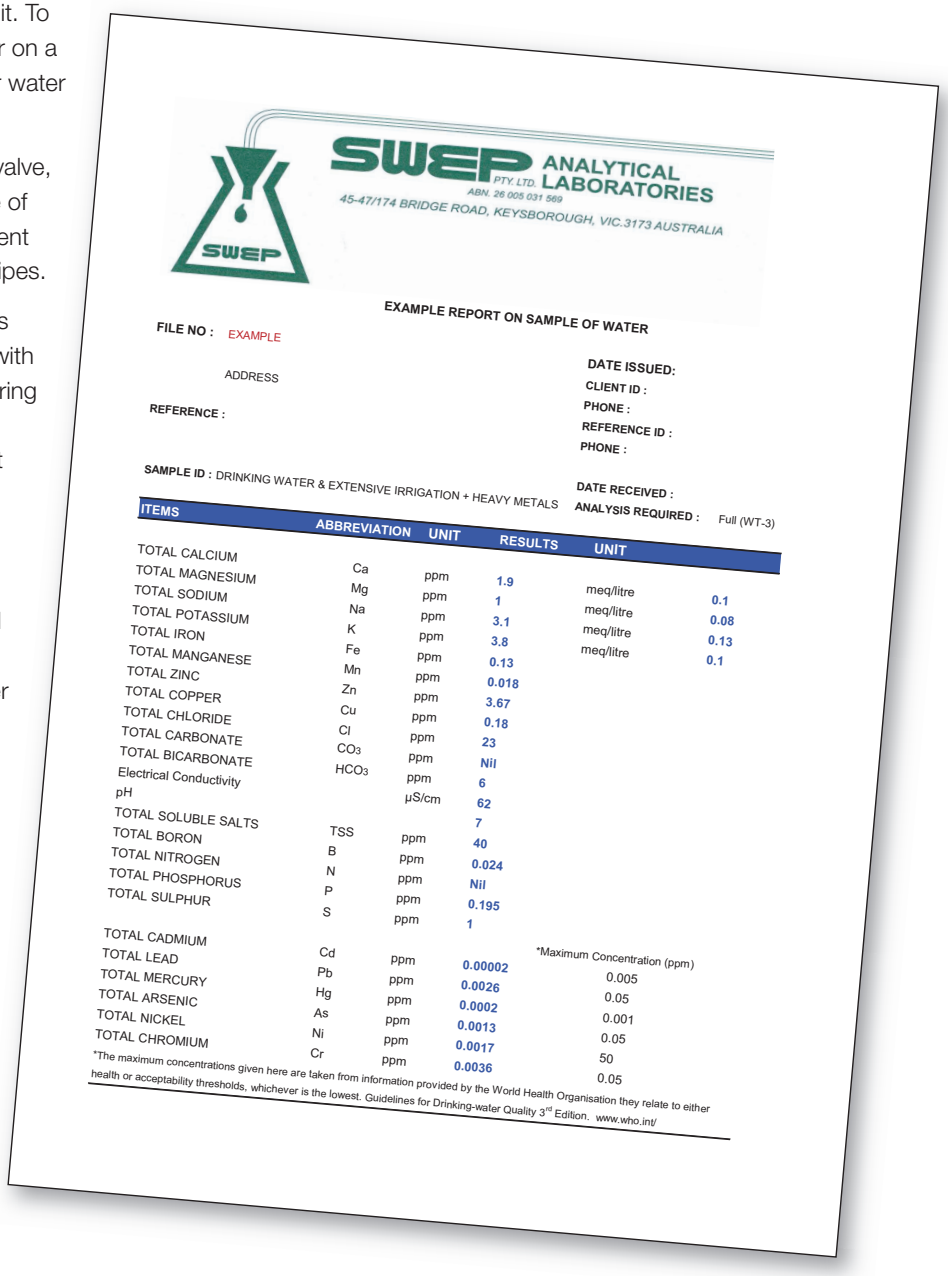

SWEP PTY. LTD. ANALYTICAL LABORATORIES
ABN. 26 005 031 569
45-47/174 BRIDGE ROAD, KEYSBOROUGH, VIC.3173 AUSTRALIA

EXAMPLE REPORT ON SAMPLE OF WATER

FILE NO : EXAMPLE
ADDRESS
REFERENCE :
DATE ISSUED:
CLIENT ID :
PHONE :
REFERENCE ID :
PHONE :
SAMPLE ID : DRINKING WATER & EXTENSIVE IRRIGATION + HEAVY METALS
DATE RECEIVED :
ANALYSIS REQUIRED : Full (WT-3)

ITEMS	ABBREVIATION	UNIT	RESULTS	UNIT	
TOTAL CALCIUM	Ca	ppm	1.9	meq/litre	0.1
TOTAL MAGNESIUM	Mg	ppm	1	meq/litre	0.08
TOTAL SODIUM	Na	ppm	3.1	meq/litre	0.13
TOTAL POTASSIUM	K	ppm	3.8	meq/litre	0.1
TOTAL IRON	Fe	Ppm	0.13		
TOTAL MANGANESE	Mn	ppm	0.018		
TOTAL ZINC	Zn	ppm	3.67		
TOTAL COPPER	Cu	ppm	0.18		
TOTAL CHLORIDE	Cl	ppm	23		
TOTAL CARBONATE	CO_3	ppm	Nil		
TOTAL BICARBONATE	HCO_3	ppm	6		
Electrical Conductivity		µS/cm	62		
pH			7		
TOTAL SOLUBLE SALTS	TSS	ppm	40		
TOTAL BORON	B	ppm	0.024		
TOTAL NITROGEN	N	ppm	Nil		
TOTAL PHOSPHORUS	P	ppm	0.195		
TOTAL SULPHUR	S	ppm	1		
TOTAL CADMIUM	Cd	ppm	0.00002	*Maximum Concentration (ppm)	
TOTAL LEAD	Pb	ppm	0.0026	0.005	
TOTAL MERCURY	Hg	ppm	0.0002	0.05	
TOTAL ARSENIC	As	ppm	0.0013	0.001	
TOTAL NICKEL	Ni	ppm	0.0017	0.05	
TOTAL CHROMIUM	Cr	ppm	0.0036	50	
				0.05	

*The maximum concentrations given here are taken from information provided by the World Health Organisation they relate to either health or acceptability thresholds, whichever is the lowest. Guidelines for Drinking-water Quality 3rd Edition. www.who.int/

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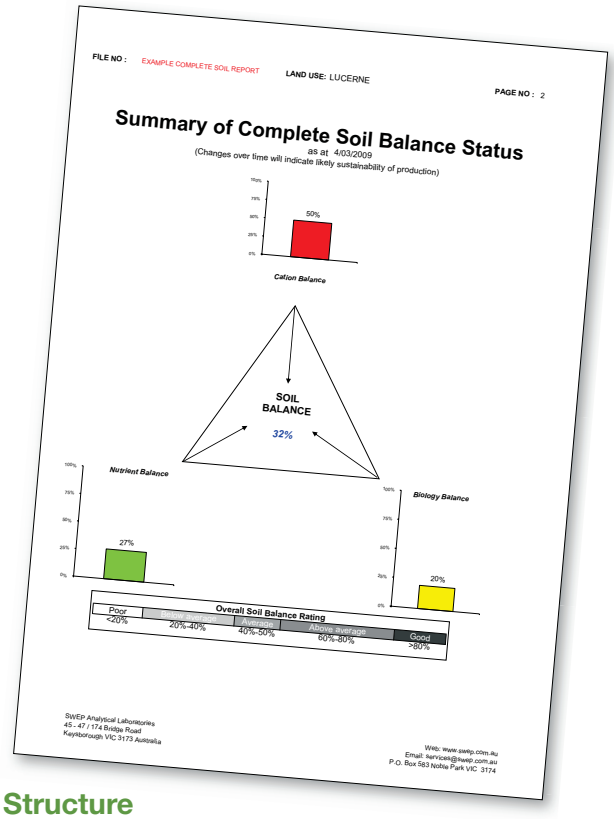
FACTSHEET 5

INTERPRETING SWEP SOIL TESTS

This fact sheet provides a basic outline to interpreting SWEP soil test results. Your SWEP agent should also be able to help you interpret your results. For those without an agent, please contact SWEP to discuss your results or any questions you may have.

Each soil component analysed by SWEP is measured against 'optimum' standards for that soil and component. SWEP then provide recommendations to achieve this optimum, in the form of soil ameliorants, fertiliser, trace elements and/or biological stimulants. Please note that any products and amounts stated in soil test results are recommendations for soil. For advice on plant requirements, we recommend you submit a plant tissue test to SWEP, and/or consult your SWEP agent or agronomist. SWEP soil test recommendations are intended to be used for soil based applications and thus all recommendations are provided on the basis of soil requirements and applications.


FILE NO : EXAMPLE COMPLETE SOIL REPORT LAND USE: LUCERNE PAGE NO : 2

Summary of Complete Soil Balance Status
as at 4/03/2009
(Changes over time will indicate likely sustainability of production)

50%
Cation Balance

SOIL BALANCE
32%

Nutrient Balance
27%

Biology Balance
20%

Overall Soil Balance Rating
Poor <20% | Below Average 20%-40% | Average 40%-50% | Above Average 60%-80% | Good >80%

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Structure

Soil structure is primarily affected by the relative proportions of exchangeable cations calcium, magnesium, potassium, sodium and hydrogen. When you receive your SWEP soil test results, you will see that on page 2 the proportion of exchangeable cations and the desirable levels for that soil are provided. This is also demonstrated in the report by a pie chart. Lime, gypsum and/or dolomite (soil ameliorant) recommendations relate to balancing these exchangeable cation proportions to achieve the desirable figures.

Nutrients


FILE NO : EXAMPLE COMPLETE SOIL REPORT LAND USE: LUCERNE PAGE NO : 5

Nutrient Balance

Deficiency And Excess of Available Elements

PLANT NUTRITION REQUIREMENTS

Soil nutrients include the major elements (such as N, P, K and S), as well as essential trace elements. Soil nutrient requirements are determined primarily by the soil CEC and specified land use (including the sample depth). Requirements are then adjusted according to the level of soil balance and the leaching potential. Total nutrients indicate the total amount of a particular nutrient in the soil. Nutrients listed as "available" refer to the level of plant available nutrients present in the soil. These are used to determine the soil fertiliser requirements, relative to the specified land use. Remember, these nutrient recommendations are to balance the soil and then for the soil to support that land use, and does not consider any factors out of SWEP's control, e.g. product use instructions, plant salt tolerance, water availability, time or application quantity etc. The required amount of each nutrient on the report then needs to be converted to a fertiliser application, as we provide nutrients in kilograms per hectare. Knowledgeable suppliers should be able to convert these into appropriate products for you.

Biology (Complete Soil Test)

Soil biology results reflect the key indicator groups of soill microbes present and their numbers and are indentified by SWEP as being "Active bacteria". Like soil structure and nutrients, each biological indicator group needs to be in balance within and between each of the groups. Certain biological stimulants have different effects on each group – some products stimulate key groups, other products may suppress certain groups. Soil biology recommendations are for broad groups of biological stimulants, at rates found appropriate from SWEP research to adjust active bacterial growth. Please consult your supplier about specific usage instructions.

For further information please visit our website: www.swep.com.au or call us on 03 9701 6007.

SWEP PTY. LTD
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FACTSHEET 6

THE MIKHAIL SYSTEM

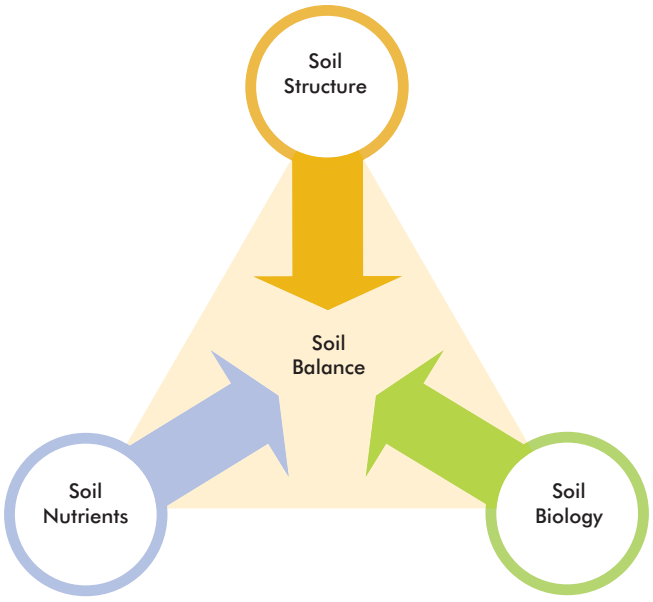
This fact sheet introduces The Mikhail System – a system of fundamental principles that make up SWEP's Complete Soil Balance Analysis.

The Mikhail System is the defining factor that separates SWEP's soil test results from other laboratories. To be able to take full advantage of the research that SWEP founder and Managing Director, Mr Ted Mikhail, has been refining for almost 50 years, the **Complete Soil Balance Analysis** provide SWEP clients with the status and requirements of soil structure, nutrients and biology. All three components are analysed under the same roof, with a guaranteed turnaround time of 10 working days for the complete set of results.

By undertaking a Complete Soil Balance Analysis, The Mikhail System allows each component of soil to be analysed according to its individual characteristics. The underlying concept here is soil balance. Balancing a soil is what we are actually striving to achieve when we talk about soil health. A "healthy" soil is difficult to define – a balanced soil is an achievable, measureable goal that The Mikhail System can help you to accomplish.

How does The Mikhail System work?

The Mikhail System draws similarities between the humanbody and soil as being a living system. Just as the human body has specific requirements for proper skeletal, digestive and immunity function, the soil has specific requirements for structural, nutrient and biological function. These differ slightly according to individual requirements, both in humans, and also soil.



A Complete Soil Balance Analysis provides the current status of a soil's structure, nutrients and biology. Additionally, it provides the specific requirements to achieve that soil's optimum potential, that is, what it needs for all three components to function at its best. Finally, along with individual soil component requirements, the report explains how this should be executed so as to have all three components in balance with each other. The results of every test are tailored to specific land use options, so that a comparison can be made to assist the client in deciding how best to utilise their property.

Structural balance

Soil structure is affected by the relative proportions of exchangeable calcium, magnesium, sodium, potassium and hydrogen cations present in that soil. The significant difference with SWEP analyses is that the exchangeable hydrogen is measured, rather than estimated from the pH.

Besides soil water, there are other forms of exchangeable hydrogen in the soil. Exchangeable hydrogen is also found in soil colloids (humus and clay), however these operate differently (for example, humus is far more complex than clay). Research carried out by Ted Mikhail has shown that some of the exchangeable hydrogen in organic matter is required as an intrinsic part of its make up, so this part of the exchangeable hydrogen does not take part in the soil balance. Therefore, to measure the exchangeable hydrogen correctly, it must be adjusted according to each particular soil and total organic matter.

The following tables demonstrate how adjusting the exchangeable hydrogen according to the percentage of Organic Matter (OM%) of each soil affects the Cation Exchange Capacity (CEC).

In this first table, two very different soils appear to have a similar CEC, even though there is a significant difference between their OM% and exchangeable hydrogen.

	PH	OM%	Exchangeable H	CEC
Loamy fine sand	5.2	16.2	13.8	25.6
Heavy clay	6.6	4.4	8.3	25.4

The second table shows the same soils, this time with correctly adjusted exchangeable hydrogen relative to their OM%, and consequently, correctly adjusted CEC's.

	PH	OM%	Adjusted Exchangeable H	Adjusted CEC
Loamy fine sand	5.2	16.2	5.7	17.5
Heavy clay	6.6	4.4	6.1	23.2

In order to balance soil structure, it is necessary to balance the exchangeable cations so that they are in desirable relative proportions. To achieve this, the figures must be accurate to begin with. **The adjusted CEC that appears on all SWEP soil test results shows the correctly adjusted, measured exchangeable soil cation proportions. This allows for both soil variability and the importance of organic matter to soil function.** ***To our knowledge, currently only SWEP has the research, experience and technical capability to provide correctly adjusted, measured exchangeable soil hydrogen and thus exchangeable cation proportions.***

Balancing soil nutrients

The key concepts here are balance, soil and nutrients. SWEP soil analyses are performed according to specific information provided on the sample submission form from the client or their agent. To correctly balance soil nutrients, many variables must be addressed, as the analysis relies on the recorded soil depth, land use (crop or plant type), rainfall and/or irrigation details and target yield for each soil. Recommendations for nutrients (fertiliser and trace element requirements) are provided according to this information and relate to soil application for the growing season. That is, the soil requirements to enable it to function:

- At its optimum,
- Whilst supporting that particular crop,
- Aiming for that target yield and
- Assuming the specified amount of rainfall or irrigation allocation will be applied.

Therefore, if a particular land use is specified where the soil is greatly deficient in a particular nutrient essential to that plant for growth, the considerations must be:

- How long will it take to build up the soil for this particular nutrient to support this crop/ land use?
- Should I choose a less demanding/more suitable crop or land use in the meantime for this particular soil?
- Is it financially and logistically possible to supply these nutrients to the soil so as the crops will benefit immediately? E.g., will the application of certain nutrients do more harm than good (due to sheer quantity, nutrient lock up, risk of crop burn etc.) if I apply them all now?
- Should I perform a plant tissue test to determine what I can apply as foliar treatments to my current crop whilst I tackle building up the soil over a longer period?

SWEP provide up to three different land use options per sample at no extra cost, so you can compare crop types or target yields to assist you with your decisions. Extra land use options beyond three are also available at $11.00 each (inc. GST).

Soil biological balance

For a soil to perform at its optimum, balancing the biology is as important as balancing soil structure and nutrients. Simply having “biological activity” present is not necessarily an indication of a balanced or “healthy” soil. Consider the human digestive system for example. We have certain numbers of many different bacteria that allow us to function normally when they are in relative, balanced proportions. However, an overgrowth of a bacterial population can rapidly cause an upset digestive system. This example of high biological activity is certainly not healthy.

SWEP look for key indicator biological groups within soil, then determine their relative numbers and compare this to desirable indicator group ratios. The key indicator groups SWEP look for are:

- Actinomycetes,
- Yeasts,
- Photosynthetic bacteria,
- Fungi,
- Cellulose utilisers and
- Lactic acid bacteria.

This becomes especially important when choosing bioactive products to apply to the soil – products claiming they are “proven biological stimulants” are not necessarily beneficial to all soils, as different products encourage and/or suppress certain indicator groups. If a soil had high levels of a certain indicator group initially and a product known to encourage that particular group was applied, a further imbalance within the soil biological population could result. SWEP can determine which biological groups are present in a soil, their ratios and beneficial products to use to bring the total active biological population into balance.

The Mikhail System - Complete Soil Balance

A SWEP Complete Soil Balance Analysis not only provides the information to balance each component of soil, but also to create balance between these three components. Instructions and ongoing support are available to assist clients balancing their soil so that it can be undertaken in the right order, using the right ingredients with the right advice. SWEP are committed to educating growers about The Mikhail System - not product sales - so that everyone can experience optimum productivity from knowledge.

For further information please visit our website: www.swep.com.au or call us on 03 9701 6007.

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FACTSHEET 7

TIPS FOR ORGANIC GROWERS

This fact sheet outlines some important tips for organic growers so they can get the most out of their management and production systems.

Prior to organic transition

Before you begin the journey to organic production, there are a few factors you should have researched and clarified first. Some of these questions should include:

Have you had an Organic Soil Audit performed?
Organic certifying bodies have strict regulations on the presence of pesticides and heavy metal residuals in soil. SWEP have a comprehensive Organic Soil Audit test package which will provide you with what you need to know before you commence certification. This will also give you a chance to realistically evaluate whether any preparation or improvement needs to be undertaken prior to being locked into using only organic certified methods and/or products.

What do your neighbours do?
It's nigh impossible to separate practices with fencelines, no matter how good people's intentions are. So if your neighbours are fairly casual with their non-certified management then it could cause some serious issues down the track for you. It's a good idea to discuss your plans with your neighbours before you begin, particularly as it may open up opportunities (perhaps they want to jump on board as well) or reveal potentially frustrating situations (e.g. if they were planning on selling up sometime soon you'd have to go over this process again with the new tenants).

What soil preparation do I need to consider?
If you began to pay off a mortgage at the highest end of your budget, with little means to absorb any price increases, rate rises would ruin you eventually. Likewise, if the soil analysis shows a severe deficiency in potassium and nitrogen, and you want to grow potatoes, you're probably going to have to use chemical fertilisers initially to build up your soil before introducing a specific, nutrient and site suitable cultivar. Sure, there are plenty of organic fertilisers available that could achieve these nutrient levels, but application in such enormous amounts would be impractical.

Many people don't realise that successful organic producers didn't stop using chemical fertilisers overnight. They introduced different practices gradually over time, and worked with what they had in terms of soil suitability and land use. So in the case where you had planned to grow organic potatoes, you might conclude that this option will be too expensive and unreasonable to achieve and maintain organically in the long term. It may be better to concentrate on preparing the soil to produce (for example) organic barley or wheat instead.

Organic management practices

For those of you already practicing organic production, there are a few factors to be aware of to ensure your success.

- When calculating fertiliser requirements, you **must reduce the nutrients recommended in the test results by 30%** for manure, compost and other organic fertilisers.
- Manure and compost type fertilisers need to be **cultivated into the soil** during application, not just spread on the surface.
- All of the recommendations that are provided in a SWEP soil test are necessary for that soil to achieve optimum balance. They are not provided as an estimate, or an option, or for non-organic growers only.
- Weed infestations can be drastically improved by balancing the soil – particularly by correcting the soil structure. Correctly balancing exchangeable cations increases soil friability, hence also the space for soil air and water and improved root movement and nutrient exchange for desirable plants. However, adopting non chemical or organic practices will not **remove** weeds for you. Weeds can only be removed by physical or chemical intervention – i.e. you!
- Increasing soil biology is **not** necessarily good for the soil - instead, it is important to balance the total active biological populations. Similarly, regardless of whether it's certified organic or claims to stimulate this or that etc - using **any** product is not necessarily good for the soil without knowing the needs of the soil first.

Ongoing monitoring

SWEP provides a range of services relating to organic production, including:

- Soil tests for pre-certification, transition and monitoring, as well as
- Compost/fertiliser quality and monitoring analysis for organic consumers and industry suppliers

SWEP recommend you obtain advice from a reputable organisation for your organic production, particularly before and during certification transition. There are also many local, regional and industry bodies who can assist with specific production areas who can be contacted through the following links:

Rural Industries Research and Development Corporation (Organic farming):
http://www.rirdc.gov.au/RIRDC/programs/established-rural-industries/organics/organic-systems_home.cfm

Biological Farmers of Australia: http://www.bfa.com.au

Organic Federation of Australia: http://www.ofa.org.au

National Association of Sustainable Agriculture Australia:
http://www.nasaa.com.au

Australian Certified Organic:
http://www.australianorganic.com.au

For further information please visit our website: www.swep.com.au or call us on 03 9701 6007.