Feature	Result	Management Prescription
Sandy topsoil	•Poor plant available water holding capacity •Poor nutrient holding capacity •Increased risk of wind erosion •Potential for hydrophobicity	•Establish wind protection barriers •Maintain vegetative cover •Increase frequency of fertiliser (e.g. side dressings) and irrigations •*Dryland cropping* - minimum tillage and stubble retention, improve organic matter through maintenance of vegetative cover and growing green manure crops

Feature	Result	Management Prescription
Deep sandy profile	•Poor plant available water holding capacity •Poor nutrient holding capacity •Increased risk of wind erosion •Potential for hydrophobicity •Rapidly drained	•Grow appropriate species •Maintain vegetative cover •Improve organic matter through maintenance of vegetative cover and growing green manure crops •Establish wind protection barriers •Increase frequency of fertiliser (e.g. side dressings) and irrigations

Feature	Result	Management Prescription
Hydrophobic topsoil	•Poor infiltration of water into the soil •Increased risk of water and wind erosion •Poor seed germination	•Maintenance of surface vegetative cover •Claying (clay spreading) if appropriate •Reducing wetting/drying cycle differential

Feature	Result	Management Prescription
Strong texture contrast between topsoil and subsoil	•Strong texture and structure difference between the topsoil and the subsoil •Can result in impeded internal drainage •Can restricted root growth if subsoil close to the surface	•Improve organic matter through maintenance of vegetative cover and growing green manure crops •Reduce tillage •Optimise plant growth through regular balanced fertiliser program •Consider sub-surface drainage (if appropriate) if subsoil has impeded drainage is restricting root growth •Deep ripping if not dispersive

Feature	Result	Management Prescription
Shallow topsoil depth	•Reduced water and nutrient holding capacity •Reduced root growth •Potential for waterlogging •Water and wind erosion potential	•Improve organic matter through maintenance of vegetative cover and growing green manure crops •Reduce tillage to protect against water and wind erosion •Optimise plant growth through a regular and balanced fertiliser program •Consider sub-surface drainage (if appropriate) if the subsoil has impeded drainage and is restricting root growth

Feature	Result	Management Prescription
Bleached A_2 horizon	•Indication of waterlogged condition (impeded internal drainage) •Poor soil structure (often massive) •Low organic matter, water holding capacity and nutrition within the horizon	•Optimise plant growth through a regular and balanced fertiliser program •Improve organic matter through maintenance of vegetative cover and growing green manure crops •Install subsoil drainage if subsoil has impeded drainage (if appropriate) •*Dryland cropping* - include deep rooted crops in the rotation, minimum tillage and stubble retention. Apply gypsum if the topsoil is dispersive

Feature	Result	Management Prescription
Sodic subsoil	•Subsoil often has poor structure that can reduce water movement and plant growth •Poor water and air movement into the subsoil resulting in waterlogging (impeded internal drainage) •Poor root growth into the subsoil reducing the volume of the soil able to be exploited •Very difficult to cultivate particularly if topsoil is shallow •Limited working time (sets hard)	•Apply gypsum if the subsoil is dispersive and close to the surface and topsoil textures are light *Dryland cropping* - include deep rooted crops in the rotation, minimum tillage and stubble retention

Feature	Result	Management Prescription
Mottled subsoil	•Indication of periodic waterlogging, particularly if grey and yellow mottles predominate	•Consider sub-surface drainage (if appropriate) •Apply gypsum if subsoil is dispersive and close to the surface and topsoil textures are light

Feature	Result	Management Prescription
Subsoil dispersive when worked when wet	•Indication of soil sodicity. Soil structure collapses following tillage and wetting Results in poor soil structure (hardpans, surface sealing) that reduces water movement and plant root growth (see sodic subsoil). •Increases water erosion hazard. •Raindrop impact on bare soil is likely to result in structural degradation.	•Don't cultivate wet soil •Apply gypsum if growing high value crops and subsoil is close to the surface and topsoil textures are light

Feature	Result	Management Prescription
Alkaline subsoil	•Potential nutrient imbalance. •Unsuitable for alkaline intolerant plants.	•Grow shallow rooted species. •Grow alkaline tolerant plants.

Feature	Result	Management Prescription
Calcium carbonate nodules	•Potential for nutrient imbalance •Unsuitable for alkaline intolerant plants •Possible drainage restrictions if dense	•Grow alkaline tolerant species •Grown shallow rooted species if carbonate close to the surface •Supply trace elements ie zinc

Feature	Result	Management Prescription
Soil salinity at depth	•Poor or no plant growth for deeper rooted species •Indication of waterlogging (impeded internal drainage) or high water table	•Grow shallow rooted species •Increase plant water use throughout the catchment •Install subsoil drainage (if appropriate) •Minimise irrigation water loss below the root zone (improve irrigation efficiency)

Feature	Result	Management Prescription
Very low and low Plant Available Water Holding Capacity (PAWC)	•Poor plant available water holding capacity •Indication of light soil texture or shallow effective plant rooting depth (ie presence of restrictive layers, salinity, pH or structure)	•Improve organic matter through maintenance of vegetative cover and growing green manure crops •Increase effective rooting depth by reducing the effect of the restrictive layer •Addition of finer material (claying) on deep light textured soils

Feature	Result	Management Prescription
•Ferromanganiferous nodules	•Restricted root penetration Limit available water holding capacity •May be an indication of period waterlogging	•Select shallow rooted species if nodules are close to the surface •Improve topsoil by increasing organic matter and nutrition •Consider subsoil drainage (if appropriate) if subsoil has impeded drainage

Feature	Result	Management Prescription
•Ferruginous nodules •Ferric horizon	•Restricted root penetration •Limit available water holding capacity •May be an indication of period waterlogging	•Select shallow rooted species if nodules are close to the surface •Improve topsoil by increasing organic matter and nutrition. •Consider subsoil drainage (if appropriate) if subsoil has impeded drainage

Feature	Result	Management Prescription
•Ferruginous pan •Ferromangaiferous pan •Petroferric pan	•Restricted root penetration into the subsoil. •May be an indication of periodic waterlogging.	•Select shallow rooted species •Improve topsoil by increasing organic matter and nutrition •Ripping may assist if pan is continuous and close to the surface, include gypsum if subsoil is sodic •Consider subsoil drainage if subsoil has impeded drainage (if appropriate)

Feature	Result	Management Prescription
Acidic topsoil	•Potential nutrient imbalance •Unsuitable for acid intolerant plants •Potential for aluminium and manganese toxicity •Highly sensitive species (such as barley, lucerne, medics, phalaris and some wheat varieties) may be affected •Deficiencies in molybdenum, calcium, and potassium may also occur	•Apply lime. Raising the pH level of the surface soil will help reduce aluminium and manganese toxicity. A lime test (sampled at paddock level) may be appropriate to determine how much lime is needed to raise the pH level. Also raises the availability of nutrients

Feature	Result	Management Prescription
Acidic subsoil	•Potential nutrient imbalance •Unsuitable for acid intolerant plants •Potential for aluminium and manganese toxicity •Highly sensitive species (such as barley, lucerne, medics, phalaris and some wheat varieties) may be affected •Deficiencies in molybdenum, calcium, and potassium may also occur	•Grow acid tolerant species or varieties if acidic subsoil is deep •If the acidic subsoil is close to the surface apply lime. Raising the pH level of the surface soil will help reduce aluminium and manganese toxicity. A lime test (sampled at paddock level) may be appropriate to determine how much lime is needed to raise the pH level.

Feature	Result	Management Prescription
Limestone	•Highly alkaline layer. Can restrict root growth of sensitive plant species •Potential for nutrient imbalance; some nutrients more available, some less available •May restrict water movement if layer is hard rock	•Grow alkaline tolerant species. •Grow shallow rooted species if limestone is close to the surface •Supply trace elements ie zinc •Considered sub-surface drainage (if appropriate) if limestone causing internal waterlogging

Feature	Result	Management Prescription
Hardsetting topsoil	•Possibly clay texture •Possibly sodic •Poor seed germination and seedling establishment •Poor root growth and exploration of the topsoil •Poor infiltration of water into the topsoil and air movement through the topsoil	•Apply gypsum if the topsoil is dispersive •Build up organic levels and green manure •*Dryland cropping* - include deep rooted crops in the rotation, minimum tillage and stubble retention

Feature	Result	Management Prescription
Shallow soil	•Poor plant available water holding capacity •Poor nutrient holding capacity. Restriction for root growth	•Select shallow rooted species •Improve organic matter through maintenance of vegetative cover and growing green manure crops to increase the available water and nutrient holding capacity

Feature	Result	Management Prescription
'Coffee rock' layer	•The 'coffee rock' layer may restrict the downward movement of plant roots and water.	•If 'coffee rock' is deep, plant deep rooted species. In some situations, the temporary build up of water on top of this less permeable layer may be beneficial for deeper rooted plants in that it prevents deep drainage of water away from plant roots. •If 'coffee rock' is shallow select shallow rooted species.

Feature	Result	Management Prescription
Cracking soil	•Uneven levels of infiltration that is highly permeable when dry and almost impermeable when saturated. •Cracking soils are often prone to structural degradation (e.g. compaction, smearing) when worked in moist conditions •Soil is often strongly alkaline, particularly at depth •Variation in soil properties can often occur over a short distance due to gilgai microrelief	•Tillage of cracking clay soils should be avoided if the soil is wet. At such moisture conditions excessive tillage, trafficking or overstocking can result in structural degradation. Ideally, tillage and trafficking should take place when the soil is drier than the plastic limit.

Feature	Result	Management Prescription
Clay throughout	•Almost impermeable when saturated. Internal drainage may be poor. These soils are typically Cracking soils	•Tillage of clay soils should be avoided if the soil is wet. At such moisture conditions excessive tillage, trafficking or overstocking can result in structural degradation. Ideally, tillage and trafficking should take place when the soil is drier than the plastic limit.

Feature	Result	Management Prescription
Topsoil dispersive when worked when wet	•Possibly clay texture •Possibly sodic. Soil structure collapses following wetting resulting in poor structure that reduces water movement and plant growth •Poor seed germination and seedling establishment •Poor root growth and exploration of the topsoil •Poor infiltration of water into the topsoil and air movement through the topsoil	•Avoid cultivation and tillage of this soil if wet •Apply gypsum •Build up organic levels and green manure •*Dryland cropping* - include deep rooted crops in the rotation, minimum tillage and stubble retention •*Horticulture* – maintain optimum plant growth in between the rows. Minimum tillage and surface vegetative cover

Feature	Result	Management Prescription
Subsoil dispersive when dry	•Indication of soil sodicity. Soil structure collapses following wetting resulting in poor soil structure that reduces water movement and plant root growth (see sodic subsoil). •Increases water erosion hazard.	*Dryland cropping* - apply gypsum, if subsoil is close to the surface and topsoil textures are light. Include deep rooted crops in the rotation, minimum tillage and stubble retention. *Horticulture* - apply gypsum, maintain optimum plant growth in between the rows. Minimum tillage and surface vegetative cover.

Feature	Result	Management Prescription
Coarse fragments	•Restricted root penetration into the subsoil, if above the subsoil. •Restricted water and nutrient holding capacity of the soil	•Select shallow rooted species. •Improve topsoil by increasing organic matter and nutrition. •Ripping may assist if coarse fragments are small and close to the surface, include gypsum if subsoil is sodic.

Feature	Result	Management Prescription
Topsoil dispersive when dry	•Possibly clay texture •Possibly sodic. Soil structure collapses following wetting resulting in poor structure that reduces water movement and plant growth •Poor seed germination and seedling establishment •Poor root growth and exploration of the topsoil •Poor infiltration of water into the topsoil and air movement through the topsoil	•Apply gypsum •Build up organic levels and green manure •*Dryland cropping* - include deep rooted crops in the rotation, minimum tillage and stubble retention •*Horticulture* – maintain optimum plant growth in between the rows. Minimum tillage and surface vegetative cover

Feature	Result	Management Prescription
Sodic topsoil	•Potential for topsoil to become hardsetting •Poor seed germination and seedling establishment •Poor root growth and exploration of the topsoil •Poor infiltration of water into the topsoil and air movement through the topsoil •Increases water erosion hazard	•Apply gypsum •Build up organic levels and green manure •*Dryland cropping* - include deep rooted crops in the rotation, minimum tillage and stubble retention