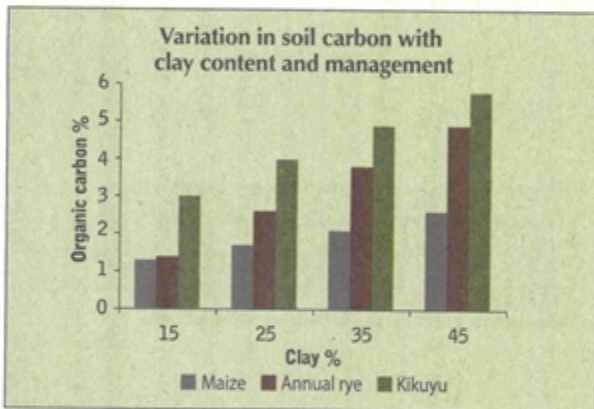


Make the most of your fertiliser applications

While many factors affect crop production results, fertiliser inputs are among the most important.

Kynoch's agricultural advisor for the KwaZulu-Natal Midlands, **Hugh Smith**, explained how farmers can make the most of their fertiliser applications to **Lloyd Phillips**.

Figure 1



TABLES COURTESY OF HUGH SMITH/KYNOCH & DR M FARINA

Figure 2

Effect of cover on maize yields (t/ha) – after Farina 2011 – Sasta conference				
Treatment	07/08	08/09	09/10	10/11
No cover	16,12	11,99	13,45	14,14
With cover	16,62	13,29	14,65	14,34
% Diff	3,0%	10,8%	8,9%	1,4%
Rainfall (mm)	792	667	604	940

Figure 3

Percentage topsoil moisture content (0-60mm) affected by cover – after Farina 2011			
Treatment	28 DAP	73 DAP	135 DAP
No cover	7,7	7,2	12,9
With cover	15	13,7	20,9
% Diff	95%	90%	61%

Figure 4

Effect of cover on earthworm counts and infiltration rates – after Farina 2011				
	09/10	10/11	09/10	10/11
Treatment	Worms/m ²	Worms/m ²	Infiltration (min/20ℓ)	Infiltration (min/20ℓ)
No cover	4,75	18,3	13,6	70,5
With cover	22,1	53,3	3,8	13,1
% Diff	365	191	257	438

It is not always appreciated that fertilisers have to be applied with precision in order to provide crops with the macro- and micro-nutrients they require to deliver optimum yields. In fact, if mistakes are made with the choice of fertiliser and its application method and rate, farmers can lose money as well as bring about undesirable soil acidity levels and increased soil salinity.

SOIL COVER AND ORGANIC CONTENT

At the same time, using inorganic fertiliser correctly cannot on its own provide the best soil environment for crops. Soils devoid of beneficial organic matter cannot help crops reach their full potential even if large quantities of inorganic fertilisers are applied.

Soils low in clay content require no-till or conservation tillage methods, green manure crops, and as much crop residue in the lands as possible to build up organic matter (see Figure 1). Studies have found that in soils with a 15% clay content, kikuyu pasture provides 3% organic carbon, annual ryegrass pasture provides just under 1,5%, and maize delivers just over 1%. In the KwaZulu-Natal Midlands, where soil clay content is



LLOYD PHILLIPS

HUGH SMITH

typically over 45%, kikuyu pasture provides nearly 6% organic carbon, annual ryegrass pasture just under 5%, and maize 2,5%. It is obvious that maize farmers must supplement this crop type's contribution to soil's organic matter by using the alternative methods already mentioned.

A study conducted by KwaZulu-Natal soil scientist Dr Mart Farina found that using crop residues to cover a maize land resulted in significant improvements to the yield of the following maize crop when compared with maize grown in uncovered soil (see Figure 2). During the 2007/2008 summer, during which 792mm of rain fell, the uncovered land yielded 16,12t/ha of maize while the covered land yielded 16,62t/ha – a 3% difference. Over the next three years, the covered land yielded more every year. In the 2008/2009 summer it produced 10,8% more,

Figure 5

Effect of a winter fire on summer maize – after Farina 2011		
Treatment	Yield (t/ha)	Infiltration rate (min/20ℓ)
Cover burnt	3,1	52
Unburnt	9,4	11