

SOUTH AFRICAN SUGAR INDUSTRY

AGRONOMISTS' ASSOCIATION

Cat. No.: 1367

TITLE: Zinc Oxide and Zinc Sulphate compatibility tests with herbicides  
(Observation)

Procedure

Mixture of herbicide treatments were made up with quantities of ZnO or ZnSO<sub>4</sub> such that the application of Zn was 11 kg/ha and herbicide treatments X1 or X2 of standard recommended rates in 1ℓ of water. Beakers with each mixture were observed at mixing and subsequently for a period of about a week to assess any changes.

No tests were conducted subsequently on efficacy of mixtures.

Rates of mixtures were: (Standard rates X1)

	<u>Mixture</u>	<u>g or ℓ product</u>
1	Diuron 80 + MCPA 40 + S + ZnO	8,3 + 13 + 20 + 46,6
2	Lasso 48 + atrazine 500 + ZnO	13 + 10 + 46,6
3	Diuron + Actrin/DS 70 + ZnO	8,3 + 6,5 + 46,6
4	Ametryne 500 + MCPA + ZnO	10 + 13 + 46,6
5	Diuron + Sencor 70 + ZnO	6,5 + 6,5 + 46,6
6	Diuron + Velpar 90 + ZnO	8,3 + 1,66 + 46,6
7	Diuron + Actril DS + ZnSO <sub>4</sub>	8,3 + 4,1 + 165
8	Lasso + atrazine + ZnSO <sub>4</sub>	13,2 + 10 + 165
9	Diuron + Sencor + ZnSO <sub>4</sub>	6,6 + 6,6 + 165
10	Diuron + Velpar + ZnSO <sub>4</sub>	8,3 + 6,6 + 165
11	MCPA + ZnSO <sub>4</sub>	23,1 + 165

Results

ZnO

a) With wettable powder

No reaction occurred but ZnO came out of suspension very quickly. ie considerable agitation would be required.

b) With EC's and FW's (liquid formulations)

No visible reaction but some complexes appeared to be formed. However this did not occur to a great extent and the mass was still soluble. ie can be dissolved. ZnO still dropped out of suspension with wettable powders.

ZnSO<sub>4</sub>a) With wettable powders WP's

No reaction or complex formation. Solids came out of suspension but with agitation remained suspended.

b) With EC's or FW's

No visible reaction occurred but solids came out of suspension leaving a translucent liquid which should be opaque. ie some chemical change had occurred. With MCPA a sticky insoluble mass was formed.

Conclusions

1. ZnO could be mixed with wettable powders but an efficient agitation system would be required to keep the solids in suspension. Normal agitation is not expected to be adequate.
2. ZnO is not acceptable for mixing with liquids since a mass is formed which would constantly have to be redissolved by good agitation. No comment is possible on the changes to weed control or Zn efficacy as an additive.
3. ZnSO<sub>4</sub> appears to be satisfactory for mixing with wettable powders although no tests were conducted on weed control or Zn efficacy as an additive. Good agitation would be necessary as solids come out of suspension.
4. ZnSO<sub>4</sub> appears to cause some chemical change when mixed with liquid herbicide formulations and hence would require more comprehensive tests to determine the effects on product efficiency before this could be recommended.

PETT/IS  
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