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SOUTH AFRICAN SUGAR INDUSTRY

AGRONOMISTS' ASSOCIATION

Code: HW273/86
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TITLE: Low volume application of herbicides

OBJECTIVE: To test herbicides, in various formulations and mixtures for their ability to flow adequately in gravity-fed spinning disc applicators.

EXPERIMENTAL: Herbicide mixtures were prepared at standard rates for application in 30 or 45 l volumes per hectare at a row spacing of 1,4m. Each mixture was then allowed to flow through the system by gravity and the output collected over thirty second periods. A water sample was tested after each chemical run.

RESULTS: See Table 1

COMMENTS:

1. The addition of herbicides to water generally caused a slight reduction in flow rates with the Birky sprayer. The effects depended on the herbicide mixture used. Powder suspensions (eg Sencor, diuron) and solutions (eg Velpar) showed least effect on flow rates, while flowable formulations (such as ametryne 500) and emulsifiable concentrates (such as Lasso) caused progressively greater reductions in flow rates.
2. Flowable formulations and water soluble powders mixed well while powderstended to settle out if left to stand. The mixture of diuron plus Actril DS caused the most sedimentation in the pipes and this was difficult to clean out. Lasso + ametryne was noticeably viscous while the addition of surfactant to ametryne + Sencor even at high concentrations showed no beneficial effect in increasing flow rates.
3. It thus appears that ideally each mixture should be calibrated with the equipment before spraying and most particularly when flowable formulations are to be used.

PET/FK
24 April 1986

Table 1. Chemical mixture flow rates through the Ciba Geigy (Birky) gravity-fed, spinning disc sprayer

Herbicide mixture	Chemical rate/ha	Nozzle	Output ml per 30 seconds					Water*	Percent water	Comments
			1	2	3	4	Mean			
Water	-	Yellow	129	131	130	130	130	130	100	-
Water	-	Red	190	191	192	191	191	191	100	-
Diuron 80 WP	4	Red	184	188	188		187	192	98	Some powder settled out. Not easily washed out.
Sencor 70 WP	2	Red	189	193	191		191	195	98	Mixed well. No sediment.
Ametryne 500 FW	8	Red	178	178	178		178	194	92	Mixed well. No sediment.
Ametryne + Sencor	8 + 2	Red	183	185	184		184	195	94	Some settling if allowed to stand.
Ametryne + Sencor + Surfactant	8 + 2 + 0,2%	Red	185	187	186	184	185	192	95	Mixed well.
Ametryne + Sencor + Surfactant	8 + 2 + 2%	Red	184	183	185		184	191	94	Mixed well.
Velpar 90 SP	0,75	Red	190	193	193		192	192	100	No problems.
Diuron + Actril DS (70 EC)	2,5 + 1,25	Red	180	189	190	189	190	195	97	Sediment in pipes but flow acceptable.
Diuron + Actril DS + Velpar	2,5 + 1,25 + 0,5	Red	185	190	189		188	191	98	Some sediment in pipes
Lasso 384EC + Ametryne + Sur.	6 + 6 + 0,2%	Red	174	174	177	176	175	192	91	No sediment, mixture slightly viscous.
Lasso + Ametryne + Actril DS	6 + 6 + 1,25	Red	173	175	174		174	193	90	

* Mean output from one, two or three runs of water only after each herbicide mixture.