

# Knockdown herbicides – check list for best results

- ▶ Can be used for a range of broadleaf weeds, vines and annual grass species, mainly as a post emergent application
- ▶ When there is grass present and the cane has emerged a directed application is recommended
- ▶ Seek advice on the weed species present and the most appropriate mixture for the job
- ▶ Seek advice on recommended water volumes as low volume spraying (high herbicide concentration) may cause phytotoxicity to the cane
- ▶ Seek advice on the recommended adjuvant
- ▶ **Always read the label**



# Residual herbicides – points to consider

- ▶ Due to the range of grass species, broadleaf weeds and vines found in most blocks it generally recommended a mixture of two herbicides is used , plus a knockdown herbicide in plants are already established
- ▶ The products used in plant cane early in the season will be more effective due to better soil moisture and lower temperatures
- ▶ Seek advice on products suited for application to trash blankets in ratoons as products may not be as effective



## Residual herbicides–

### points to consider

- ▶ A different management strategy will be required for a GCTB than a burnt cane system
- ▶ Herbicide efficacy is generally reduced for most pre emergent products when applied to GCTB
- ▶ Herbicides applied to trash blankets are at a higher risk of being moved off site due to high rainfall events
- ▶ Most herbicides require 48 hours to be fully bound to the soil particles



## Incorporation of herbicides

- ▶ Trifluralin not to be applied in plant cane until after cane emergence– root growth
- ▶ All need incorporation soon after application– except Balance<sup>®</sup>
- ▶ The activity of Velpar<sup>®</sup> K4™ DF<sup>®</sup> (subject to new use restrictions), Dual<sup>®</sup> Gold & Flame<sup>®</sup> is improved with some incorporation
- ▶ Problems with incorporation with limited irrigation water or uncertain rainfall
- ▶ Consider mechanical incorporation



## Notes for sandy soils

- ▶ Diuron – not for soils with low (<1%) organic matter
- ▶ Flame® - setts require at least 5cm of soil cover in plant sugarcane
- ▶ Balance®- not for soils with CEC below 4.5 or OC 1% or less, unless CEC is greater then 9.5
- ▶ Caution with Velpar® K4™ DF® but Compatriot® OK
- ▶ Soccer® – Not for use on very light sandy soils. Caution with hot dry soil conditions.
- ▶ **Diuron & diuron/hexazinone use subject to new regulations in the wet tropics**



## Chemical mixing order

Chemical	Example
60-80% of required water volume	
Water conditioners/ acidifiers	Bonus®, Liase, LI 700®
Wettable/ Dispersable powders	
Dry flowable granules (WDG)	Diurex®, Velpar® K4™ DF®, Atradex®, Soccer®, Ametrex®, 800WG Balance® 750WG
Flowables (suspension concentrates)	Gesapax® Combi, diuron flowable
* Wetter- if using EC's	Activator 90®, Agral, LI-700®***
Emulsifiable concentrate (EC)	Triflur® X, Stomp® Xtra
Water soluble concentrates, aqueous solutions	Amicide, glyphosate, paraquat
Ints	Chemwet, oils **



## Mode of action (reviewed end of 2011)

- ▶ **Group A (H<sub>5-5yrs</sub>)– Inhibitors of fat synthesis.**  
(Fat synthesis –used in cell membranes, plant cuticle)  
*Grass herbicides: Fusilade Forte, Verdict™520*
- ▶ **Group B (H)– Acetolactate Synthase(ALS)**  
Prevent the formation of amino acids. (proteins)  
*Soil activity: Flame\*, Sempra\*, Krismat\*, Hero\**
- ▶ **Group C (Med<sub>5-8yrs</sub>)– Inhibitors of Photosynthesis**  
Block high energy electrons  
*Non selective/selective, foliar and root absorbed*  
Atrazine, ametryn, diuron, velpar, soccer,  
ioxynil, terbutryn ,Basagran,Krismat



## Mode of action *cont...*

- ▶ **Group D (Med)– Inhibitors of microtubule assembly.** Prevent cell division.  
*Soil activity: Stomp\*, trifluralin*
- ▶ **Group G (M–LOW<sub>8-12+yrs</sub>)– Inhibitors of Protoporphyrinogen Oxidase.**  
Prevents chlorophyll formation.  
*Pre emergent control: none registered for sugarcane*
- ▶ **Group H (M–Low)– Inhibitors of dioxygenase.**  
Bleaching herbicides  
*Root & crown absorbed: Balance\**



## Mode of action *cont.*

- ▶ **Group I (M-Low) Disrupters of plant cell growth.**  
Leads to abnormal & rapid growth  
Foliar absorbed: 2,4-D, MCPA, dicamba, starane
- ▶ **Group J (M-Low) Inhibitors of fat synthesis**  
Absorbed by roots and leaves: 2,2-DPA
- ▶ **Group K (M-Low) Inhibitors of cell division**  
Pre & post emergent activity  
s-metolachlor, metolachlor
- ▶ **Group L (M-Low) Inhibitors of photosynthesis**  
Non selective contact herbicides  
Paraquat, Diquat



## Mode of action *cont...*

- ▶ **Group M (M-Low)– Inhibitor of EPSP synthase.**  
Prevents the formation of aromatic amino acids.  
*Non selective systemic action:* **glyphosate**
- ▶ **Group N (M-Low)– Inhibitor of glutamine synthase.**  
Stops inorganic nitrogen being converted into useful compounds.  
*Non selective contact herbicide:* **Basta®**
- ▶ **Group R (M-Low)– Inhibitors of DHP.** Inhibits the synthesis of fatty acids.  
Pre & post emergent control of grass. **Asulam**
- ▶ **Group Z (M-Low)– Herbicides with unknown of diverse sites of action.** Ideal for resistance management.  
Contact herbicide for annual & perennial grass.  
**Daconate® (MSMA)**

