Herbicide Diagnostic Field School

The BCG ran a very successful herbicide diagnostic field school at Birchip in early August, 2000. 14 different demonstrations were set up with over 150 herbicide mixes on a wide variety of crops for the field school. Dr Linda Hall from Alberta Agriculture was the main speaker and Linda delighted the audience with her wit and excellent knowledge of herbicide activity. Over 200 people from the chemical companies, trade, Department and BCG members attended the days of the field school.

The herbicide demonstrations were:
1. herbicide effects by mode of action
2. grass herbicide effects on broad leaf crops
3. grass herbicide effects in wheat and barley
4. di-nitro-aniline and triazine effects on wheat and barley
5. effects of SU herbicides on three wheat varieties
6. early post emergent herbicide drift damage
7. controlling regular, TT and IT canola volunteers in wheat
8. residual knockdown effects on broadleaf crops
9. disease - herbicide interactions
10. frost effects on crop from some herbicides
11. spray conditions for grass herbicides
12. water quality and herbicide efficacy
13. new herbicides
14. nozzles

The overall opinion of those attending was that the field school was essential learning for all those who are involved in using herbicides. The main focus was on understanding the herbicide groups and their activity, to improve herbicide management and use, especially in relation to resistance. There is so much to learn about how herbicides affect weeds and crops, as well as environmental conditions, adjuvants, water quality and nozzles. When farmers spend between 5 to 10% of their gross farm income on herbicides per year - they and their advisers should be up to date with the latest information. Unfortunately Australia does not have a certification program for crop advisers and our knowledge is not as good as it should be.

The BCG will run another Herbicide Field School this year in August. Linda Hall has not committed yet to make the trip over again but with a bit of luck we hope we can convince her. We are also planning to run a Fungicide Diagnostic Field School together with the WFS (Wimmera Farming Systems Group) at Rupanyup later this year. We have invited a speaker from Canada and are in the planning stages for the demonstrations.

	Dr. Linda Hall, explaining herbicide groups and their mode of action on crops and weeds to participants at the diagnostic field school

The BCG are preparing a manual with a photographic record of the main demonstrations at the herbicide field school. An example of the type of information is given below.

DIAGNOSTICS FOR GROUP A HERBICIDES

Visual symptoms appear 7 to 10 days after spray application

Effect on susceptible grasses 1. Select (12 days after spraying)		
Yellowing of leaf base		Centres of new leaves pull out

GROUP A. INHIBITORS OF THE ENZYME ACCASE (FOP AND DIM GROUP)

Fops		**Dims**
Hoegrass	Shogun / Correct	Achieve
Wildcat	Targa	Sertin and Sertin Plus
Fusilade	Tristar	Select
Verdict / Appeal	Fusion (also part Dim)	Fusion (also part Fop)
Topik		

ACTIVITY

- inhibits enzyme activity (acetal co-enzyme A carboxylase - ACCase), required for the synthesis of fatty acids (fatty acids are required in cell membranes)
- grass herbicides only (the enzyme in broad leaf plants is slightly different)
- fops and dims affect same target site (but may bind slightly different)
- slow to move within the plant (translocation is slow)
- selectivity between weed and crop is due to the rapid metabolism of the herbicide in tolerant crops (ie. wheat is able to break down Hoegrass rapidly whilst wild oats cannot do this, hence the herbicide is active in wild oats but not in wheat). It also means that in poor growing conditions when metabolism is slow (ie. cold and droughty conditions) the crop effect of the herbicide can be quite large even in tolerant crops

APPLICATION INFORMATION

- ACCase activity is highest at the base of actively growing leaves (it is very important to get the herbicide to run down the leaves into the base of the leaves and the crown of the plant)
- essential to get good coverage - keep water rates up and use fine droplets
- dims should be used with water which contains few dissolved minerals. Adding Ammonium Sulphate may help (Ammonium Sulphate acts by binding the salts).
- dims degrade rapidly in sunlight. Applying dims in late afternoon (watch dews) or on overcast days may be better than in full sunlight
- rapid take up into leaves is essential for these herbicides to work effectively. It is strongly recommended to use the correct adjuvants with dims.

OTHER IMPORTANT POINTS

- fops are weak acids
- both fops and dims are broken down in the soil by microbial activity (no residual soil activity)
- Verdict has activity on the broadleaf weed Erodium