fluometuron were applied at the one time. On the other hand, there was a general absence of broad-leaf weeds in the second experiment described despite the lack of grass control by simazine. Thus the subsequent control of the grasses by carbetamide illustrates the potential value of sequential applications of complementary herbicides. Moreover, the required rate of each herbicide may be reduced when sequential application is employed (Baldwin and Armsby 1970; Short 1972). As such a program could be economically advantageous, the sequential application of triazine or substituted urea herbicide and carbetamide to lupins warrants investigation.

BENTAZON - A BREAKTHROUGH IN THE CONTROL OF DATURA IN SOYBEANS

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Broad-leaf weed control has been identified as a major production problem in soybeans in Australia. In New South Wales, where most soybeans are grown with irrigation, the two important weeds are *Datura* spp. (thornapple) and *Xanthium* spp. (Noogoora burr).

Trifluralin, linuron and chlorthol dimethyl are the herbicides currently registered for use in soybeans but do not satisfactorily control these problem weeds.

Since 1970 the following herbicides have been tested in soybeans:

trifluralin	chlorbromuron	chloroxuron	oxadiazon
nitralin	metobromuron	chlorthal dimethyl	bifenox
linuron	fluorodifen	alanap/CIPC	metribuzin
prometryne	propachlor	vernolate	glyphosate
prynachlor	alachlor	chlornidine	bentazon

Several of these herbicides may be useful in some situations but have not shown out under the conditions of test, viz. unreliable rainfall and furrow irrigation.

The first real success in *Datura* control was with bentazon. This is a post-emergence applied herbicide which is very effective on both *Datura* and *Xanthium* and any phytotoxicity to the crop is mild and transient.

Bentazon was one of five herbicides included in an experiment at the Liverpool Plains Field Station, Breeza, in 1974/75. The experiment was carried out on an area which had been sown to *Datura* several seasons earlier to ensure an established weed population. The bentazon treatments were 0.5, 1.0 and 2.0 kg ha^{-1} a.i. applied 7 weeks after sowing and 0.5 + 0.5, 1.0 + 1.0, and 2.0 + 2.0 applied as a split application 4 and 8 weeks after sowing. Soybean cv. Lee was sown on 26.11.74 in 96-cm rows and the herbicide treatments were applied at 500 ℓ ha^{-1}.

Summarized results of the experiment are:

Treatment	Datura density at harvest No. per m^2	Soybean yield kg ha^{-1}
Hand weeded control	0.5 (1.00)*	2549
Weedy control	26.3 (5.18)	329
Bentazon 0.5	19.2 (4.44)	715
Bentazon 1.0	16.9 (4.18)	968
Bentazon 2.0	2.3 (1.68)	1754
Bentazon 0.5 + 0.5	4.0 (2.11)	2225
Bentazon 1.0 + 1.0	2.8 (1.83)	2061
Bentazon 2.0 + 2.0	0 (0.71)	2584
L.S.D. 5%	(1.61)	611

* $\sqrt{x + \frac{1}{2}}$ transforms

Following spraying it was most apparent that weeds not contacted because of shielding from the crop or larger weeds were not controlled. Weeds germinating after spraying were also not controlled. The split application technique at the lower rates was more effective than a single application at the highest rate.

This result is considered most significant in the development of a satisfactory herbicide control measure in soybeans. The expansion of the industry in many of the irrigation areas will be dependent on selective chemical control of weeds such as *Datura* and *Xanthium*. Bentazon may well be the answer to this problem.

Soybean yield was not significantly greater than the weedy