Thanks to Monterey Bay Chapter of CAPCA for the refreshments

- **Meeting Code:**
  - **A-1273-10**

Weed control strategy in peppers and implication for other crops

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Weed Control Materials Registered for Peppers in California

- Preplant
  - Paraquat
  - Roundup
  - Metam Sodium
- Preemergence
  - Goal[1,2]
  - Prefar
  - Devrinol
  - Treflan
  - Dual Magnum
  - Prowl H2O
- Layby
  - Dacthal
  - Dual Magnum
  - Prowl H2O
- Postemergence
  - Sandea
  - Poast
  - Select Max

1-Preformed beds up to 30 days prior to transplanting, must work beds;
2-applied to shaped beds and tarped

Unresolved Weed Control Issue

- In the coastal production district, malva continues to be a expensive and difficult to control weed late in the season

Malva

Need for an Effective Layby Herbicide

- The long growth cycle make pepper susceptible to late-season weeds
- Late in the season, growers have exhausted their weed control budget and late season weeds can overtake fields

Malva infestation prior to harvest
- Can be expensive to control
- Can reduce quality of peppers

Pepper Herbicides

WEEDS	Prefar	Dacthal	Dual Magnum	Devrinol	Prowl H2O	Treflan	Chateau
CHICKWEED	P	C	C	C	C	C	C
N.L. GOOSE FOOT	P	C	P	C	C	C	C
GROUNDSEL	N	N	N	C	N	N	C
HENBIT	N	P	-	N	C	C	C
LAMBS QUARTERS	C	C	P	C	C	C	C
MALVA	N	P	P	P	P	N	C
BURNING NETTLE	P	P	C	P	N	N	C
BLACK NIGHTSHADE	N	P	C	N	N	N	C
HAIRY NIGHTSHADE	N	P	C	N	N	N	C
YELLOW NUTSEDGE	N	N	P	N	N	N	P
PIGWEED	C	C	C	C	C	C	C
PURSLANE	C	C	C	C	C	C	C
SHEPERD'S PURSE	N	N	P	P	P	N	C
SOW THISTLE	N	P	P	C	N	N	C

Treatment	Application	Material/A	Malva	Total weeds
Untreated	---	---	5.0	39.0
Dual Magnum + Prowl H2O	Directed	1.5 pints 2.0 pints	5.3	12.0
Chateau	Directed	3.0 oz	1.0	9.0
Chateau	Directed	6.0 oz	0.0	2.7
Broadstar 0.25G	Broadcast	37.6 lbs	0.7	3.7

Strategies Evaluated thus far to Fit Chateau into Pepper Weed Control Program

1. Application at transplanting
2. Use of water repellant adjuvant
3. Directed and hooded sprays
   (layby on beds – not furrow bottom)
4. Use of granular formulation (Broadstar)
5. Application on impregnated fertilizer

1. Application at transplanting

- Applying Chateau pre-transplant looked very effective
- However, pepper transplants are too tender at transplanting and can burn at the soil line
- This line of research was terminated

2. Use of water repellant adjuvant

- The water repellant adjuvant, DC-6184 has the potential to help the Chateau application to not stick to the pepper plant, but rather shed onto the soil, where it needs to be
- Unfortunately, this technique did not look promising in the 2009 trials and no further research is planned

Treatment	Application	Material/A	Phyto
Chateau	Directed	3.0 oz	1.3
Chateau	Directed	6.0 oz	2.7
Chateau +DC 1–6184	Directed	3.0 oz	1.7
Chateau +DC 1–6184	Directed	6.0 oz	2.0

3. Directed and hooded sprays

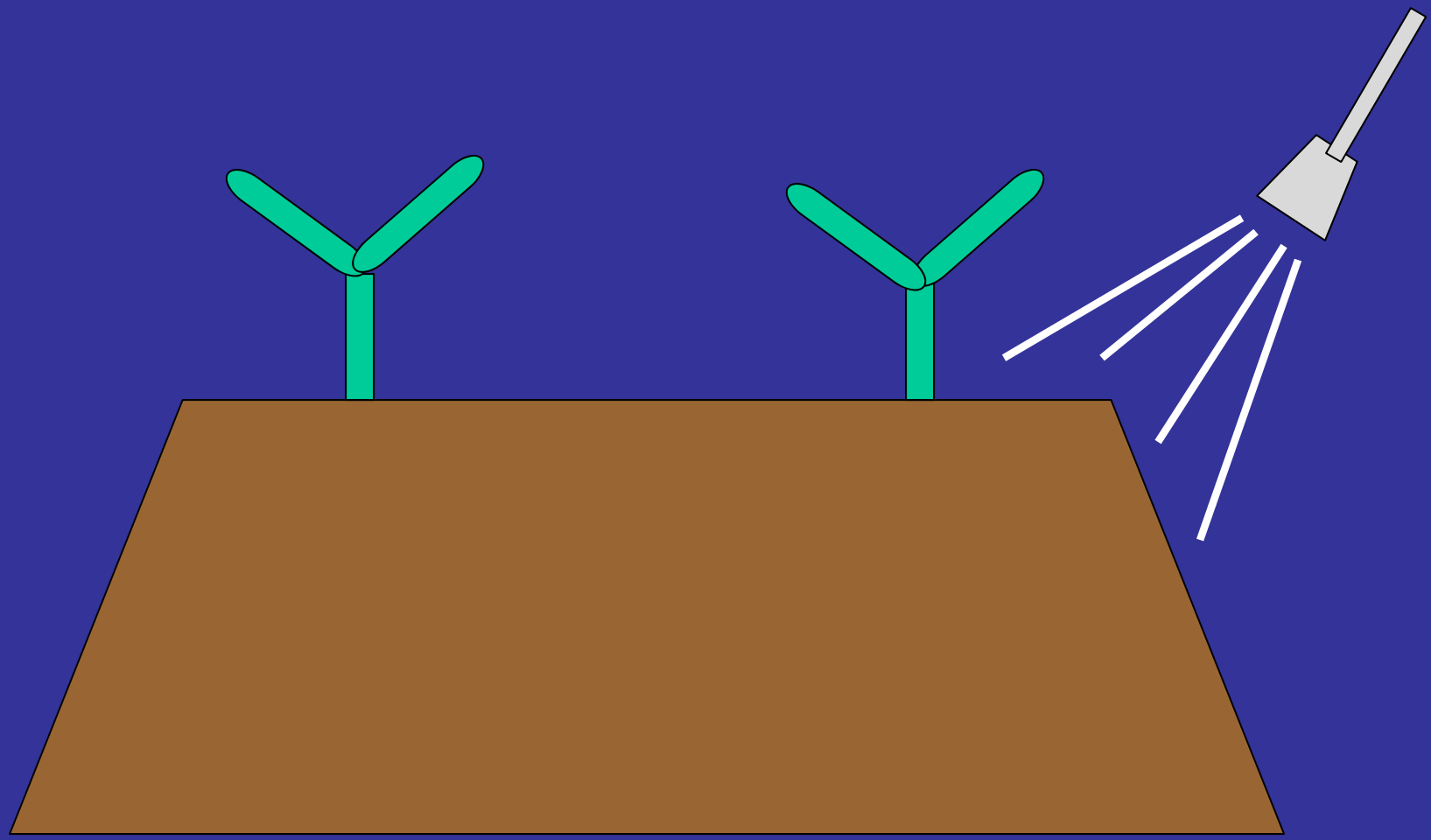
- Directed sprays at layby of Chateau to the base of the plant would be a great solution, however, pepper s are relatively sensitive to Chateau and the injury on the leaves can cause leaf drop
- It can cause spotting on the fruit as well

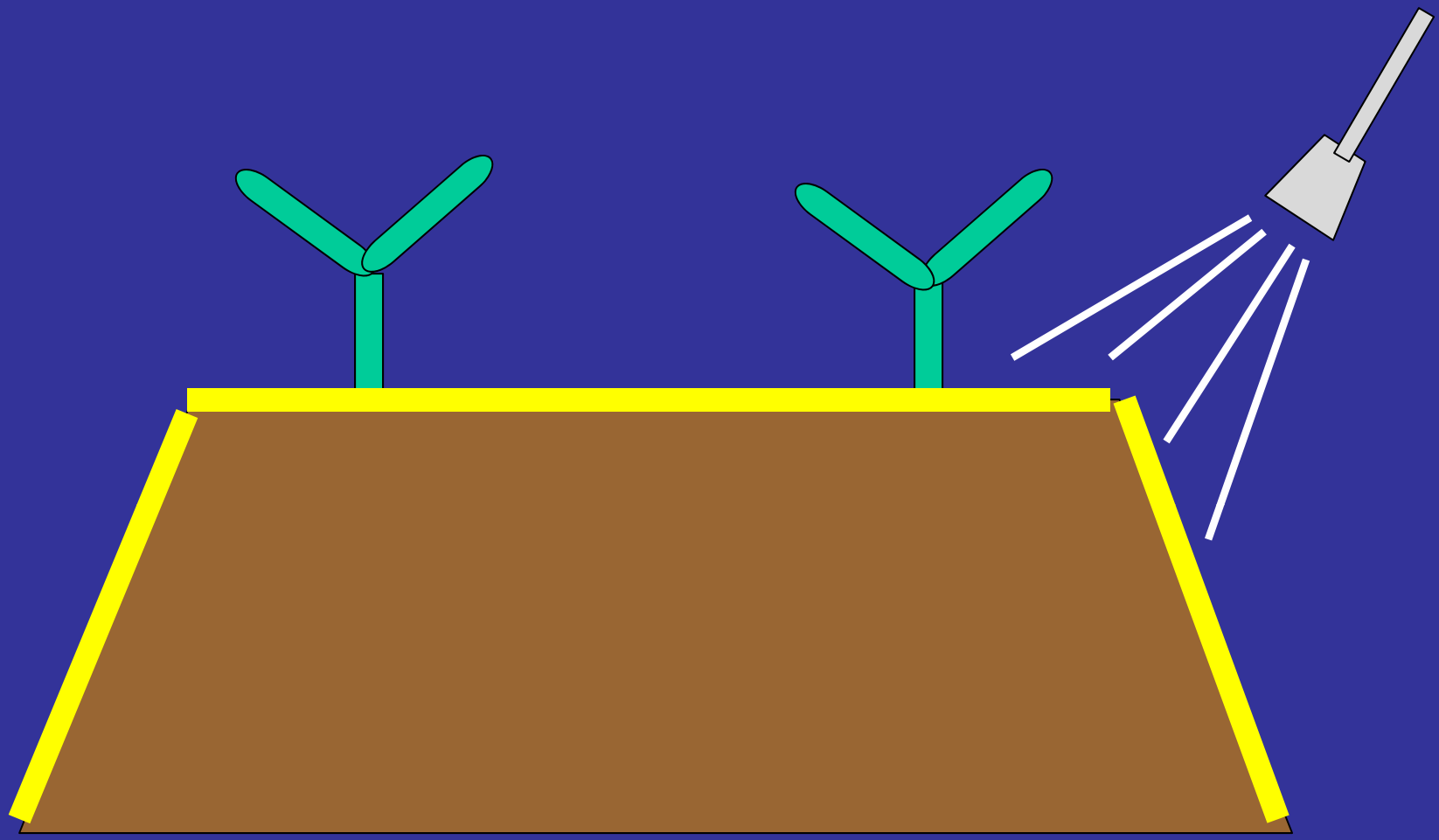
3. Directed and hooded sprays

- **Unfortunately Valent is not open to allowing an endemified label to allow this use**

We did not see big improvement in safety with shielded sprays, but this could probably be improved on

Treatment	Application	Material/A	Phyto
Chateau	Directed	3.0 oz	1.3
Chateau	Directed	6.0 oz	2.7
Chateau	Shielded	3.0 oz	1.3
Chateau	Shielded	6.0 oz	2.0





Sprays can provide good uniformity of application over the bed, the key is keeping the spray off the peppers

4. Use of granular formulation (Broadstar)

- There is a 0.25% granular formulation of flumioxazin, the same chemical as in Chateau, called Broadstar
- It is registered in ornamentals
- This material shows a great deal of promise in peppers, but given the price structure, we cannot economically rationalize its use in vegetables

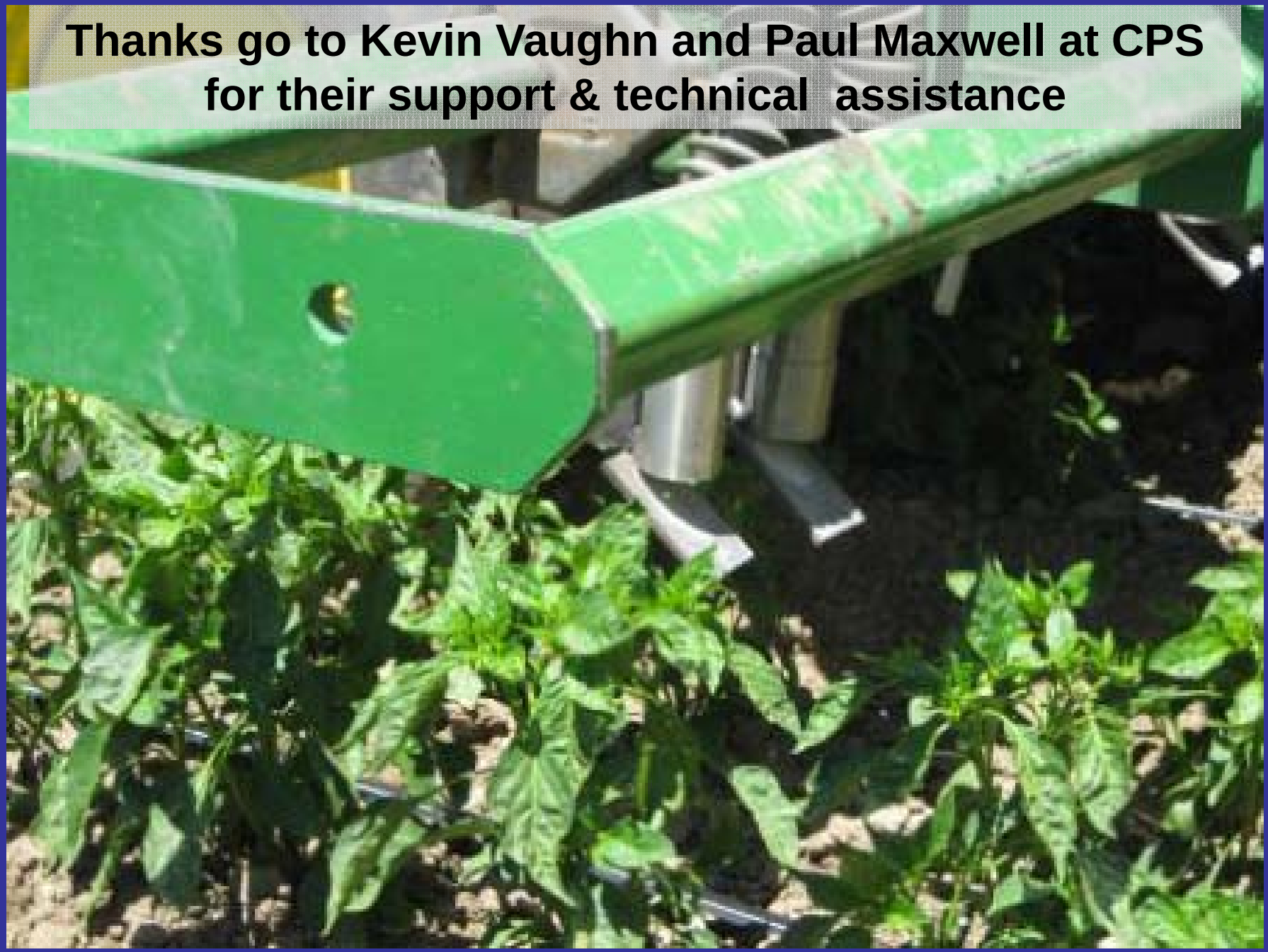
Broadstar 0.25G
37 lbs/A

5. Application on impregnated fertilizer

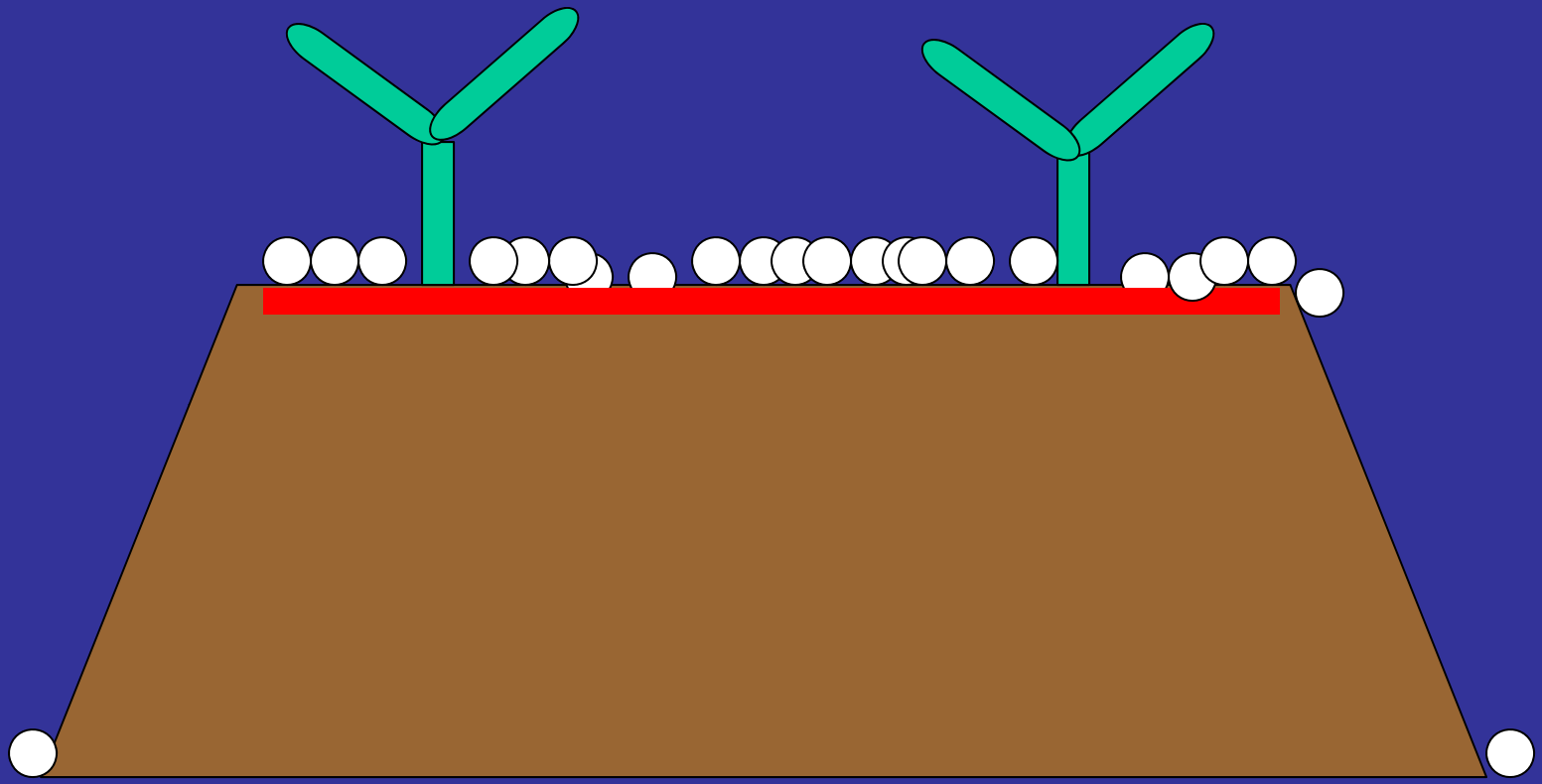
- There is a label for the use of impregnated with Chateau for use on mint
- Given the positive results with Broadstar, we chose to evaluate Chateau on fertilizer as an alternative

Applying 4.0 ounces Chateau to one ton of potassium sulfate mixed with lime 0-0-5

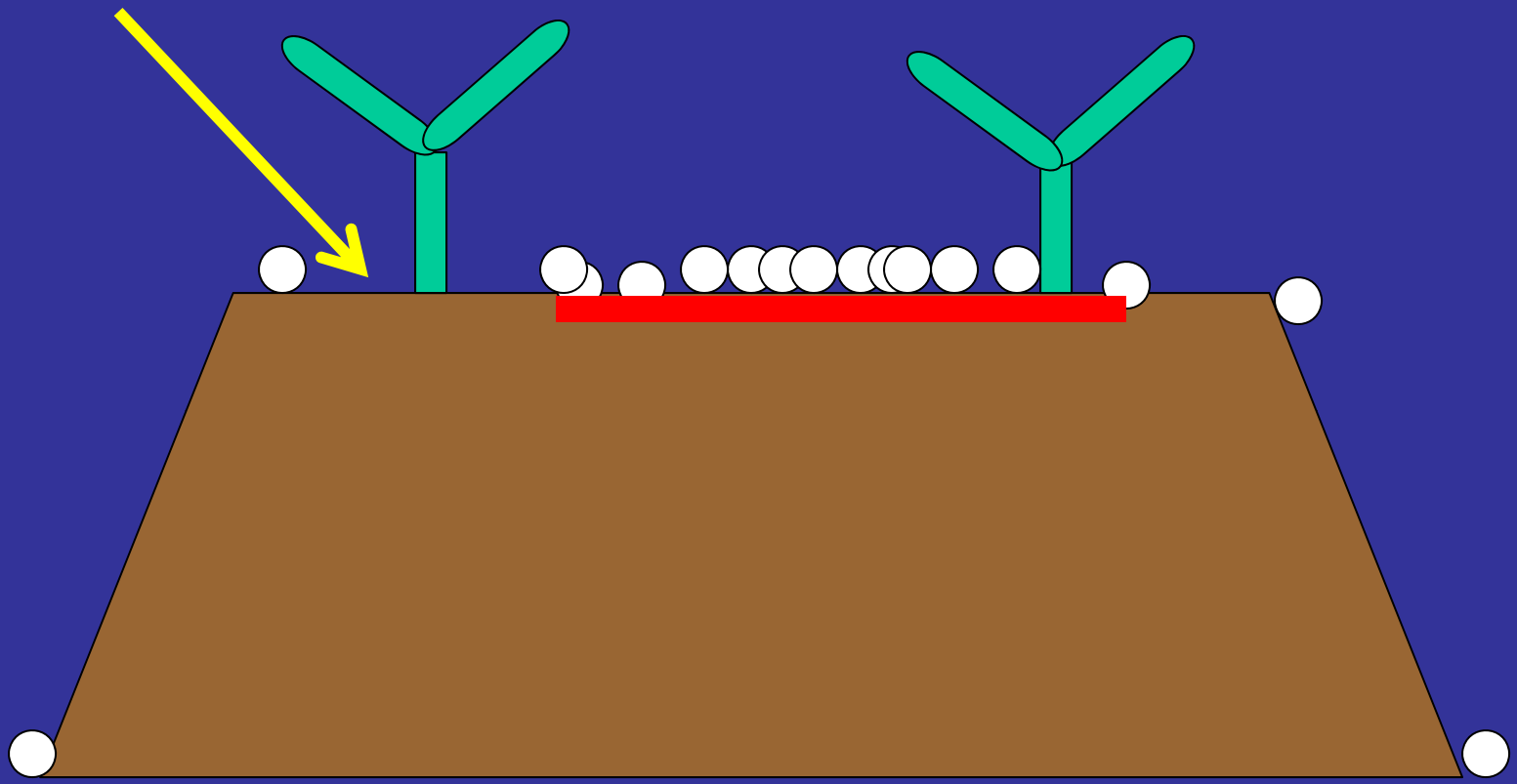
Thanks go to Kevin Vaughn and Paul Maxwell at CPS for their support & technical assistance

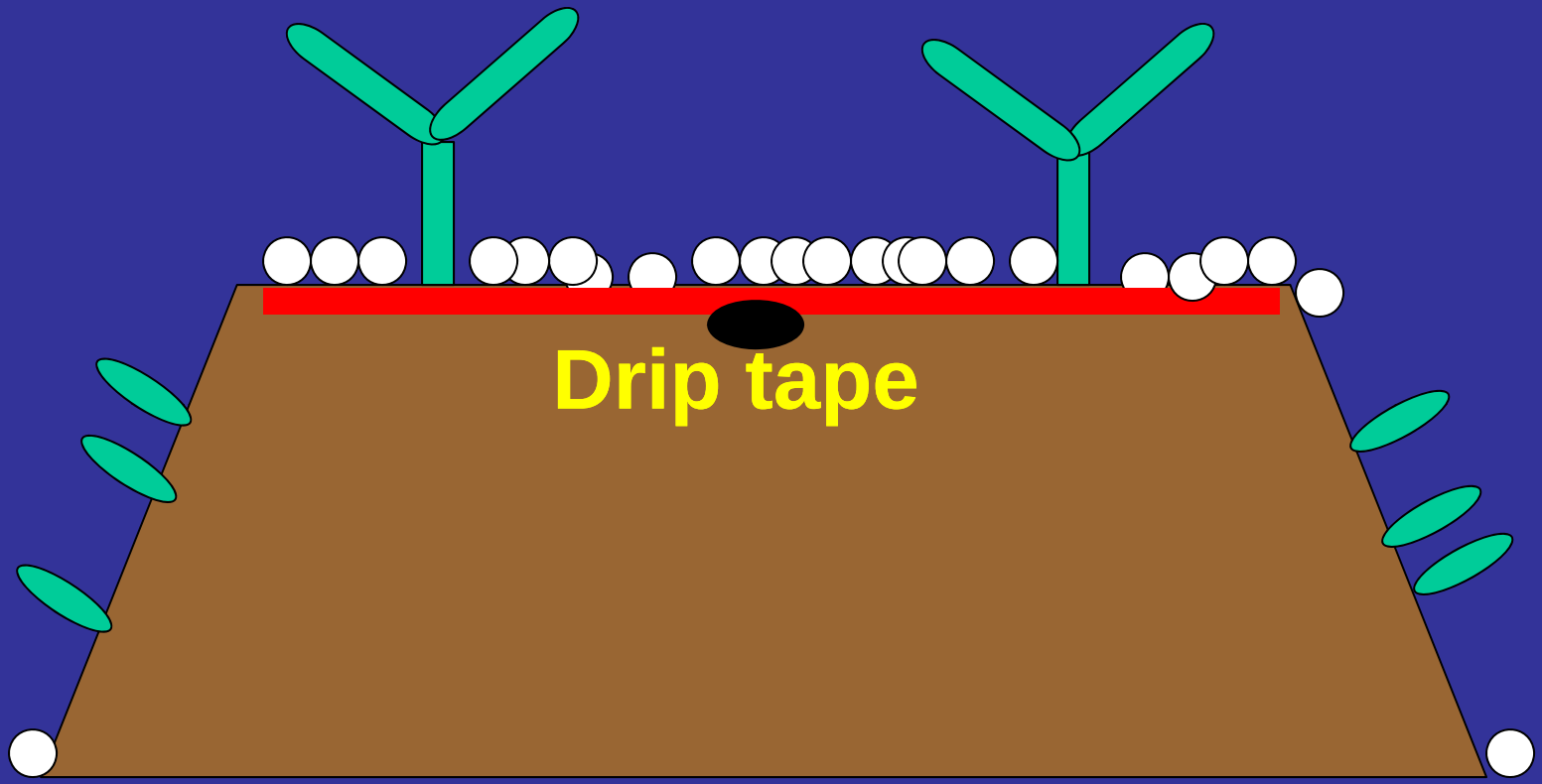


Good pattern on bed top, but not on sides



Poor pattern on bed top

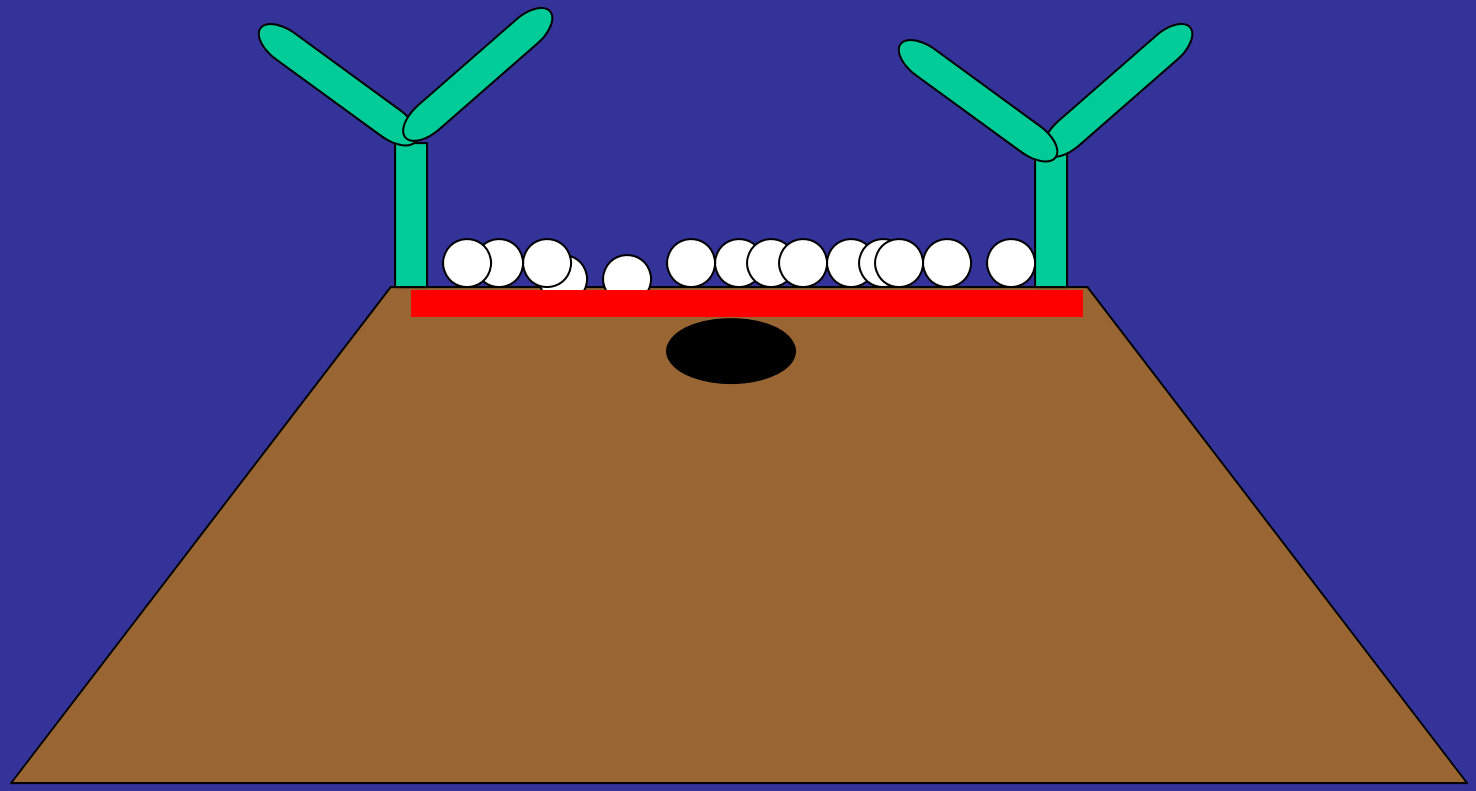




If water reaches the sides, then weeds can Grow, that is what happened in the 2010 trials

2010 Evaluations

- We worked under a research authorization and treated two acres of peppers with Chateau on fertilizer
- Four trials
  - Strip trials in pimentos, bells and chili peppers
  - Small plot trial in chili peppers



After final cultivation, the sides of the beds were steep beyond the seedline. Nearly all material fell between the seedlines and provided little weed control on the bedsides

Pepper Yield T/A

Treatment	Pimento	Chili	Bell
4 oz Chateau	26.5	19.2	18.6
8 oz Chateau	28.3	11.8	19.7
Standard[1]	33.2	19.0	16.8

1 – Dual + Prowl H2O pimento & chili; untreated in bells

Time to Weed (hrs/A)

Treatment	Pimento	Chili	Bell
4 oz Chateau	3.6	33.8	6.8
8 oz Chateau	4.0	25.5	5.1
Standard[1]	4.3	27.6	13.6

1 – Dual + Prowl H2O pimento & chili; untreated in bells

2010 Small Plot Trial

Treatment	Material/A	Active Ingredient/A	Total Weeds Per M^2	Weeding Time Hrs/A
Dual Magnum Prowl H2O	1.33 pint 1.60 pint	1.27 lb 0.75 lb	1.0	10.2
Broadstar	50 lbs/A	4.0 oz	0.8	9.1
Zeus	3.2 oz/A	0.10 lb	5.6	13.1
Chateau on fertilizer	4.0 oz/A	4.0 oz	9.9	14.8
Untreated	----	----	19.5	25.2

Summary

- Weed control in the trials was not as good as we would have liked, due to the pattern of distribution of the granules
- This issue could probably be improved with a bit more engineering
- The safety of the 4 ounce/A rate is excellent
- This practice looks promising enough to pursue a registration to provide an option to growers where this treatment makes sense

Acknowledgements

- Guidotti Farms, Soledad
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- California Pepper Commission