Adjuvants for Rosarians

Increasing Spray Effectiveness

What is an Adjuvant?

- The definition of adjuvant is: *a person or thing that aids or helps*
- In the context of pesticides, an adjuvant helps them do their job of attacking and killing pests
- Most adjuvants available to rosarians are liquids added to the pesticide spray solution when mixing

Why Use an Adjuvant?

- Researchers claim that *up to 70% of the effect of a pesticide is dependent on its application*
- In other words, regardless of the claims made for a particular pesticide, its effectiveness is no better than the way it's applied
- Adjuvants serve to enhance the quality of a pesticide's application

Types of Adjuvants

- Surfactant – a "spreader-sticker" such as manufactured by Hi-Yield
- Buffer – adjusts the pH of the spray liquid – for example, Indicate 5 by Brandt
- Extender – binds contact pesticides to foliage – provides protection for pesticide from rain and UV rays
- Penetrant – opens leaf's stomata to promote entry of systemic/translaminar pesticides and liquid fertilizers
- Attractants – draws insect pests to pesticide – for example, spider mites to Stirrup M by Troy Biosciences

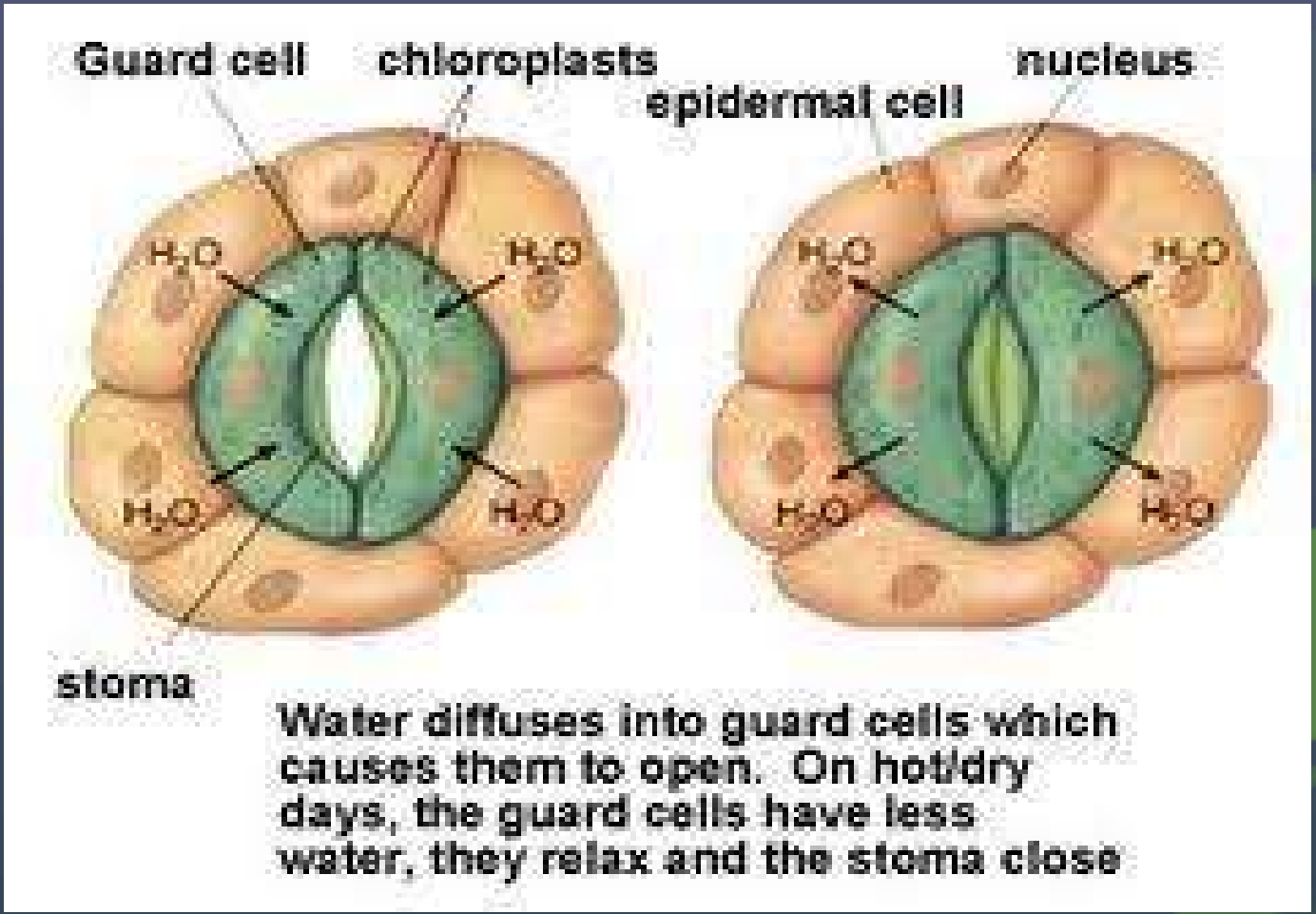
Extenders – an example

- Binde manufactured by AgXplore International
- An extender/sticker/spreader designed specifically to extend the life of pesticides
- Non-ionic and may be used with all pesticide products
- Forms a durable film that holds pesticide on foliage after spraying
- Shields contact sprays from dilution by rain and degradation by UV rays
- Available from Keystone Pest Solutions (www.keystonepestsolutions.com) for $38.95/gallon
- Use rate: ½ to 1 teaspoon per gallon of spray

Penetrants – an example

- Cadence – manufactured by Kalo, Inc.
- An organo-silicone-based non-ionic wetter/spreader/penetrant
- Formulated to greatly reduce the surface tension of the spray droplets
- The very low surface tension, in turn, results in stomatal flooding thereby significantly enhancing the uptake of systemic and translaminar pesticides
- Available directly from Kalo (www.kalo.com) for about $55/gallon
- Use rate: ½ teaspoon per gallon of spray

Plant Stoma


Guard cell
chloroplasts
epidermal cell
nucleus
H_2O
H_2O
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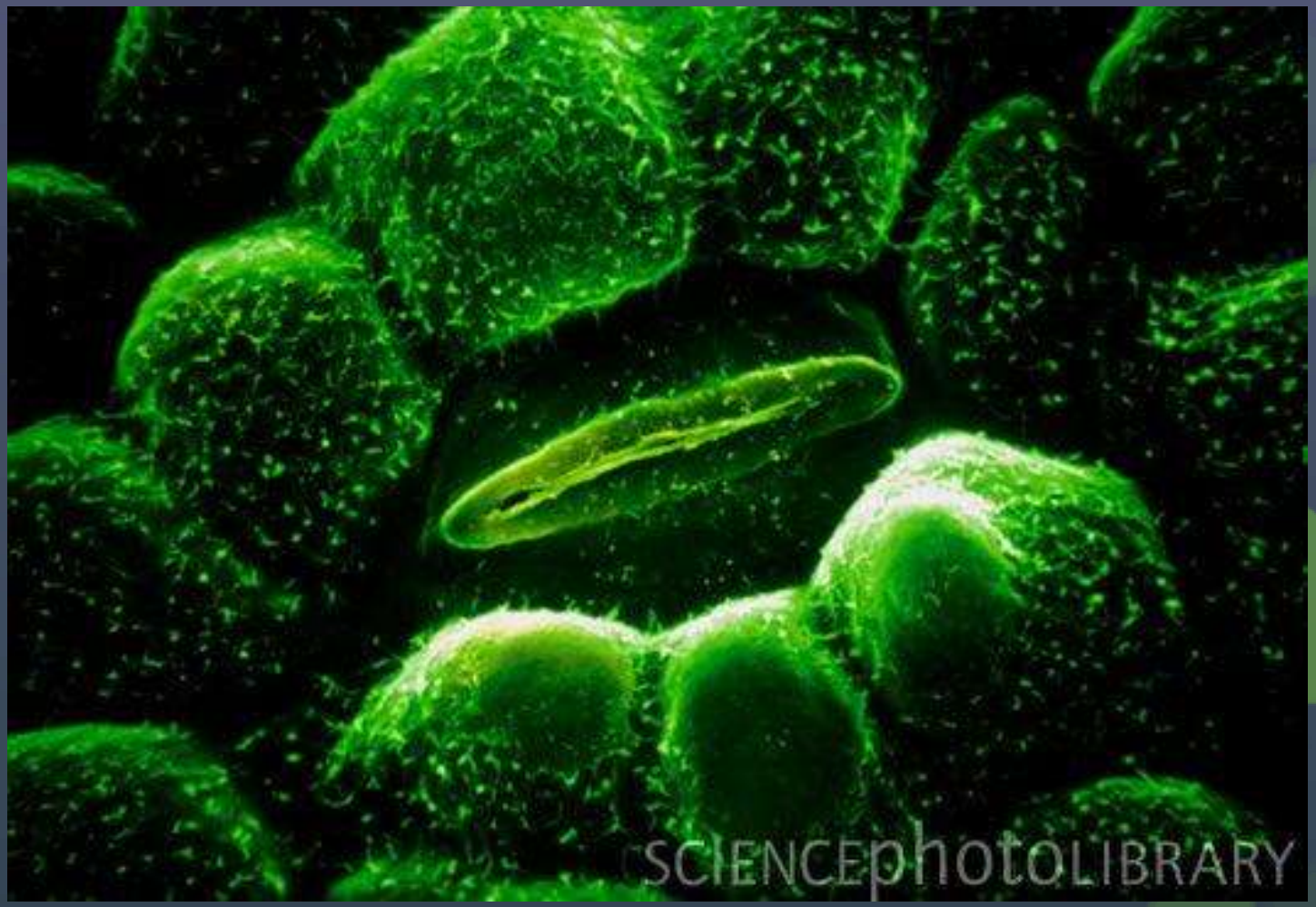
H_2O
stoma
Water diffuses into guard cells which causes them to open. On hot/dry days, the guard cells have less water, they relax and the stoma close

Stomata Close-Up

Stoma Even Closer



My experience

- I've been using Cadence and Binde for about three months
- I use Cadence with systemics such as Phyton 27, Banner Maxx, Cleary's 3336F and with translaminars such as Compass
- I also use Cadence with liquid fertilizers such as EZ-Feed and Miracle-Gro Rose Food for foliar feeding
- Blackspot has been held in check and drench feeding has not been used for three months
- Bushes appear quite healthy with only foliar feeding – which greatly reduces the fertilizer use rate *and* concerns about soil pH
- I use Binde with contact pesticides such as Pentathlon – leaves foliage quite "spotted" but pesticide remains for many weeks

A Few Words About Indicate 5

- Indicate 5 is a spreader-sticker and a buffer
- It serves to acidify the spray liquid if the water source is "hard" – that is with a pH greater than 7
- Following label directions it lowers the spray's pH to below 5
- In my experience acidifying the spray liquid appears to have a deleterious effect on metallic-based pesticides such as Phyton 27 (copper) and Pentathlon (manganese)
- I suggest using a simple spreader-sticker or Cadence for Phyton 27 and Binde for Pentathlon