

## Bud Marking vs. Cross Banding in Agaves

By Jim Elliott

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Bud marking (or “imprinting”) in agaves occurs when the new (lower) leaf of an agave is pressed so tightly to the older leaf before they separate that the pattern of the teeth and/or edges of each leaf is imprinted or marked on the surface of the adjacent leaf. This trait appears in most agaves to some extent but probably reaches its apex in *Agave colorata* in the blue gray agaves and the delightful white lines on the entire spectrum of Queen Victoria agaves. I have never read that the white lines of the *Agave victoria-reginae* complex are bud marking, but if you look carefully at your own agave collection, I think you will come to that conclusion as I have. How it causes a white line on a green leaf instead of just an indent as it does on the blue-gray family is beyond me. Better minds than mine will have to answer that for you. I am first and foremost just an observer of the plants I love to grow and never have wished to become a botanist. I was bored by plant parts in biology and though the knowledge would be extremely useful now that I am a nurseryman, it still bores me. But bud marking and cross banding excite me as they are so central to the appearance of agaves. Guess I will just always be a Shallow Hal with a concentration on looks.

On to cross banding. That has been much more of a challenge to me as a grower and collector of agaves. “Cross banding,” as I am using the term, is when a definite color change goes straight across the leaf of an agave. It may be close to the tip or at mid-leaf or way at the bottom close to the plant’s core. How did it get there? And more importantly to the mercenary side of me, how can I cause it to happen? As with so many questions I have about agaves, I stretch my mind to figure it out and then stretch my arm to reach the phone. Hello, Gard Roper, please. Gard, how is it that I can produce such beautiful bud marking on many agaves and can’t produce cross banding on any? Even *Agave zebra*! The plant is named for the cross banding and I have several clones, including Gard’s “Best in Show.” If I were a zoologist instead of a nurseryman, we would have solid white zebras. Why?

Gard then admits: “I don’t have it either on my propagated agaves.” We proceed from there and I offer that I often find really nice cross banding on agaves from landscapes that are being redone or from private collections where the caregiver has passed away or moved out of the area. Little did I realize that those orphaned plants were telling me how cross banding is done. Gard is of the opinion that the cross banding is the product of alternating seasons of wet and dry. Bingo! Eureka! And Like, Oh My God! That’s it! His theory fits all of my own observations over 30 years of growing experience.

Where the plants have a wet season followed by a long period of drought it would figure that the uptake of water and minerals would force an initial bloom of rapid growth. This would account for the relatively light colored section of the leaf as the minerals that create color would be fairly widely spaced (fewer pixels for the digitally conscious). As the availability of water/minerals lessened, this growth surge would taper off and the pixels would become more concentrated, thus deepening the color band. With the end of

the wet season the growth would stop altogether as the agave goes dormant and awaits the next wet season. This dormancy creates a definite band directly across the leaf, the elusive cross banding.

This alternating dormant and growth pattern never happens at Arizona Cactus Sales. We are pushing our plants year round to shorten the lead times to optimal market sizes. In private collections in the Valley, most agaves are kept outdoors and our winter rains perform the same function of eliminating a totally dormant period. Only in those very dry years would cross banding occur here naturally. Unless we are willing to stretch an already lengthy preparation period for our products (agaves, in this case) we will never create a zebra with stripes. In short, bud marking is fairly universal across the agave genus, predictable and repeatable. Cross banding, on the other hand, is not an inherent trait but is brought on by alternating wet/dry seasons.

This theory fits my needs and logically answers my questions of how it happens. I have been wrong many times before and will be again, but it never will keep me from sharing these thoughts. If you have another explanation please write it up and submit it to our editor so we can grow in knowledge through the club's newsletter. Call me at 480-732-0307 if you have other theories or examples.

P.S. If you wonder why some nurserymen run for the exit whenever someone announces they are a "collector," I will relate my recent experience. I received an e-mail from an East Coast agave collector who has been looking for cross banding for many years, especially on *Agave zebra* and *Agave colorata*. I have had several inquiries from this person over the years and all ended with 'No Sale.' After much back and forth, it always comes down to him wanting a much smaller specimen with mature characteristics and incidentally, a reduced cost. This time I wrote essentially this same article to him and suggested that he already has many agaves that might show cross banding if he would subject them to a boom and bust sequence. He replied: "Thanks for the information. Do you have any *Agave zebra* with good cross banding? Would I send a list of all my agaves with sizes, cross banding tendencies, shipping costs, etc?"

No good deed goes unpunished.