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PART 2

DIMENSIONS OF RIPENESS

MATURITY & COLOR

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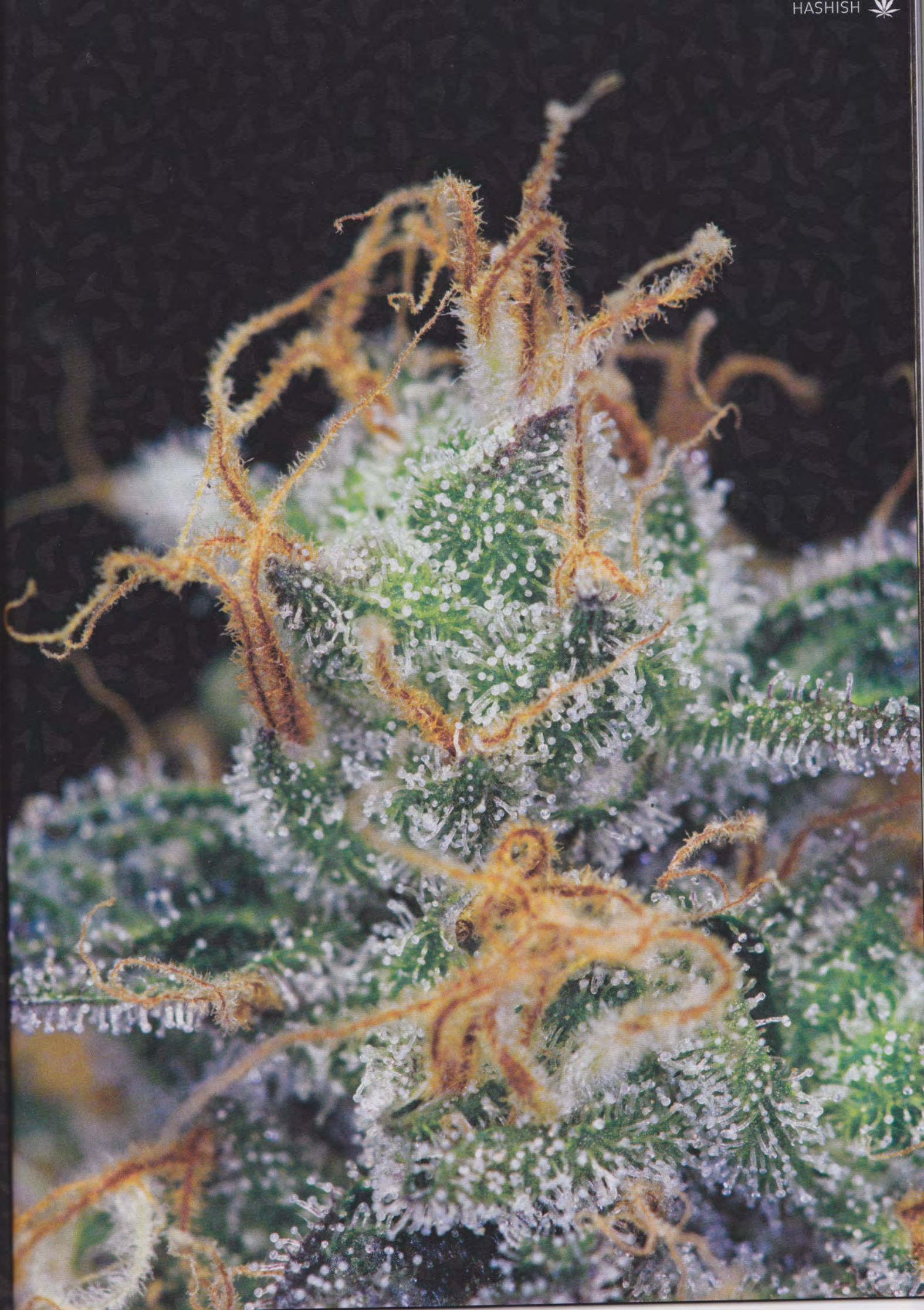
PHOTOS: OCANABIS



Growers generally estimate resin maturity very much like we would assess the ripeness of a fruit, by the color of the trichomes.

The general assumption is that transparent resin heads are immature, milky white indicates ripeness, and amber suggests degradation of the resin (a conversion of the THC into CBN which would give a more soporific effect to the resin).

"However, a study of over 300 dry cannabis samples indicated minimal correlation between trichomes color and potency, except in relation to darker brown samples, clearly past the peak of potency."[1]

The rate of loss of transparency appears to be a genotypically-dependent characteristic of the Cannabis resin - milky white resin heads develop as early as the fourth week of flowering for the majority of the strains tested, and much earlier for high CBGA strains[2], again very much like fruit ripening to genetically determined colors.

It appears that estimating resin maturity solely based on color is a crude approach to judging ripeness when genetic make-up and growing conditions are the deciding factors of resin development. As trichomes age,

clear resin first turns milky white and then transitions from a light to dark amber. This amber color spectrum is wide, and most certainly represents different dimensions of ripeness. Only the darker colored trichomes will show a degradation of the THC into CBN but not as a rule.[3]

Additionally, there is always a disparity in the overall level of ripeness of a Cannabis plant, greater with indoor grown Cannabis than with outdoors; the intensity of the light affects the growth of the plant and the development of the trichomes. A healthy outdoor plant has the possibility to express its potential more fully; it usually has a more uniform resin ripeness and the trichome's coloring will be of a darker shade as well due to natural light.

Samantha Miller, President & Chief Scientist at Pure Analytics[4] in Santa Rosa, California, monitors the resin glands of the plant for specific shades of coloration to determine the peak of the flowering cycle. However, she does not evaluate the maturity of the resin heads on the overall trichome production's coloring but on the shading of individual resin heads. It is a unique approach into assessing the dimensions of the ripeness of trichomes but a logical one nonetheless if you reflect on the structural similarities of a resin head and fruit on a tree, the metaphor I used in Part 1 of this series[5]. It would be difficult, if not impossible, to assess accurately the general ripeness of fruit on a tree without examining a large number of fruit separately, and so it is with the Cannabis plant and the trichomes.

Miller, like myself, is a proponent of the "Darker Side". We believe that in the wide range of amber coloration lies perfection, and that it does not indicate resin degradation but the opposite in fact: quality; every shade of amber represents a different dimension of ripeness.

The ideal is a gland that is 60-80% amber colored and only 20-40% clear.

To achieve a preponderance of resin glands with such a shade it is mandatory to harvest during the later stage of the flowering period and of resin development.

A recent scientific research on the development of Cannabis trichomes has quantified four of the main cannabinoids, THCA, CBCA, CBGA, and THC. During the last stages of the flowering cycle the amount of THCA increases from week 5 to week 7, and then decreases in week 8, while the THC level gradually rises during the entire cycle as the concentrations of CBCA and CBGA decrease from week 5 through week 8.[6]

Another study indicates "between the sixth and eight week of flowering the 33% extension in flowering duration resulted in a mean cannabinoid yield increase of over 50%. In all clones this extra two week's flowering was clearly advantageous. A further 25% increase in flowering period from eight to ten weeks resulted in a mean increase in THC yield of 31%, but for approximately half of the clones the observed THC yield increase was less than 25% and the economic benefit of the extra two weeks flowering was doubtful."[7]

The plant is obviously on overdrive when reaching the last stage of its flowering cycle, substantial transformation of cannabinoids is happening within the trichomes which is vital to the overall quality of the resin, very much again like a fruit gaining sweetness and expressing its full potential solely when allowed to reach its peak maturity.

The most enigmatic aspect of the development of resin during the later stage of flowering resides in the fact that a flower can test as high as 28% THCA while very little resin is actually formed in the trichomes.

How can we have a high concentration of cannabinoids without actual resin formed in the trichomes?

We have to study the entire development of the trichomes and of the cannabinoids within to fully understand the mystery of the final step of ripeness.

Cannabinoids are formed by the bounding of the two most common molecules found in the plant kingdom, terpenes and phenols, however the biosynthesis process of Cannabis is complex, despite the relatively simple structure of the cannabinoids which results from it; every part of the resin gland plays an important role in the overall transformation.

This process is actually so complex that scientists have only recently explained the magic behind it. The precursors of cannabinoids originate in two pathways: a pathway creating Olivetolic Acid (OLA) and another creating Geranyl Diphosphate (GPP), which are the source of the formation of CBGA, the main precursor of diverse cannabinoids. The diversity of cannabinoids is mainly due to three transformations: firstly THCA synthase changes CBGA into THCA; secondly CBDA synthase creates CBDA; and thirdly CBCA synthase results in CBCA.[8]

Every stage of the transformation defines a level of cannabinoid formation, which translates in a dimension of ripeness. This information gives Cannabis extract artists the power to access specific cannabinoids during the plant cycle which is essential in our quest for creating a pharmacopeia of plant-based cannabinoids.

This knowledge is equally important for a Hashishin but mostly as a guide when monitoring trichome development; we seek the ultimate perfection, absolutely perfect resin maturity, the dimensions of ripeness that can be found solely in the later stage of the plant's flowering cycle.

I am still at loss, however, as to what is happening during the final two weeks of resin development that is so central to quality. Researching the subject has only exposed generalized industry unawareness, most literature essentially advocates harvesting at an early stage of the resin formation.

As much as I want to find answers, I wish above all to be able to accurately

judge the quality of the resin on the plant material as opposed to once the resin has been sieved, dried and pressed; a decisive advantage in my quest for quality and productivity since potency results do not reflect resin maturity.

Samantha Miller has developed a scientific approach to determining ripeness to an amazing level of accuracy; The Dimensions of Ripeness Part 3 will be dedicated to her methodology and the repercussions such a procedure will have on the overall quality of flowers and resin.

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