

Practical Use of Dosage & Nicking in Thoroughbred Breeding

One of the more frequent inquiries we receive at TrueNicks involves the comparison of Dosage and TrueNicks ratings. Our responses to the questions, both in the TrueNicks.com blog and in direct communication with readers, have tended to point out the differences in each system's purpose. While Dosage references a collection of influential sires and their aptitudinal influence on a pedigree, TrueNicks uses The Jockey Club Information Systems database to measure sire line affinities based on all worldwide starters and stakes winners. But what are these two calculations really saying about a pedigree? How can these tools be most useful to breeders when planning matings? And can they be used in conjunction to achieve the "intelligent interpretation" that is crucial to Thoroughbred pedigree analysis? To answer these important questions, we asked the experts on each subject to discuss the background of Dosage and TrueNicks as well as potential breeding strategies:

Steven A. Roman, Ph.D. is the originator of the contemporary Dosage system, creator of the Dosage Index, and author of the definitive book on the subject, *Dosage: Pedigree & Performance*. His research and development of the roster of *chefs-de-race*, those prepotent sires that have shaped the breed, has changed the way Thoroughbreds are bred, bought, and sold. Dr. Roman holds a Ph.D. in Organic Chemistry from Columbia University and has studied Thoroughbred performance for more than 30 years. (For more, visit www.chef-de-race.com)

Alan Porter is a co-developer of TrueNicks and partner in Pedigree Consultants LLC. He has worked professionally with Thoroughbreds for nearly 35 years and has consulted on matings that have resulted in more than 150 stakes winners to date, including four Eclipse Award winners and grade or group I winners in at least 12 countries. Porter is a regular contributor to major industry publications and has authored three books on racing including the *Patterns of Greatness* series.

Dosage: Background

Dr. Steve Roman: Dosage, a technique for classifying Thoroughbred pedigrees by aptitudinal type, was created in the early 20th century by the Frenchman Lt. Col. J. J. Vuillier who observed that very few sires (which he called *chefs-de-race*) appeared with any great frequency in the extended pedigrees of the best runners in England and France. Some decades later, the Italian Dr. Franco Varola developed a modified version of Dosage that emphasized the predictable aptitudinal traits passed on by his expanded list of *chefs-de-race*. The key point made by Varola was that the characteristics transmitted by his *chefs-de-race* were not necessarily those they possessed as runners. The focus, instead, was entirely on the qualities passed on as breeding animals. Thus, in contrast to conventional pedigree analysis based on a historical perspective of ancestral performance type, Dosage interprets pedigrees in the context of inherited speed and stamina. As an alternative and complementary method of interpreting Thoroughbred pedigrees, it may help avoid potential problems associated with the traditional concept of "breeding the best to the best."

Contemporary Dosage methodology fuses the basic ideas of Vuillier and Varola, incorporating both quantitative and qualitative components while using more accessible four-generation pedigrees. The output is a Dosage Profile (DP), a series of five numbers that reflect the relative proportions of each of five aptitudes contributed by *chefs-de-race* in a pedigree and expressed in the order Brilliant-Intermediate-Classic-Solid-Professional. These aptitudes constitute the full spectrum of pure speed on the left to pure stamina on the right and its particular pattern symbolizes the aptitudinal type of the pedigree.

TrueNicks: Background

Alan Porter: Having been professionally involved in pedigree research for nearly 35 years, and planning matings for over 25 years, I've seen a revolutionary change in the data available for this kind of work. For example, in England at the start of that period, catalog pedigrees were still compiled by hand, earnings having to be gathered from Weatherbys Statistical Review and updated by going through the form book (updates for which were delivered weekly by mail from England, Ireland, France, and Italy, and on microfiche). While planning matings, major farms had the advantage of split pedigree books – one for the stallions being considered, with their four- or five-cross pedigrees at the top of the page, and one for the mares, with their pedigrees at the bottom. To see a potential pedigree for a hypothetical mating, one simply flipped the pages and aligned the sire and dam. No highlighted inbreeding, no Dosage, and definitely no nick rating.

Of course, while modern nicking programs did not yet exist, the concept of a nick – a sire or sire line crossing well over mares by another sire or sire line – is not exactly new. In fact Thoroughbred nicking theory goes back to at least the late 18th century when the Eclipse/Herod and Herod/Eclipse crosses dominated the English classics. While nicks might have existed for more than 200 years, it's been less than 20 years since nick ratings have been publicly available, and little more than two years since TrueNicks – the first program to offer true opportunity-based nick ratings – was launched. So, in terms of the tools available for planning matings, there's probably been more of a change in the last two decades than the previous two centuries.

Dosage: Practical Observations

Dr. Steve Roman: The Dosage Profile allows for the calculation of a Dosage Index (DI) and a Center of Distribution (CD), related indices that express the ratio of inherited speed to stamina in a pedigree and can be used for statistical analysis. Some key patterns revealed by observing the DI and CD of race winners include:

1. Dosage figures correlate with the average distance of races where sprinters display the highest numbers (more speed) and routers display the lowest (more stamina).
2. Elite Thoroughbreds (e.g., champions, leading earners, leading sires) generally have lower DIs and CDs than the general population as well as a much larger contribution from chefs-de-race.
3. Classic winners also are more stoutly bred than the average and, in addition, often exhibited high class as juveniles. However, the continual infusion of speed into Thoroughbred pedigrees is reflected in the rising DIs and CDs of classic winners over time.

TrueNicks: Practical Observations

Alan Porter: When calibrating TrueNicks and converting raw variants to letter ratings, we found a point where the return of stakes winners to opportunity begins to greatly increase, and this is the threshold for nicks we now give the letter grade *B+*. From our studies, we've extrapolated that it is wise to pay particularly close attention to horses rated *B+* and above. Now that's not to say that lower ratings are automatically dismissed. Sometimes there is a particularly compelling reason to try a cross – an attractive inbreeding or line-breeding pattern, or a case where a sire line/broodmare sire line cross has not been particularly successful in general, but there is a horse or horses bred on similar lines to the mating we are considering.

This generally gives us a short list to refine with further study. I particularly look at whether the class of the stakes winners produced on the TrueNicks-rated cross is up to what one might expect from the material involved. There are crosses that produce plenty of stakes winners, and stakes winners of good quality; crosses that have a good strike rate of stakes winners relative to opportunity, but have been somewhat short on quality; and crosses that have hit less frequently, but have produced at a very high quality level when they have worked. Personally, I also pay close attention to inbreeding and line-breeding (using *line-breeding* in the generally accepted usage of duplications in the fifth and sixth generations), particularly through clusters or related strains (genetic relatives). There are no hard and fast rules for this; although we do have ways of checking the number of times certain strains have appeared in certain positions, when you are combining and blending crosses in specific positions, pure statistical analysis gets a little less straightforward. This perhaps is a point where experience and intuition blend with the hard statistical data.

While I'm happy that TrueNicks is the most accurate reflection of the success of a nick that could be created at the moment, we have to be careful not to confuse reflection and prediction when working with statistical data. There are some crosses that have produced 100% stakes winners to starters – for example Distorted Humor has three stakes winners from three starters out of El Prado mares – and obviously you wouldn't expect that strike rate to be maintained with the next 10, 20 or 100 runners bred on the cross. Still, as the saying goes, "past is prologue to the future," so all else being equal, you would expect what has worked in the past to be more successful in the future than what has failed in previous attempts.

Dosage: Breeding Strategies

Dr. Steve Roman: Dosage observations are based on large populations and reflect statistically significant trends. These trends offer some degree of predictability; however, there is great variation within the population and individuals may not conform. Accordingly, breeders must recognize that Dosage is an aid to understanding potential racing type but does not preclude issues of conformation and breeding class. In general, by differentiating between the performance record of ancestors and what they actually pass along at stud, Dosage will help the breeder focus on his or her target type, whether it be a precocious 2-year-old, sprinter, classic contender, or turf marathoner.

Breeders with the primary goal of producing horses capable of staying middle, classic, or marathon distances should realize that the increasing emphasis on speed in pedigrees may limit their access to stamina-oriented sires. Therefore, a Dosage analysis of prospective foals may help clarify the complicated stallion selection process. In addition, by track-

ing the Dosage figures of the foals produced, breeders can monitor changes in the aptitudinal type being generated in their program over time and, depending on their racing objectives, make adjustments in their choice of stallions or in their inventory of mares.

TrueNicks: Breeding Strategies

Alan Porter: However clever a cross or pedigree might be, there is little point in executing it if it brings together individuals with, for example, similar physical flaws, or individuals of extreme physical types. The same would apply to aptitude: in general, mating pure sprinters to distance horses tends to disappoint, or breeding two horses that lacked speed is probably something you would want to avoid. And all of this is without even considering commercial factors!

The first thing to remember when weighing a nick rating against other factors is that this kind of evaluation is best used to rate *like against like*. A C-rated mating with a proven \$50,000 stallion would generally be a better bet than an A-rated one with a stud standing for \$5,000. Beyond that, while I certainly wouldn't plan a mating just because of the nick, there would have to be something very persuasive and compelling about another aspect of the pedigree for me to recommend a mating with a low rating – one that had had a fair trial and proved to be consistently disappointing – just as I wouldn't recommend breeding a mare with offset knees to a stallion that throws the same characteristic.

Having had the opportunity to use TrueNicks for the last three years – initially in a beta-test form prior to its public release – I can say that it hasn't changed my basic philosophy regarding planning matings, but it has brought a greater degree of confidence and consistency to the process. One of the first pedigree questions one would ask when considering a mare is whether the broodmare sire (or broodmare sire line) had done well under any particular sire (or sire line). What TrueNicks does is take the guesswork out of answering that question. This is particularly so with the Broodmare Analysis Report, in which breeders can enter up to 50 stallions to be considered with their mare. I use this premium report in my own consultations because it enables me to look at each mare in a client's broodmare band, crossed with every stallion that we are considering using that breeding season.

Intelligent Interpretation

As we mentioned earlier, intelligent interpretation is always necessary when analyzing a pedigree. TrueNicks provides an important piece of the puzzle and can be used in conjunction with other pedigree tools. For this reason, TrueNicks includes the Dosage Profile, Index, and Center of Distribution on all reports, along with the TrueNicks rating, five-cross hypothetical pedigree, any inbreeding both listed and highlighted, and the five best horses bred on the cross complete with their sire, broodmare sire, and standard of best win. In addition to pedigree, multiple factors are at play when breeding or buying racehorses – physical type, conformation, soundness, biometrics, auction history, commercial value, training, and countless other environmental factors. By considering each variable in the appropriate context, we can make a fairer assessment of a potential mating or purchase.

2010 Kentucky Derby Pedigree Perspectives

With the Kentucky Derby Presented by Yum! Brands (gr. I) just days away, we asked Dr. Steve Roman and Alan Porter to comment on three contenders, specifically in reference to Dosage and TrueNicks. Their expert analysis illustrates how these tools work in practice.

Jackson Bend

Hear No Evil – Sexy Stockings, by Tabasco Cat

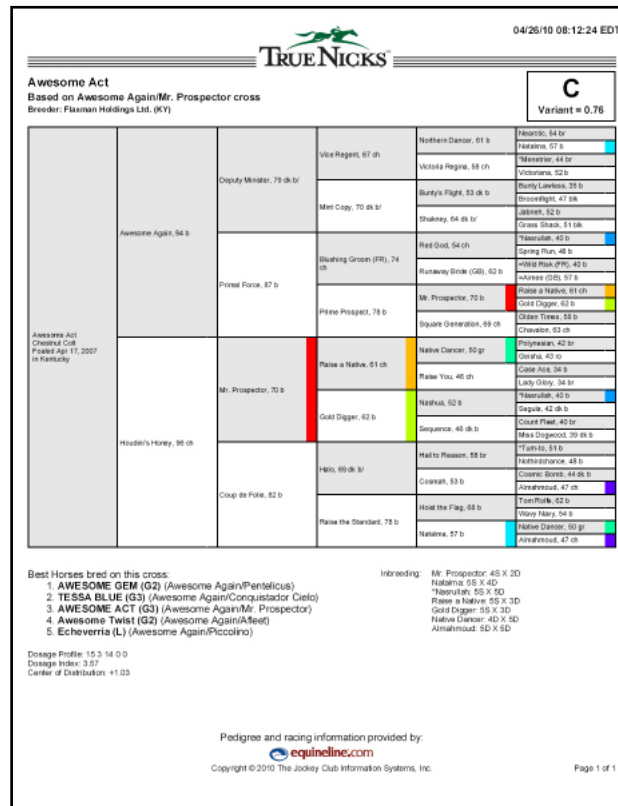
Jackson Bend		Based on Carson City/Tabasco Cat cross		Breeder: Jacks or Better Farm Inc. (FL)		04/26/10 08:13:07 EDT			
						A+ Variant = 5.33			
Jackson Bend Chestnut Col Foaled Feb 11, 2007 in Florida	Hear No Evil, 00 ch	Carson City, 87 ch	Mr. Prospect, 70 b	Raise a Nativ, 61 ch	Honor Dancer, 50 gr	Sweet Yaw, 45 ch	Nashua, 52 b		
			Blushing Groom FR, 74 ch	Ovid Ogger, 62 b	Savanna, 45 dk b	Red Dsd, 54 ch	Runaway Bride (GR), 62 b		
			Blushing Promise, 82 b	Sunset in Promise, 72 b	Prize Promise, 46 b	*Majesty II, 67 b	Sweet Catherine, 60 b		
		Hcy, 88 ch	Car's Ridge, 74 b	Boat Turn, 68 dk br	Our Matha, 61 ch	*Babybonnet, 62 ch	Corley, 46 ch	*Honor Ice (AR), 51 ch	*Peace (AR), 51 b
			Nathanael, 79 ch	*Page Page, 60 b	*Sweet Catherine, 60 b	*Doug's Serenade, 56 ch	Northern Dancer, 61 b	South Ocean, 67 b	Belmont, 70 ch
			Storm Cat, 83 dk br	Storm Bird, 78 b	Northern Dancer, 61 b	South Ocean, 67 b	Belmont, 70 ch	Common Sense, 68 ch	Key to the Mint, 66 b
			Tabasco Cat, 91 ch	Twinning, 75 ch	Sauce Boat, 75 ch	Misty Gaze, 55 b	Belmont, 70 ch	*Carnelate, 55 b	*Honor II, 62 b
	Sexy Stockings, 00 dk br	Beltsue Sauce, 83 b	Lady Beltsue, 79 b	Rock Talk, 64 dk br	Free Flowing, 69 b	Rock Prison, 60 b	Hear Shad, 50 gr	*Midway (AR), 49 ch	
		Tall, 72 b	Hear Flash, 67 b	Anticipation, 71 b	*Marking Time, 63 ch	*Midway (AR), 49 ch	*Caltape (AR), 69 ch	*Thalassa I, 58 ch	
		Lotta Tal, 90 dk br	Artlessa, 77 dk br	*Thalassa I, 58 ch	*Caltape (AR), 69 ch	*Thalassa I, 58 ch	*Caltape (AR), 69 ch	*Caltape (AR), 69 ch	
		Best Horses bred on this cross: 1. CARNACKS CHOICE (L) (Carson City/Tabasco Cat) 2. JACKSON BEND (Hear No Evil/Tabasco Cat) 3. Victory Pete (G2) (Five Star Day/Tabasco Cat) 4. Mr. Bourbon Street (Cremesky/Tabasco Cat) 5. Peace Wine (Cuvee/Tabasco Cat)							
		Dosage Profile: 9 4 5 0 0 Dosage Index: 6.20 Center of Distribution: +1.22							
		Pedigree and racing information provided by: Copyright © 2010 The Jockey Club Information Systems, Inc.							

Dr. Steve Roman: Jackson Bend's pedigree, with a DP of 9-4-5-0-0, DI of 6.20, and CD of 1.22, is strongly influenced by the speed contribution of Brilliant/Intermediate chef-de-race Carson City. The DP pattern is consistent with optimum performance well below classic distances – Brilliant points are dominant, Classic points are modest, there are no Solid or Professional points, and the total points are below average. Although a classy and consistent type, his inability to close in the later stages of his Derby prep races seems to confirm the figures and suggests his best opportunities are in shorter races.

Alan Porter: Jackson Bend is rated A+ on the basis of a very specific cross, that of Carson City and his sons over Tabasco Cat mares. There have been only 14 starters on the cross for two stakes winners and four stakes horses. Just four of these were by Carson City himself, and since his sons have generally not been top level sires, it's not surprising that there has been little graded form. Hear No Evil is a somewhat atypical Carson City, as he was a speedy and precocious 2-year-old but stretched out as he got older. While the dam did her winning at six furlongs, Tabasco Cat won the Belmont, so Jackson Bend has the pedigree to get him to at least the eighth pole, even if it's not really a conventional classic pedigree.

Awesome Act

Awesome Again – Houdini's Honey, by Mr. Prospector

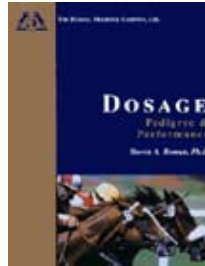


Dr. Steve Roman: Awesome Act, with DP 15-3-14-0-0, DI 3.57, and CD 1.03, has a pedigree slightly shifted toward speed but still within classic distance guidelines. In addition, there may be additional stamina provided through non-chefs-de-race Awesome Again and Deputy Minister. There are elements within the DP (e.g., high number of Brilliant points and no representation in the Solid or Professional category) that argue against classic potential and other elements (e.g., high number of Classic points and the very high DP point total) that argue for it, but on balance his aptitudinal type is within the historical classic winner range.

Alan Porter: Awesome Act is something of an anomaly as neither his broodmare sire nor the sire of his second dam – Mr. Prospector and Halo – have worked particularly well with Awesome Again. When Awesome Act won the Gotham Stakes (gr. III), Awesome Again had sired 51 starters out of mares by Mr. Prospector, his sons, and his grandsons, for just two stakes winners. Awesome Act might be a triumph for the class of his female line, as his dam is a sister to Machiavellian (already grandsire of Kentucky Derby winner Street Sense). Overall, however Awesome Act fares in the Derby, I would say that Awesome Again/Mr. Prospector is still a cross to treat with considerable caution.

Some have questioned whether Awesome Act's Mr. Prospector inbreeding will prevent him getting the Derby trip. However, consider the sources of those strains: Awesome Again stayed 10 furlongs extremely well, and Houdini's Honey broke her maiden over 10 furlongs in England. There has already been a Kentucky Derby-placed horse with Mr. Prospector 3x3 in his pedigree (Invisible Ink), and the best runner on the Awesome Again/Mr. Prospector cross, Awesome Gem, was third in the Breeders' Cup Classic Powered by Dodge (gr. I).

For more information on Dosage or TrueNicks, please consult these references:



www.chef-de-race.com



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