CDN Website Tips & Tricks: The Inbreeding Calculator

This is the third article in a three part series for users to learn how to maximize benefits from the various features of the CDN web site.

Many dairy producers are technologically savvy and seek out tools to help them better manage their herds. On the genetic front, the CDN website is one such tool, highly utilized by those keen on monitoring and querying genetic data. The inbreeding calculator, which provides inbreeding levels and Parent Averages (PA) for potential progeny from various matings, is one of the website's most frequently used features. When looking to breed any given female, the inbreeding calculator can be accessed one of three ways:

1. From the "Calculators" drop down found in the grey left-hand sidebar of the CDN website.
2. From the "Inbreeding Calculator" link found above an Active List of females. An Active List of females can be generated by performing a Group Query, or you can target females with the same prefix, as covered in the example below.
3. By clicking on the "Inbreeding" tab displayed at the top of any page for the female of interest, which then pre-populates the Inbreeding Calculator with the female's registration number.

Using the Inbreeding Calculator for Females with Your Prefix

In the first Tips & Tricks article of this series, readers learned how to enter their prefix in the Individual Animal Query to bring up a list of animals they have bred. Using the Selection Refinement Filter, results can be further reduced to only include active females by clicking the "Active Only" option.

Using the prefix "Ste Odile" - the highest LPI herd in August 2018 as an example - here are the steps to use the inbreeding calculator with a list of females with a common prefix and a male of interest:

1. Select the Individual Animal Query.
2. In the "Search by Name" box, select "Holstein" and "Female" and type "Ste Odile" into the empty field. Submit the query and you will be brought to the resulting Active List of females.
3. To refine the list to only include Active females, select "Query Refinement Filter" and check the box next to "Active Only." At this point you can also refine the female list by entering evaluation thresholds, as well as sort the list by a trait other than LPI by using the "Sort results by" dropdown at the bottom, if desired. Once you submit the Query Refinement Filter settings, you will be brought back to an updated Active List of females as seen below.

Animal Query | Group Query | Active List | Query Refinement

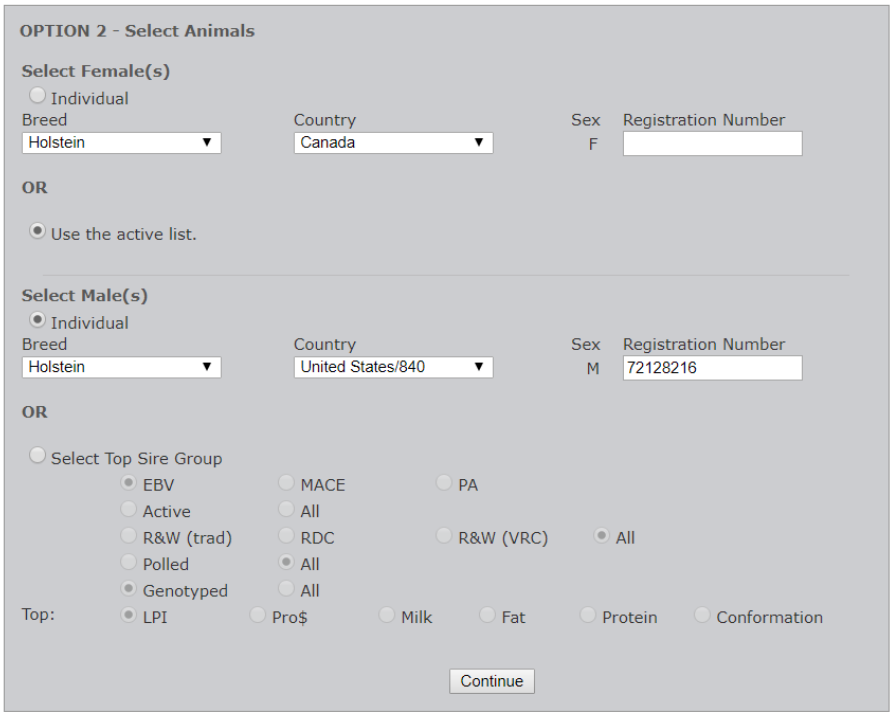
Customized Query Results Based on Genetic Evaluations for AUG 2018

Your search returned **194 results**, sorted by **LPI** with **Refinement Filter** applied.

Modify Query | Modify this Refinement Filter | Inbreeding Calculator | Customized Index Calculator

Identification	Name	Birth Year	Act.	GS	LPI Code	LPI	Pro$	Milk	Fat	Prot	%F	%P	SCS	Conf	MS	F&L	DS	RP
HOCANF110550155	STE ODILE BANDARES EMPIRE	2017	A	G	PA	3482	3197	2357	82	91	-0.07	+0.10	2.51	7	9	3	1	3
HOCANF110831858	STE ODILE BANDARES PESTE	2017	A	G	PA	3410	2869	1585	63	77	0.00	+0.20	2.74	12	12	5	5	7
HOCANF110831868	STE ODILE BOURBON ETTIE	2017	A	G	PA	3403	2907	2302	81	81	-0.08	+0.03	2.74	8	10	6	0	-2
HOCANF110550169	STE ODILE BANDARES PEACE	2017	A	G	PA	3369	2888	1679	80	75	+0.12	+0.16	2.73	8	8	6	1	5
HOCANF110550150	STE ODILE BANDARES PEACH	2017	A	G	PA	3365	2577	670	88	51	+0.58	+0.25	2.83	11	10	9	6	3
HOCANF110550153	STE ODILE BANDARES EMOTION	2017	A	G	PA	3336	3028	2054	97	77	+0.18	+0.07	2.44	6	8	3	-1	4
HOCANF110831888	STE ODILE BANDARES PARULIE	2018	A	G	PA	3330	2672	796	94	63	+0.57	+0.32	2.75	9	9	6	4	2
HOCANF110550154	STE ODILE BANDARES EXTRA	2017	A	G	PA	3323	3004	2263	68	84	-0.18	+0.07	2.50	6	8	2	-3	4
HOCANF110831871	STE ODILE KINGROYAL ECLAT	2017	A	G	PA	3313	2537	1549	89	65	+0.28	+0.13	2.76	11	11	8	6	5

4. From here, choose the red “Inbreeding Calculator” link. By default, “Use the active list” will be selected in the “Select Female(s)” section, as seen below. Under “Select Male(s)”, choose “Individual” and fill in the registration number for a sire of interest. Remember to change the country if the bull in question has a country code other than Canada as part of their registration number. In this case, the #1 proven sire for LPI and Pro$, Mr Mogul Delta-1427-ET, was used. Hit “Continue” to see the Inbreeding Calculator Report.



The top of the report shows the sire information and his genetic evaluations for a select number of traits. Below is a list of all of the potential female mates ranked in order of LPI. Accompanying these potential mates are the inbreeding levels and parent averages for potential progeny for a given female mated to the selected sire, Delta. Select “Download results to Excel” to find and sort traits by parent averages for additional traits beyond those listed in the Inbreeding Calculator Report.

Choose Group | Inbreeding Report

Download results to Excel

Inbreeding Calculator Report - AUG 2018 Evaluations

HOUSAM72128216 **MR MOGUL DELTA 1427-ET** **DELTA**

0203HO01468 ET BW A1A2 CDF CVF BYF BLF Born 31-JAN-13 7.10%INB 15%R

Sire:	HO840M3006972816	MOUNTFIELD SSI DCY MOGUL-ET	22-JUN-10	7.79%	15%
Dam:	HO840F3006989479	MISS OCD ROBST DELICIOUS-ET	28-JAN-11	6.99%	15%
MGS:	HOUSAM64966739	ROYLANE SOCRA ROBUST-ET	23-DEC-08	6.01%	15%

Animal's Inbreeding and Genetic Evaluations

	LPI Code	%INB	LPI	Pro$	MILK	FAT	PROT	%F	%P	SCS	Conf	MS	F&L	DS	RP
MR MOGUL DELTA 1427-ET	GEBV	7.10	3357	2791	1999	110	70	+0.30	+0.03	2.82	9	10	7	3	5

Potential Progeny's Inbreeding and Parent Averages

POTENTIAL MATES	LPI Code	%INB	LPI	Pro$	MILK	FAT	PROT	%F	%P	SCS	Conf	MS	F&L	DS	RP
STE ODILE BANDARES EMPIRE	GPA	12.66	3420	2994	2178	96	81	+0.12	+0.07	2.67	8	10	5	2	4
STE ODILE BANDARES PESTE	GPA	15.04	3384	2830	1792	87	74	+0.15	+0.12	2.78	11	11	6	4	6
STE ODILE BOURBON ETTIE	GPA	12.82	3380	2849	2151	96	76	+0.11	+0.03	2.78	9	10	7	2	2
STE ODILE BANDARES PEACE	GPA	15.04	3363	2840	1839	95	73	+0.21	+0.10	2.78	9	9	7	2	5
STE ODILE BANDARES PEACH	GPA	15.04	3361	2684	1335	99	61	+0.44	+0.14	2.83	10	10	8	5	4
STE ODILE BANDARES EMOTION	GPA	12.66	3347	2910	2027	104	74	+0.24	+0.05	2.63	8	9	5	1	5
STE ODILE BANDARES PARULIE	GPA	15.04	3344	2732	1398	102	67	+0.44	+0.18	2.79	9	10	7	4	4
STE ODILE BANDARES EXTRA	GPA	12.66	3340	2898	2131	89	77	+0.06	+0.05	2.66	8	9	5	0	5
STE ODILE KINGROYAL ECLAT	GPA	18.02	3335	2664	1774	100	68	+0.29	+0.08	2.79	10	11	8	5	5
STE ODILE IMAX ERYNNE	GPA	15.62	3329	2846	2187	93	75	+0.08	+0.01	2.69	8	8	7	1	5
STE ODILE HEISENBERG ZELDA	GPA	9.40	3321	2517	1353	100	69	+0.43	+0.21	2.86	8	8	8	5	0
STE ODILE FEDEX EVASION	GPA	12.57	3320	2789	1985	91	71	+0.13	+0.04	2.68	8	8	8	1	5
STE ODILE BALISTO MODEL ZEPHIR	GEBV	9.53	3317	2588	1150	119	79	+0.69	+0.34	2.83	8	8	6	4	2
STE ODILE BANDARES PASSIFLORA	GPA	15.04	3313	2712	1522	100	71	+0.37	+0.18	2.83	8	9	7	3	4
STE ODILE EUCLID ZIGZAG	GPA	9.82	3309	2665	1785	90	70	+0.21	+0.09	2.74	10	10	7	4	6
STE ODILE COACH ELYSA	GPA	18.36	3309	2631	1765	99	70	+0.27	+0.09	2.85	10	10	7	5	5
STE ODILE FLAGSHIP PEARL	GPA	13.74	3304	2677	1547	97	66	+0.34	+0.12	2.86	8	8	8	3	5
STE ODILE CHIEF ESPRESSO	GPA	14.92	3302	2691	2154	95	71	+0.12	-0.01	2.89	9	9	9	3	7
STE ODILE BOURBON ELECTRA1394	GPA	12.61	3298	2736	2269	89	78	+0.02	+0.02	2.77	7	8	5	2	4
STE ODILE CHINCHI ELECTRODE	GPA	12.69	3297	2728	2182	91	78	+0.07	+0.04	2.80	9	10	6	3	3
STE ODILE RUBICON PARURE	GEBV	16.07	3297	2603	1552	100	67	+0.36	+0.13	2.86	9	9	9	5	4
STE ODILE BANDARES EXPRESS	GPA	12.66	3296	2819	2251	83	76	-0.03	+0.00	2.69	8	9	5	1	4

Breeders can use this report to help them select a mate for the animal of interest. The inbreeding percentage (%INB) should be used to eliminate potential mates that lead to a %INB deemed too high by the breeder. While comfort levels for %INB may vary, most A.I. mating programs set a default threshold of 9% to eliminate mating suggestions that lead to a %INB greater than this level. After eliminating potential mates based on %INB, the Parent Averages for the resulting progeny from each potential mate should be considered. Ultimately, the combination of the highest Parent Averages and an acceptable level of inbreeding should lead to the selection of the most desirable mate.

The example illustrated in the screenshot above allows the user to determine which female would be the best mate for the bull Delta. The tool can also be used to easily look at results for various potential sires by clicking the button "Select Top Sire Group", as an alternative under “Select Male(s)” mentioned in point 4 above, and then selecting from among the bull names listed. A third possible way to use the inbreeding calculator is to enter the registration numbers for a given female and male, and examine the values on an individual mating basis.

In the previous two Tips & Tricks articles the Animal Query, the Group Query and the Selection Refinement Filter were covered. These tools, in combination with the Inbreeding Calculator described in this article, put genetic information at your fingertips in order to help facilitate the breeding decision process.

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