

Table 2 Cautery disbudding methodologies reported in calf publications.

Age of animal (weeks)	Breed	Hair removal (Y/N)	Type of iron	Iron temperature (°C)	Total application per horn bud (seconds)	Number of applications per bud	Horn bud removed (Y/N)	Reference
8	Holstein	NA	Electric – Sunbeam 120V	NA	120-180	NA	NA	Laden <i>et al</i> (1985)
7-16	Holstein	NA	Electric – Sunbeam 120V	NA	120-180	NA	NA	Boandl <i>et al</i> (1989)
3-4	Holstein	NA	Electric – Rhinehart 110-120V	NA	10 and 60-120	1	NA	Wohlt <i>et al</i> (1994)
8	Mont-béliearde	NA	Electric	600*	~60	1	NA	Morisse <i>et al</i> (1995)
6-8	Friesian	NA	Gas-powered – Te Pari Products	NA	3-5	1	NA	Petrie <i>et al</i> (1996)
4-6	Brown Swiss, Holstein-Friesian, Jersey	NA	Electric – ‘Safety-First’ A-Super-Vario	600*	10-20	1	Y	Graf & Senn (1999)

4-6	Friesian	NA	Electric – Kruuse 190W	600*	15	1	NA	Grondahl-Nielsen <i>et al</i> (1999)
4-8	Holstein	NA	Electric – Rhinehart X30	600*	~35	1	NA	Faulkner & Weary (2000)
<1	Holstein	NA	Butane- powered – Portasol Dehorner II	593	NA	NA	NA	Milligan <i>et al</i> (2004)
3-9	Holstein	NA	Electric – Rhinehart X30	600*	19-52	NA	NA	Schwartzkopf- Genswein <i>et al</i> (2005)
1.4-5	Holstein	NA	Electric – Rhinehart X30	600*	~15	1	N	Vickers <i>et al</i> (2005)
10-12	Holstein	Y	Electric – Rhinehart X50	538	NA	NA	NA	Doherty <i>et al</i> (2007)
5-7	Holstein-Friesian	NA	Gas-powered – ABER LPG Debudder	NA	NA	NA	Y	Stewart <i>et al</i> (2008)
6-12	Holstein	NA	Electric – Rhinehart X30	600*	NA	NA	NA	Heinrich <i>et al</i> (2009)

4.3-5.6	Holstein-Friesian	NA	Gas-powered – ABER LPG Debudder	NA	NA	NA	Y	Stewart <i>et al</i> (2009)
4-8	Holstein	NA	Electric – Rhinehart X30	600*	NA	NA	NA	Duffield <i>et al</i> (2010)
4.7-5.9	Holstein	NA	Butane- powered	NA	20-30	1	NA	Stilwell <i>et al</i> (2010)
6-12	Holstein	NA	Electric – Rhinehart X30	600*	NA	NA	NA	Heinrich <i>et al</i> (2010)
8-10	NA	NA	Electric	NA	~30	1	N	Stilwell <i>et al</i> (2012)
10	Holstein	NA	Electric – Rhinehart X30	600*	20	1	NA	Theurer <i>et al</i> (2012)
8-10	Holstein	NA	Electric – Rhinehart X30	600*	NA	NA	NA	Allen <i>et al</i> (2013b)
5-8	Simmental, Brown Swiss, or Holstein- Friesian	NA	Electric –Kerbl	NA	NA	NA	Y	Huber <i>et al</i> (2013)
4-5.5	Holstein–Friesian	NA	Gas-powered – ABER LPG Debudder	NA	NA	NA	Y	Mintline <i>et al</i> (2013)

<1	Holstein	NA	Electric – Rhinehart X30	NA	15	1	NA	Neave <i>et al</i> (2013)
5	Holstein-Friesian	NA	Gas-powered – ABER LPG Debudder	NA	~49	NA	Y	Stewart <i>et al</i> (2013)
1-2	NA	NA	NA	NA	NA	NA	NA	Hokkanen <i>et al</i> (2014)
3-6	Friesian-Jersey	NA	Gas-powered	NA	12-15	NA	Y	Bates <i>et al</i> (2015)
1-4	Charolais, Holstein	Y	Butane- powered – Buddex™, Kerbl	700*	7	1	NA	Caray <i>et al</i> (2015)
6-8	Holstein-Friesian		Electric	600*	30-60	NA	NA	Korkmaz <i>et al</i> (2015)
4-6	Holstein	NA	Butane- powered – Express dehorner	600*	~10	1	N	Stock <i>et al</i> (2015)
3-6	Friesian-Jersey	NA	Gas-powered	NA	12-15	1	Y	Bates <i>et al</i> (2016)
7-8	Holstein	NA	Electric – Rhinehart X30	600*	15-20	NA	N	Stock <i>et al</i> (2016)

2-5	Holstein, Jersey- Holstein	NA	Electric – Rhinehart X50	NA	10-20	NA	NA	Black <i>et al</i> (2017)
1-3	Holstein	Y	Butane- powered – Portasol	NA	≤5	1	Y	Huebner <i>et al</i> (2017)
6-8	Holstein	NA	Dehorner III Electric - Rhinehart	NA	10	1	N	Kleinhenz <i>et al</i> (2017)
<5	Holstein, Jersey	Y	Electric – Rhinehart X50	467	18-23	NA	N	Adcock & Tucker (2018)
6-8	Holstein	NA	Electric - Rhinehart	NA	10	1	N	Kleinhenz <i>et al</i> (2018)
1-4	Holstein	NA	Electric - LötKolben 230 V	600*	NA	NA	NA	Mirra <i>et al</i> (2018)
3-4	Friesian	NA	Electric – 'Quality' 230V	NA	NA	NA	Y	Sutherland <i>et al</i> (2018a)
<1.5	Holstein	Y	Electric – Rhinehart X50A; Butane- powered – Portasol	433-436	7-25	NA	N	Adcock <i>et al</i> (2019)

4-5	Friesian	NA	Butane-powered – Portasol Mark 3 debudder	NA	10-15	NA	Y	Bates <i>et al</i> (2019)
4-7	Holstein	NA	Gas-powered – Express dehorner	NA	5-7	1	Y	Byrd <i>et al</i> (2019)
1-4	Holstein	NA	Electric	NA	NA	NA	NA	Casoni <i>et al</i> (2019)
2-6	NA	Y	Gas-powered – Express dehorner	NA	NA	NA	Y	Cuttance <i>et al</i> (2019)
3-7	Holstein	Y	Electric – Rhinehart X30	500*	15	NA	NA	Ede <i>et al</i> (2019a)
3-5	Holstein	NA	Electric – Rhinehart X30	NA	NA	NA	NA	Ede <i>et al</i> (2019b)
1-5	Holstein	NA	Electric – Rhinehart X30	NA	15	NA	NA	LeCorps <i>et al</i> (2019)
10	NA	NA	Electric	NA	10	1	N	Mir <i>et al</i> (2019)
<1	Friesian	Y	Electric – 'Quality' 230V	NA	15	NA	Both	Sutherland <i>et al</i> (2019a)

NA: not available as the information was not provided. * denotes studies that did not state if (or describe how) the temperature of the iron was measured.