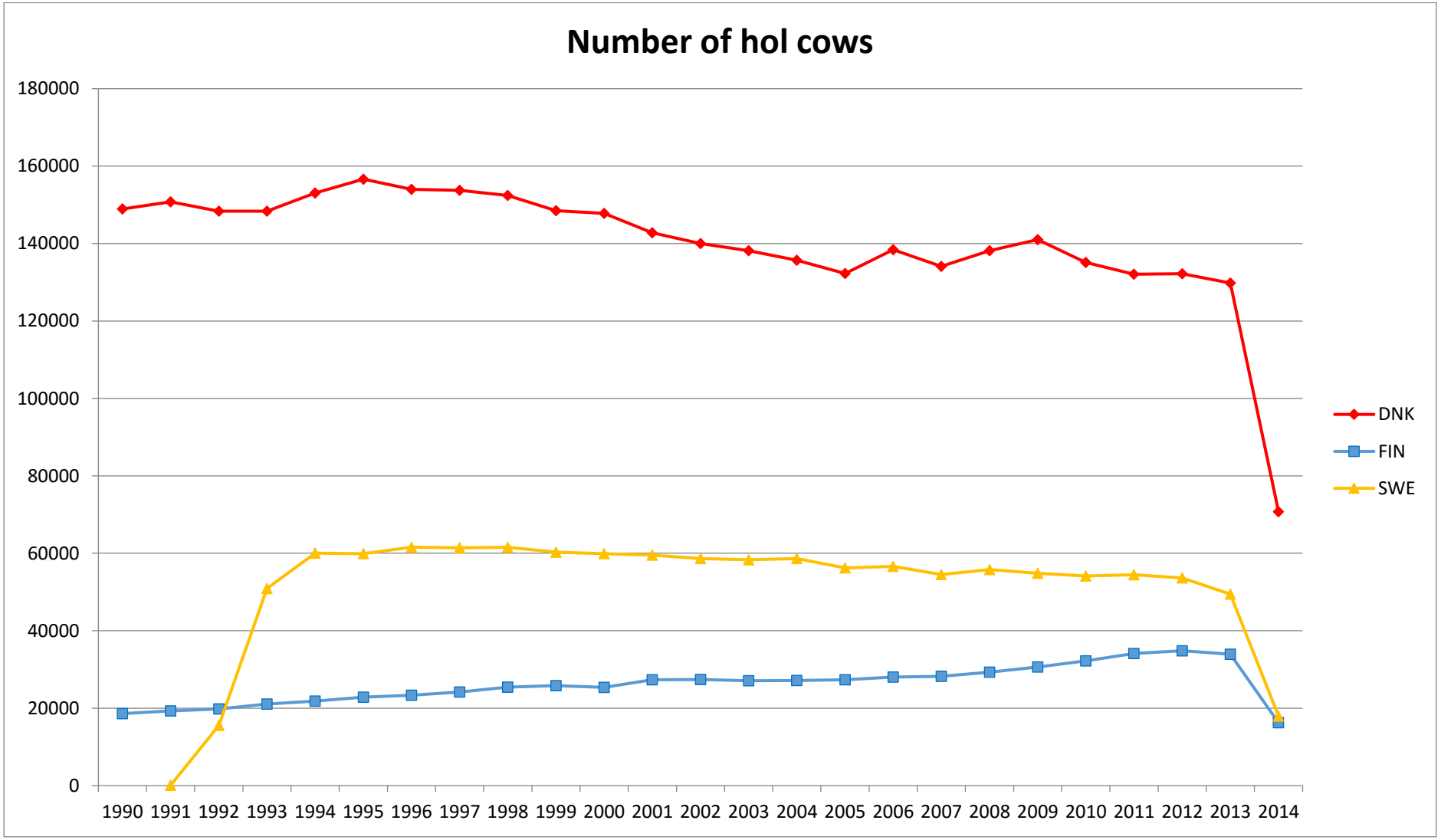
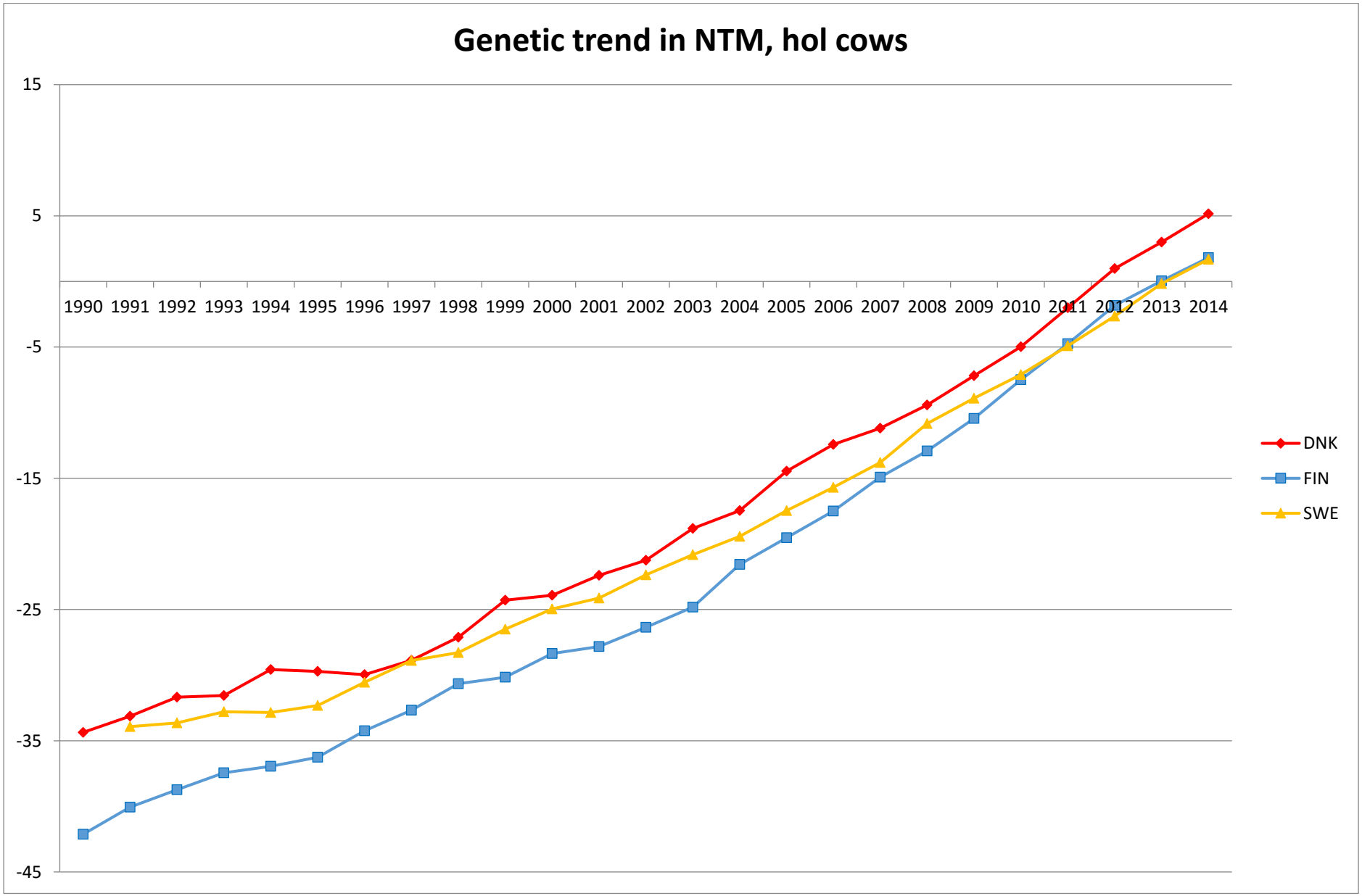
NAV workshop 19.1.2017

Following document shows genetic trends in traits that are included in NTM. Additionally, genetic trends in individual type traits, in yield traits and in growth traits are given. Genetic trends are calculated from females that get breeding values in NAV evaluation. For each birth year class a mean is calculated. From annual means it can be concluded how the population is changing over years.




Genetic trend in NTM, hol cows
15
5
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-35
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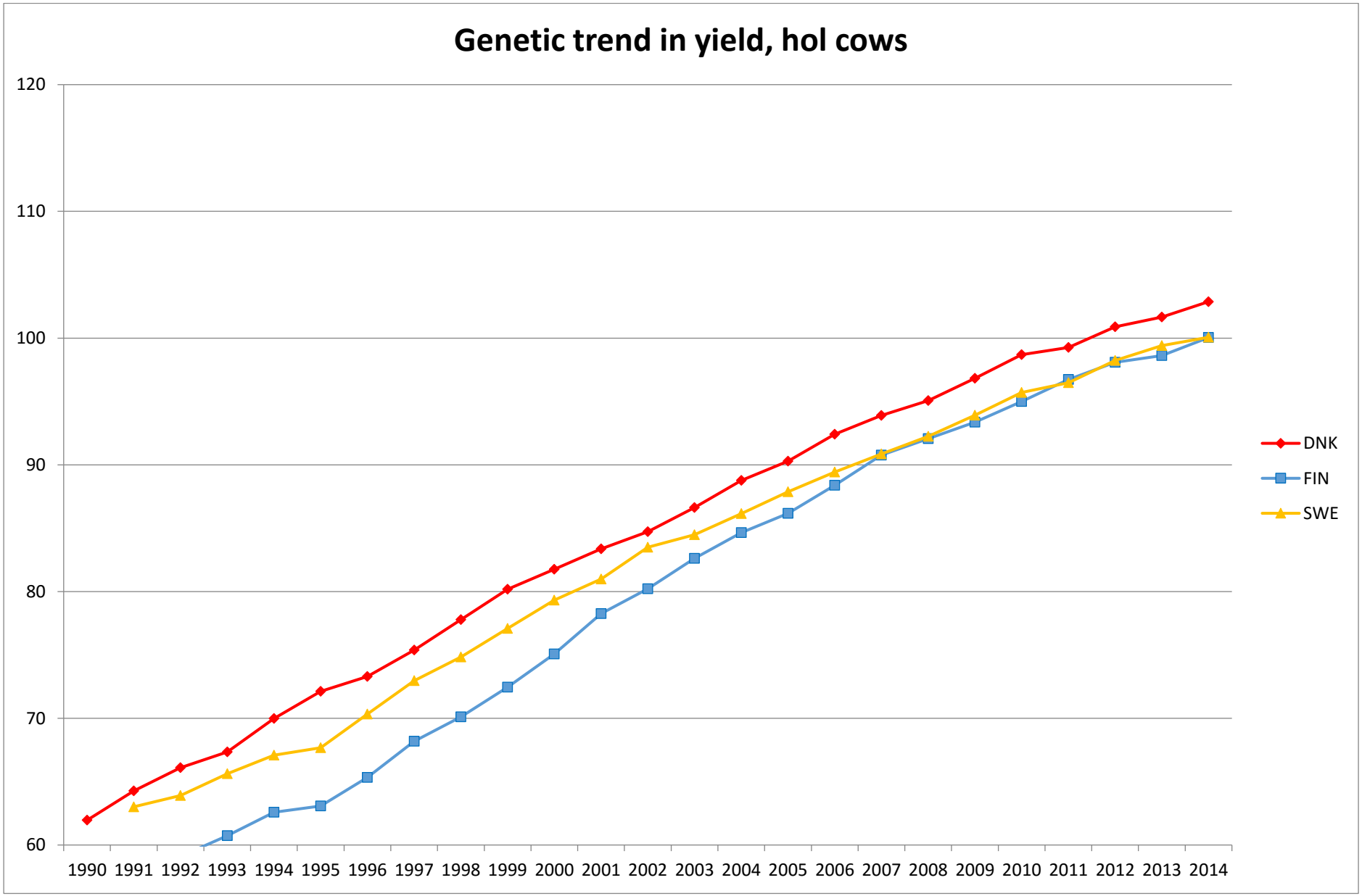
1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014
DNK
FIN
SWE


Genetic trend in yield, hol cows
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110
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90
80
70
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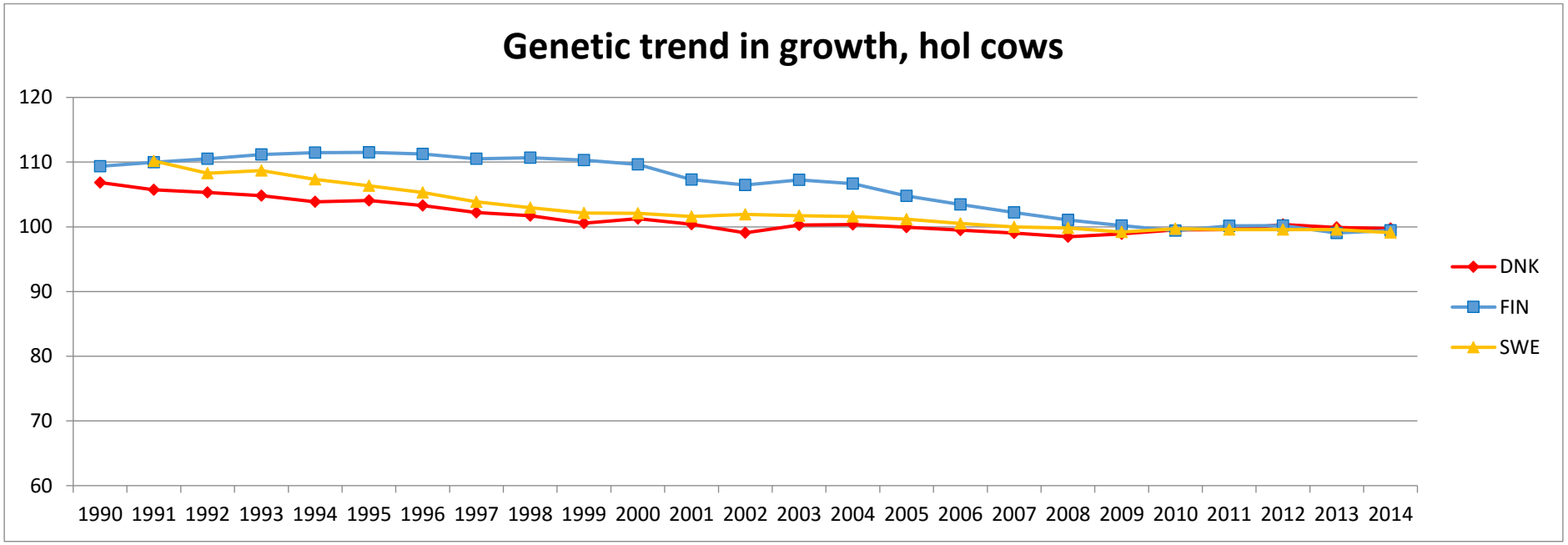
DNK
FIN
SWE


Genetic trend in growth, hol cows
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110
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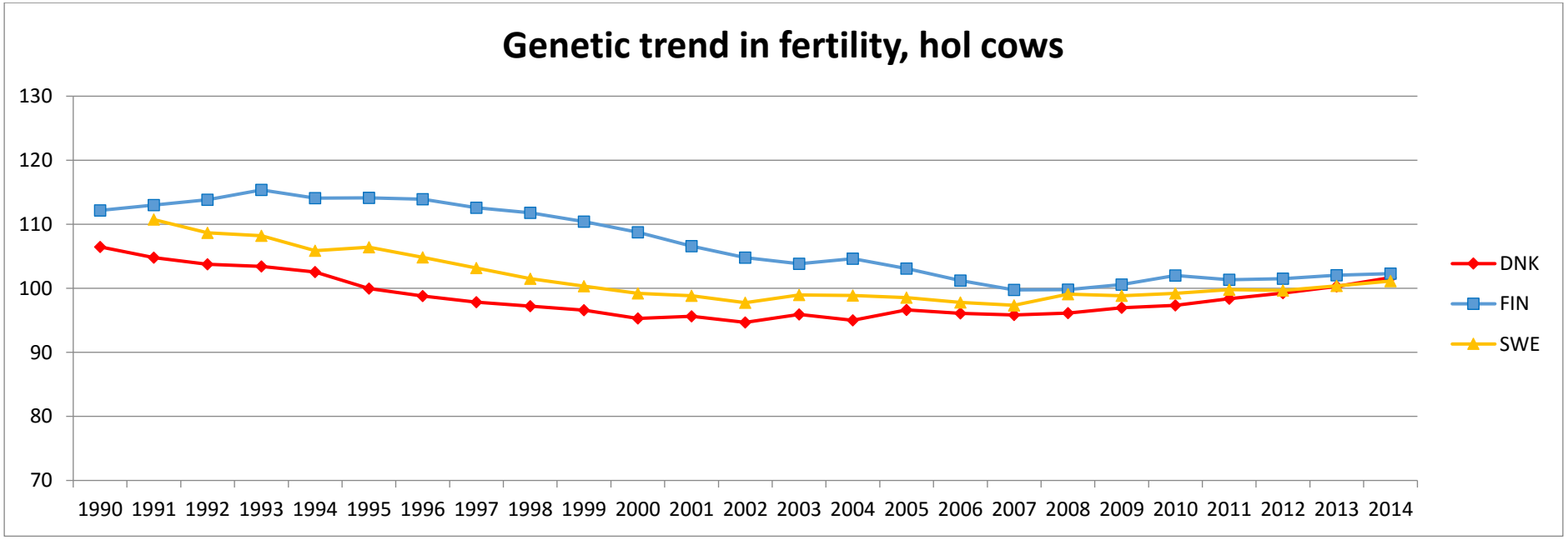
1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014
DNK
FIN
SWE


Genetic trend in fertility, hol cows
130
120
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100
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80
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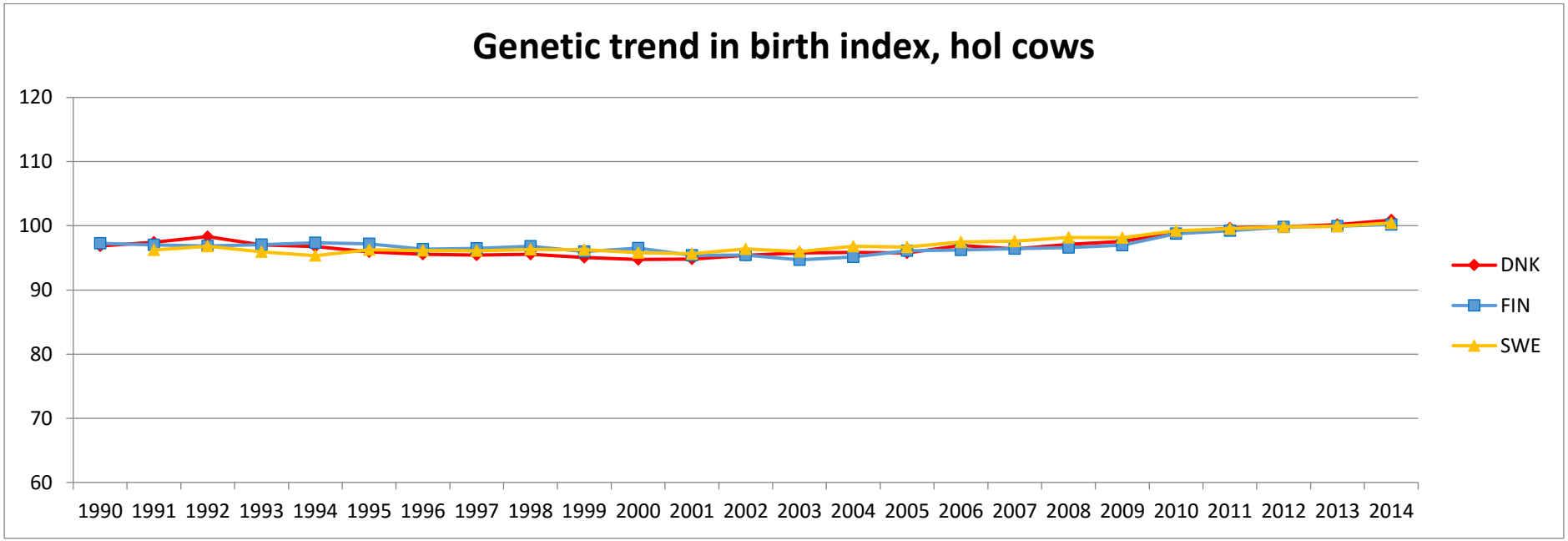
1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014
DNK
FIN
SWE


Genetic trend in birth index, hol cows
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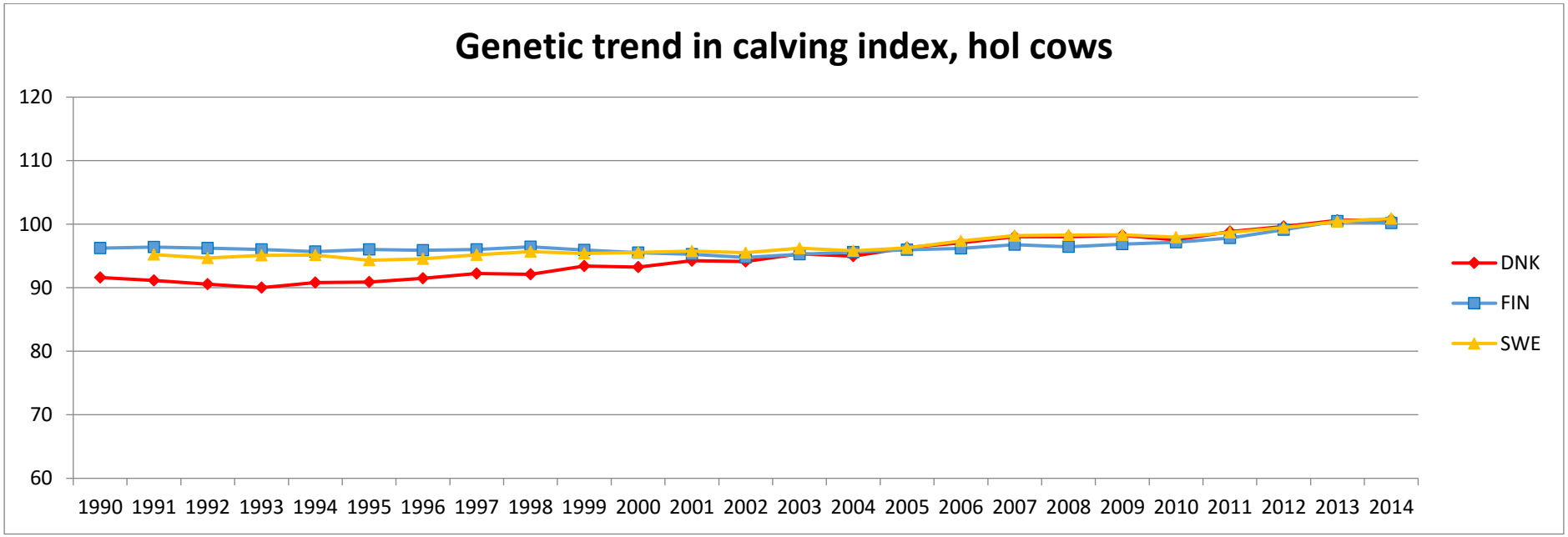
DNK
FIN
SWE


Genetic trend in calving index, hol cows
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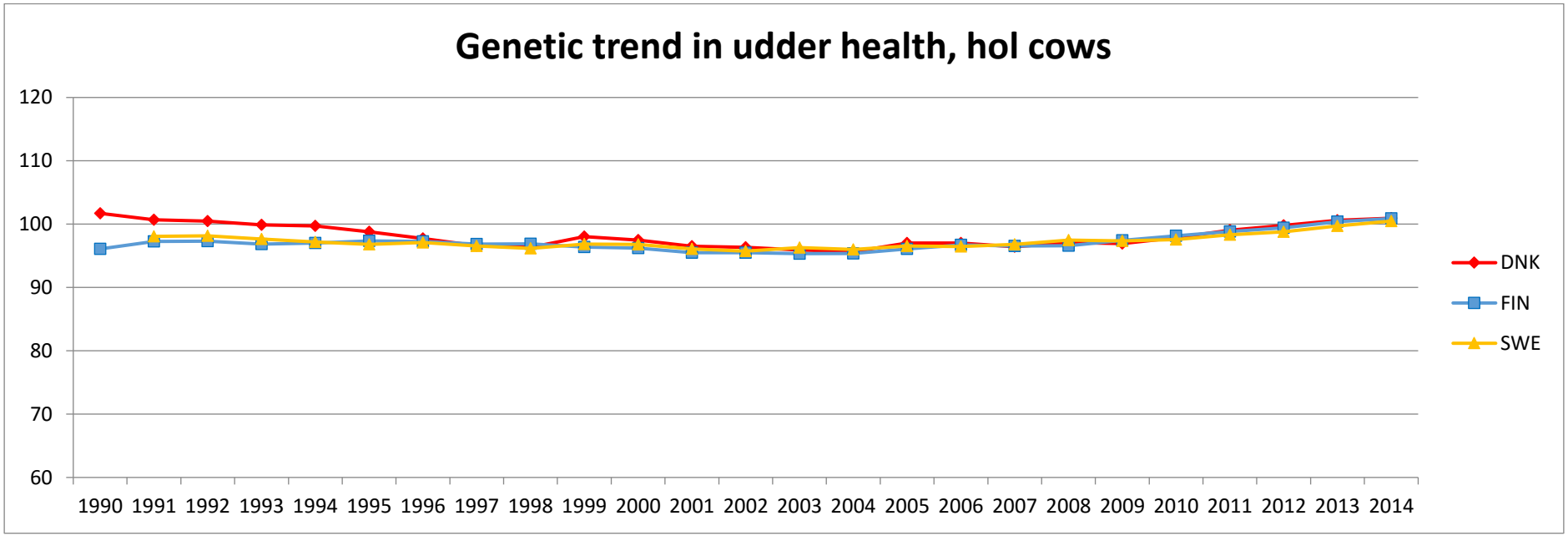
DNK
FIN
SWE


Genetic trend in udder health, hol cows
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70
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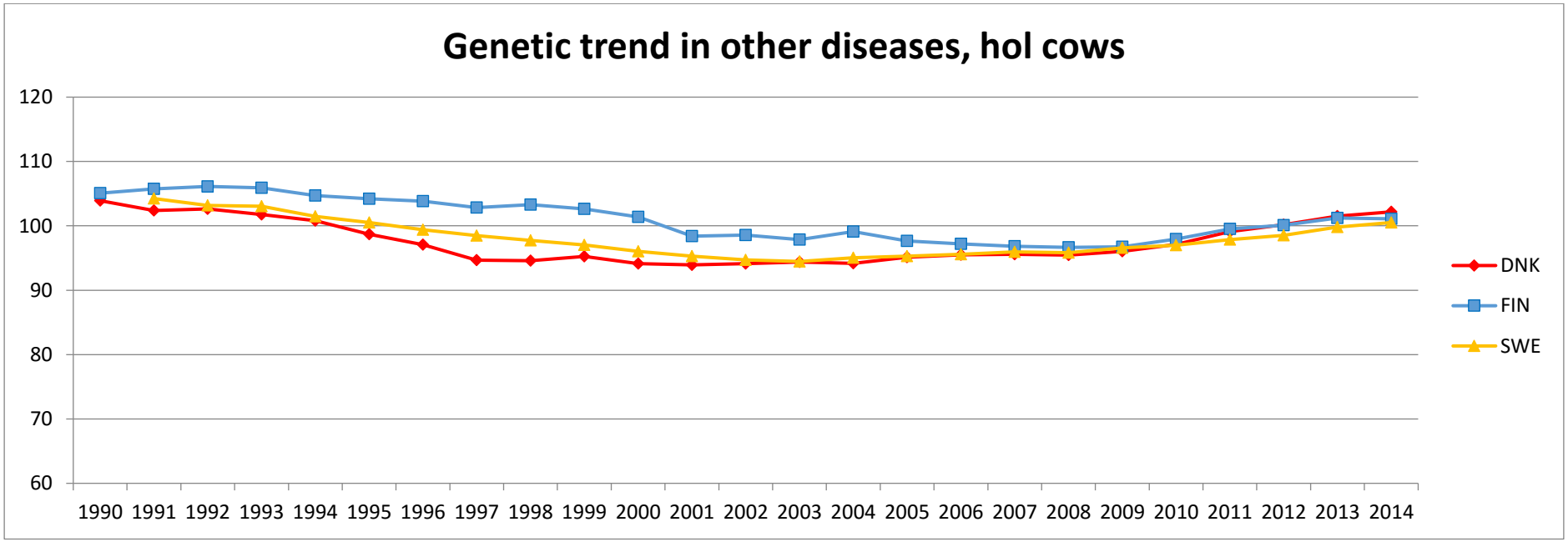
DNK
FIN
SWE


Genetic trend in other diseases, hol cows
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110
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90
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70
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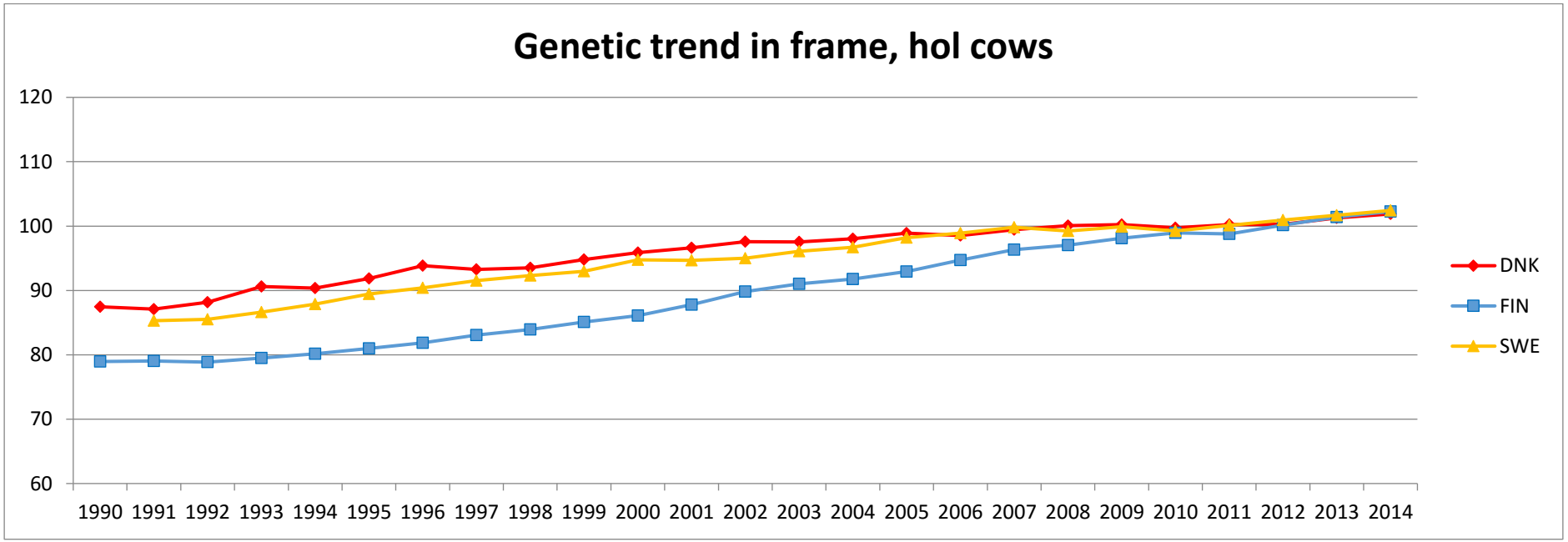
DNK
FIN
SWE


Genetic trend in frame, hol cows
120
110
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70
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1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014
DNK
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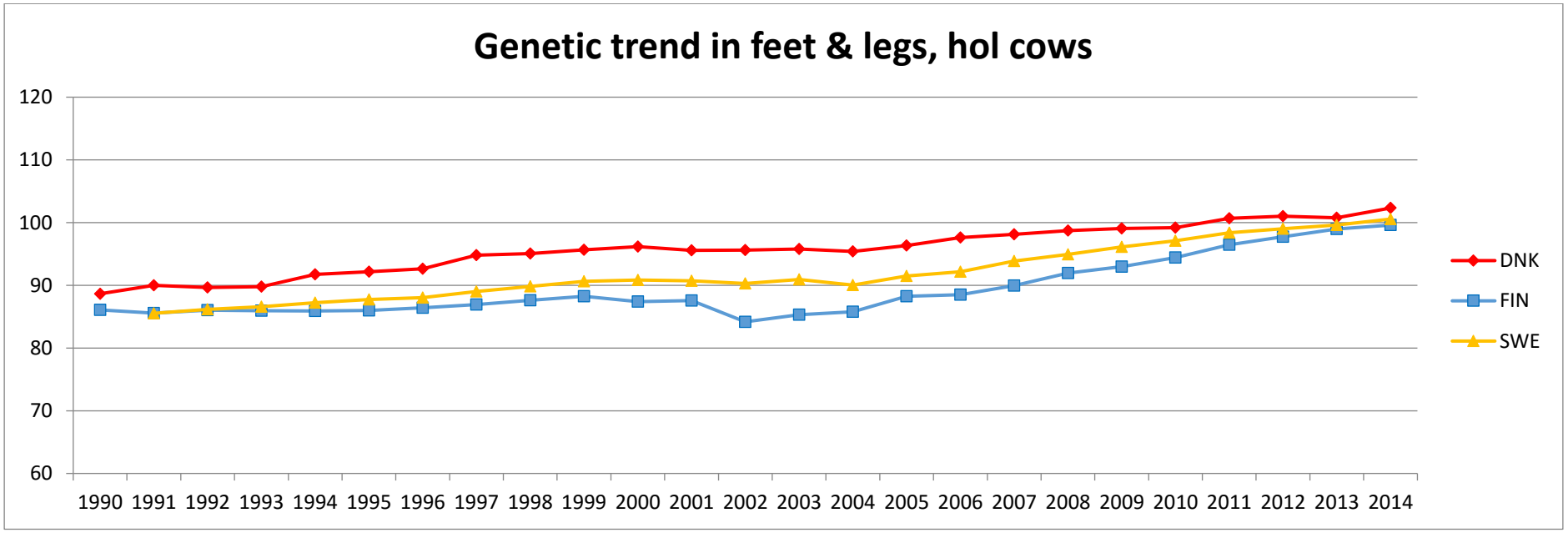
SWE


Genetic trend in feet & legs, hol cows
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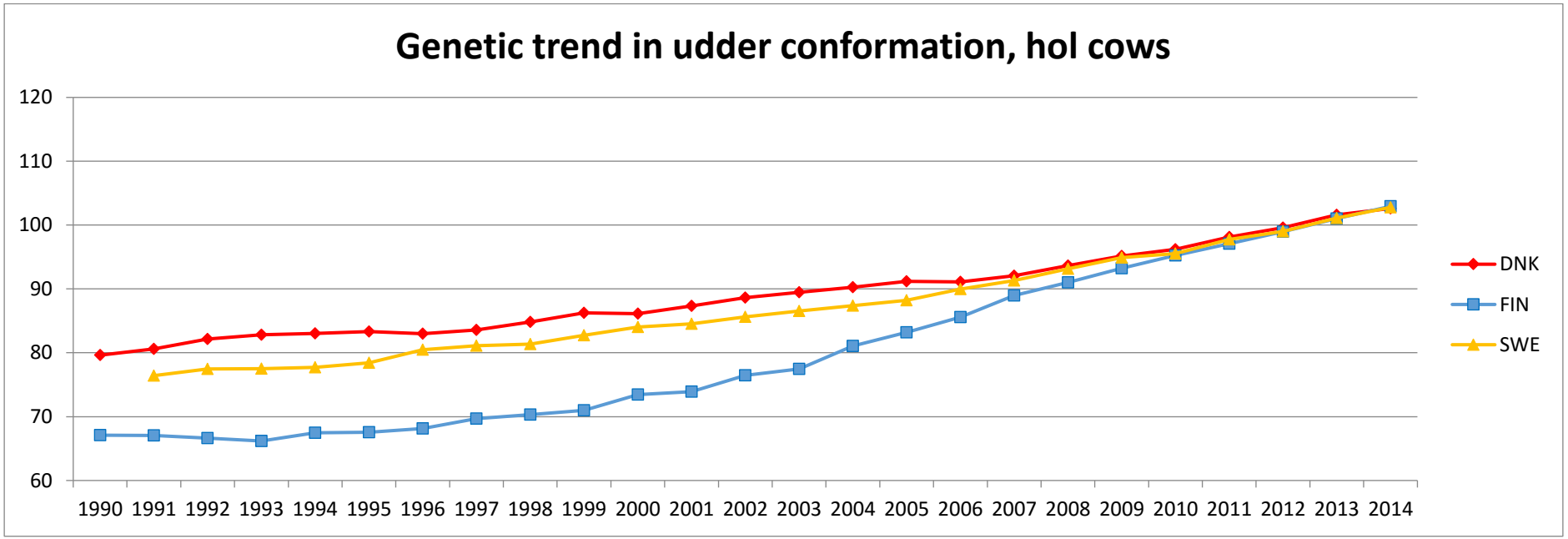
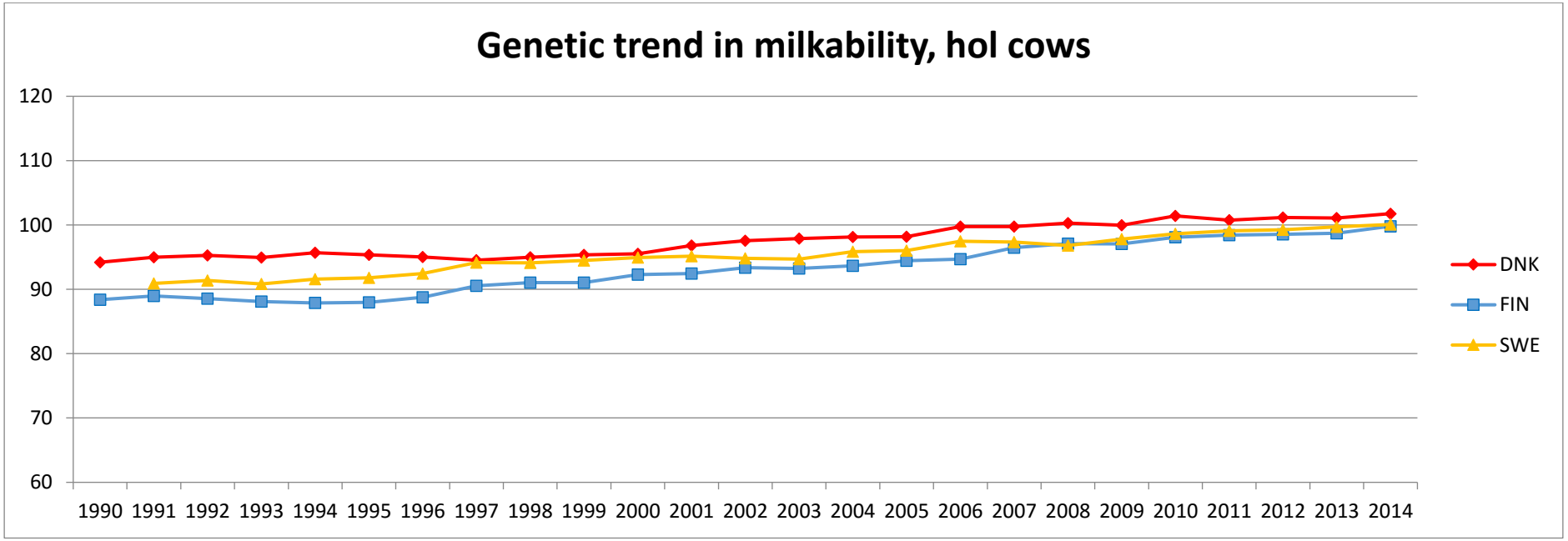
DNK
FIN
SWE


Genetic trend in udder conformation, hol cows
120
110
100
90
80
70
60
1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014
DNK
FIN
SWE


Genetic trend in milkability, hol cows
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110
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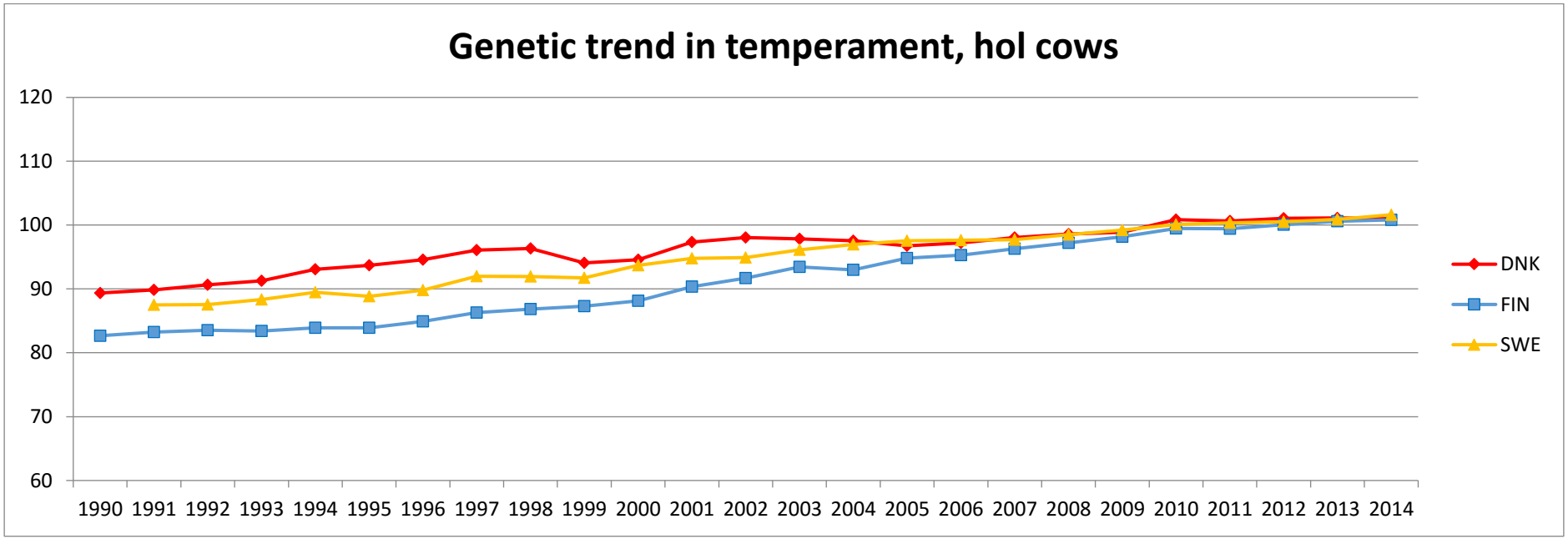
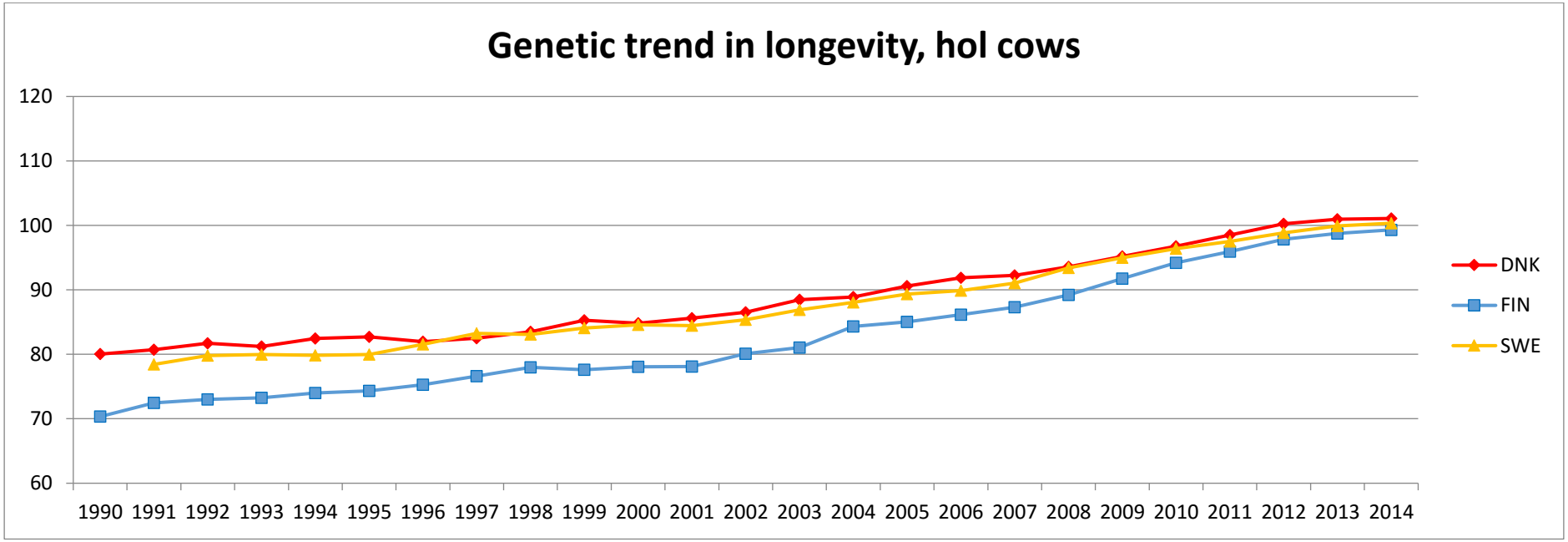
90
80
70
60
1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014
DNK
FIN
SWE


Genetic trend in temperament, hol cows
120
110
100
90
80
70
60
1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014
DNK
FIN
SWE


Genetic trend in longevity, hol cows
120
110
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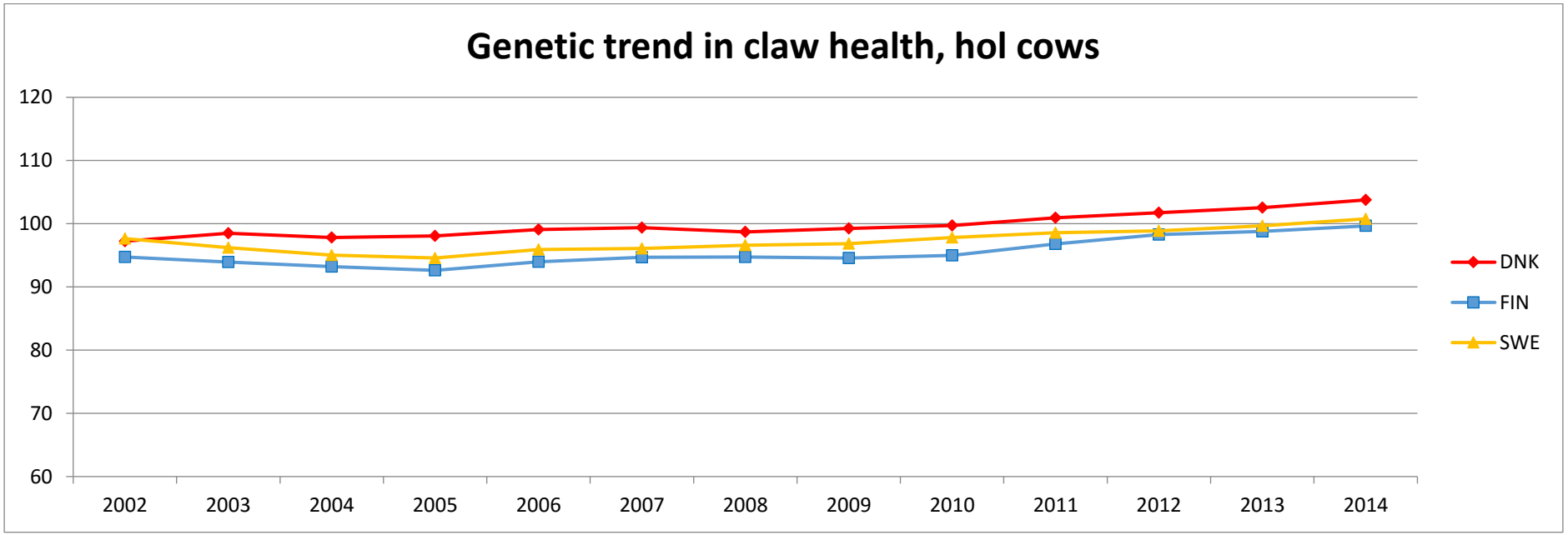
90
80
70
60
1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014
DNK
FIN
SWE


Genetic trend in claw health, hol cows
120
110
100
90
80
70
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2002
2003
2004
2005
2006
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2008
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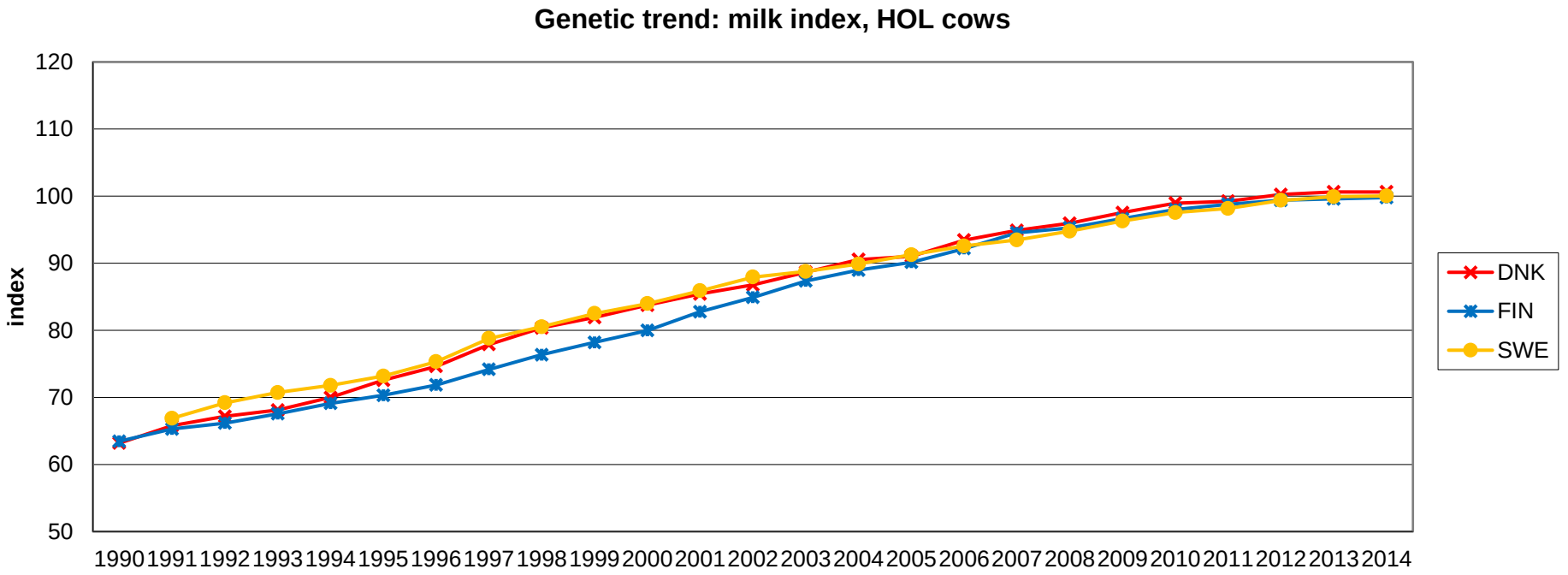
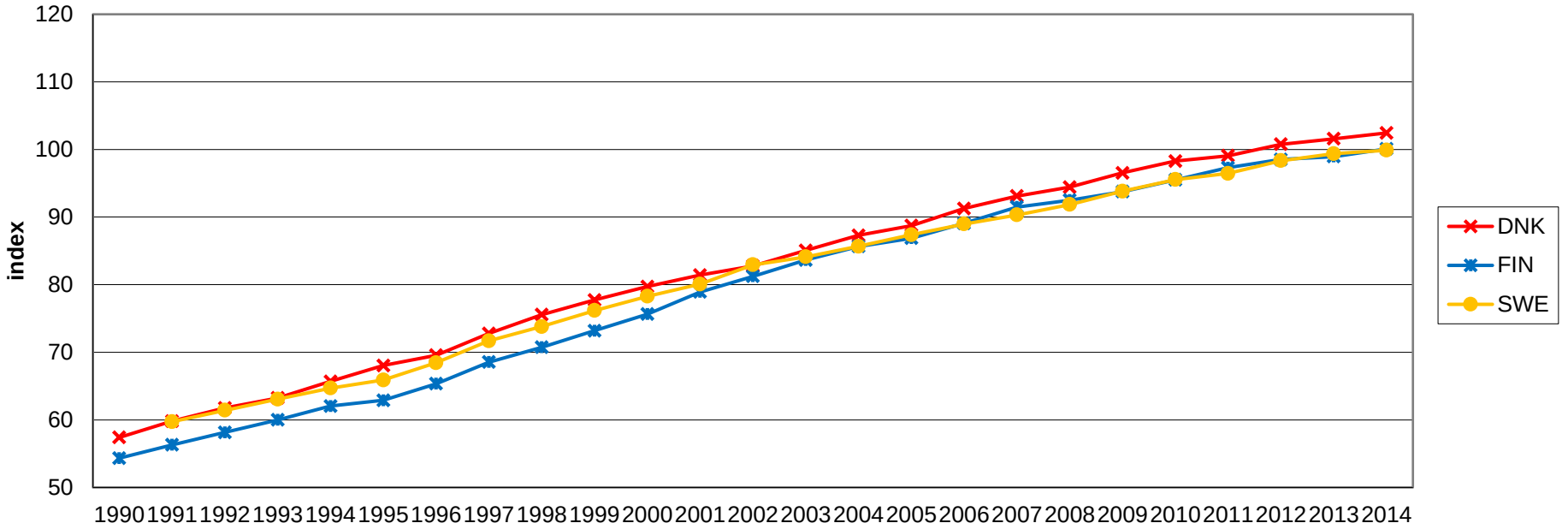
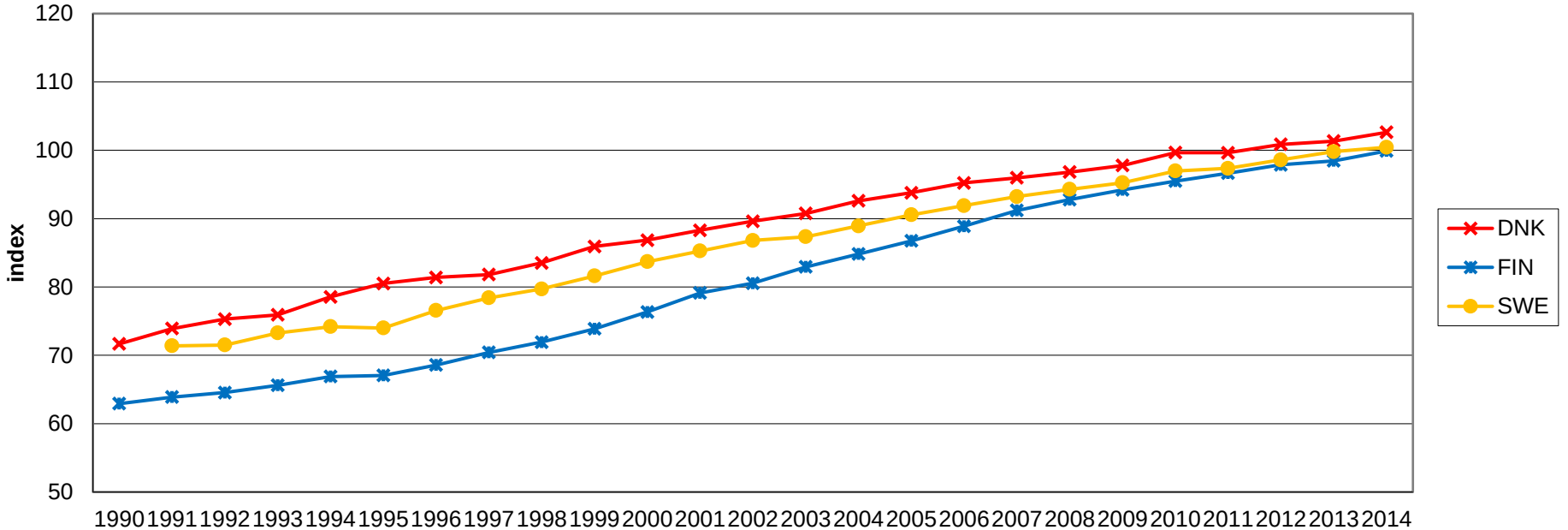
2010
2011
2012
2013
2014
DNK
FIN
SWE


Genetic trend: milk index, HOL cows
index
120
110
100
90
80
70
60
50
1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014
DNK
FIN
SWE

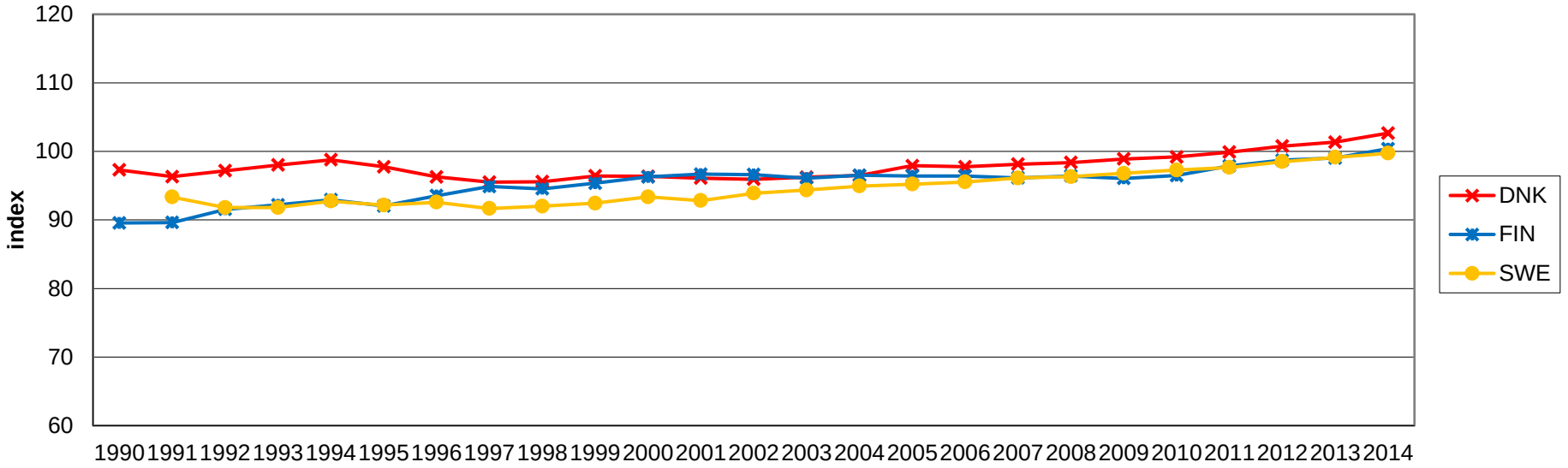
Genetic trend: protein kg index, HOL cows



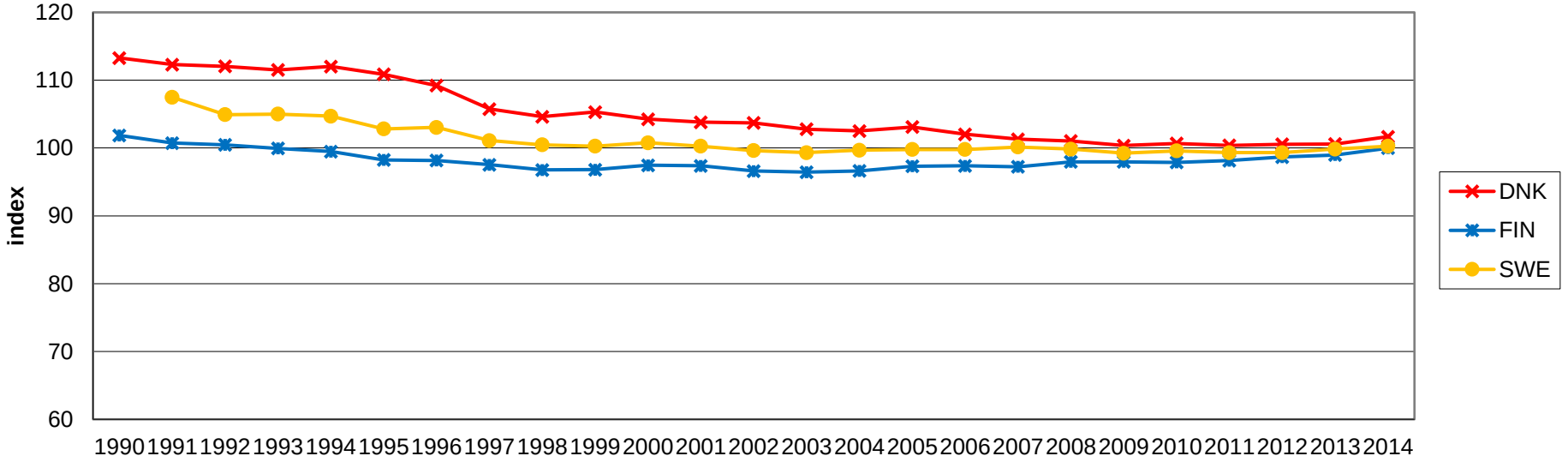
Genetic trend: fat kg index, HOL cows

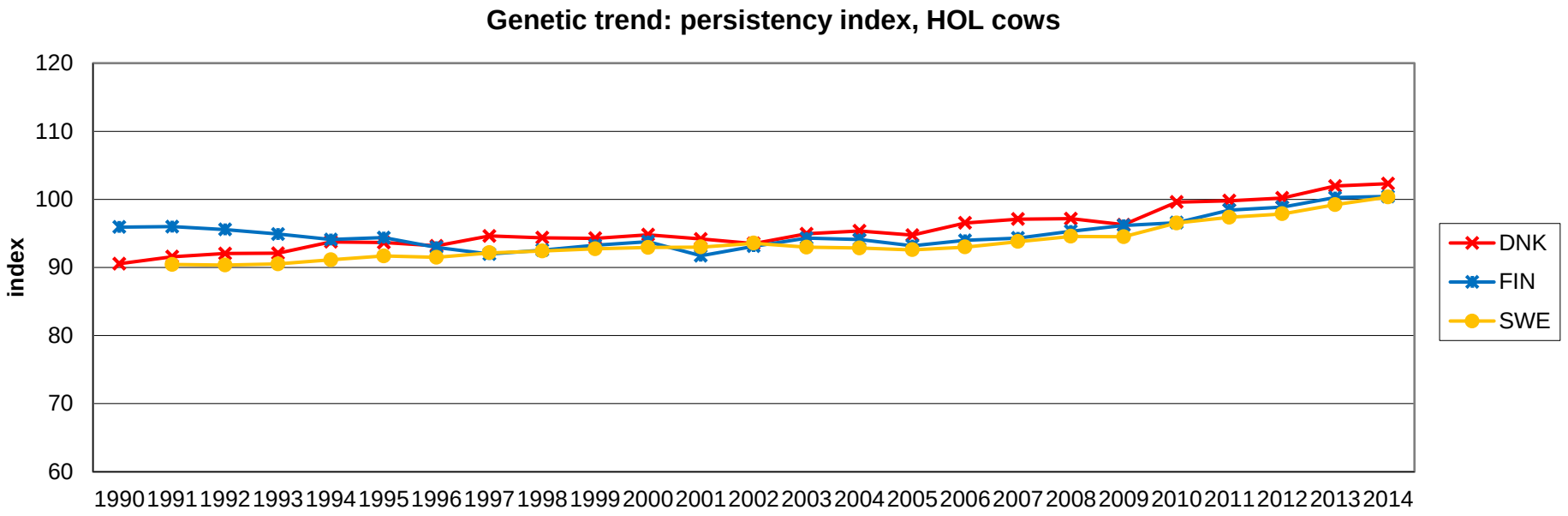


Genetic trend: protein% index, HOL cows



Genetic trend: fat% index, HOL cows




Genetic trend: persistency index, HOL cows
index
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110
100
90
80
70
60
1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014
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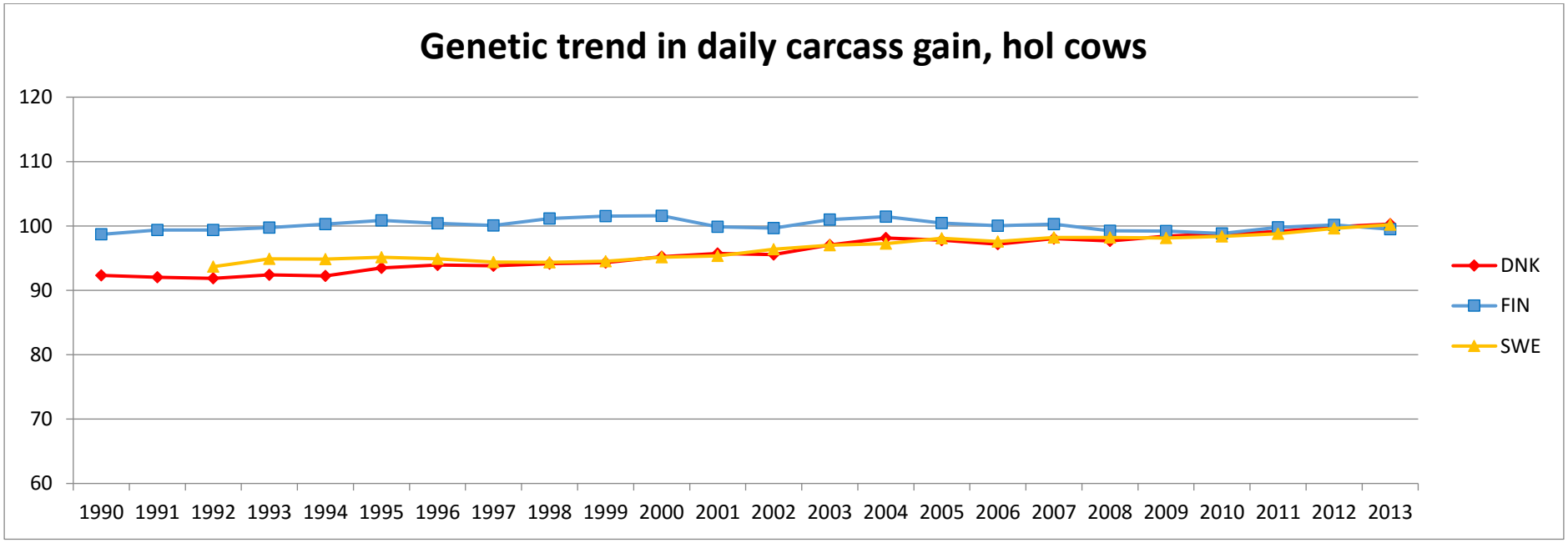
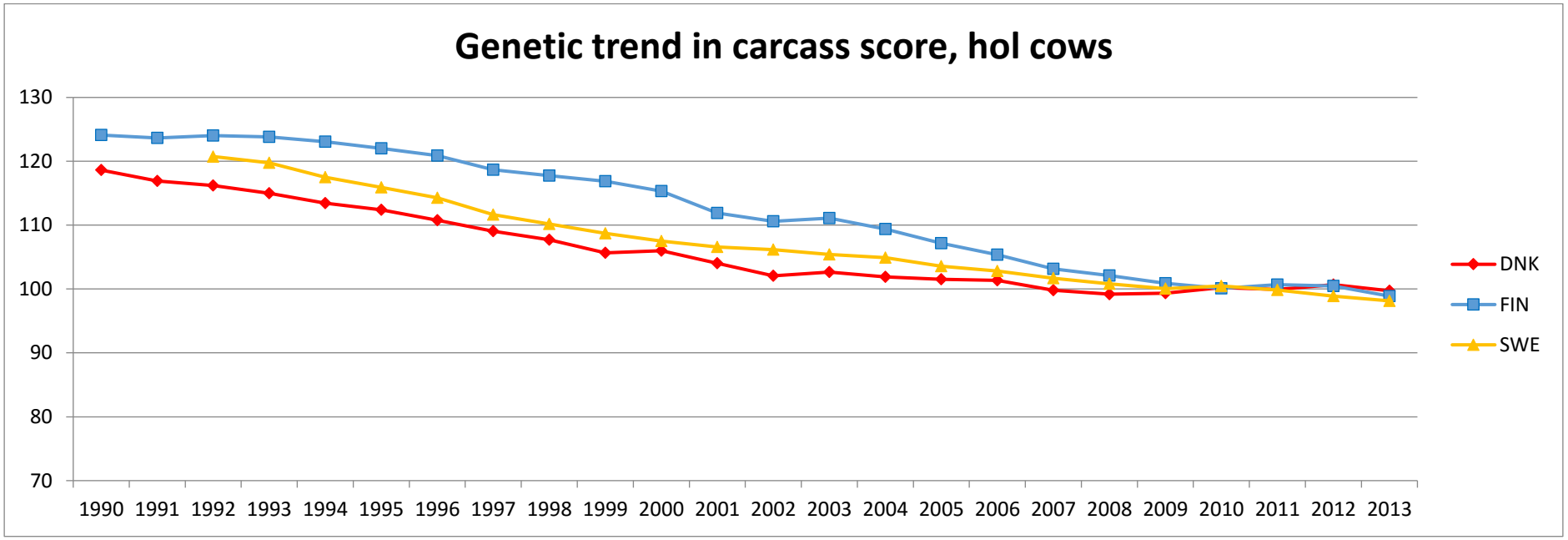
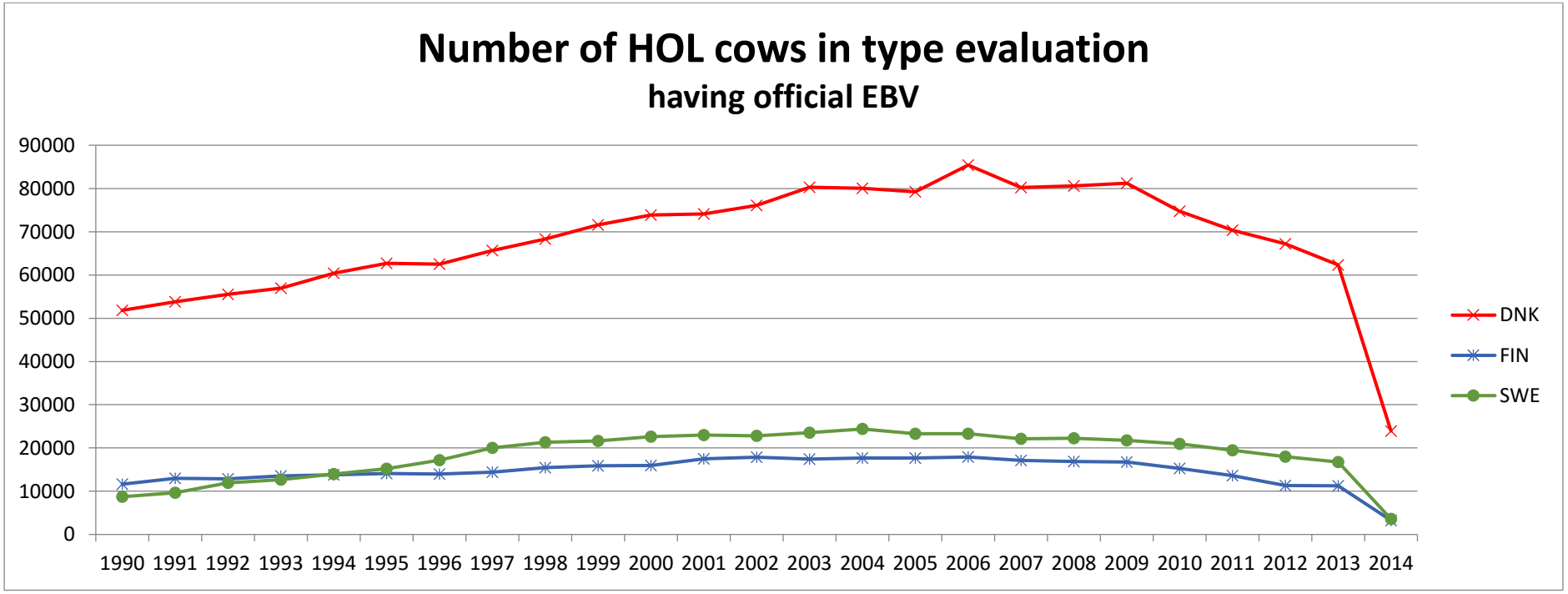
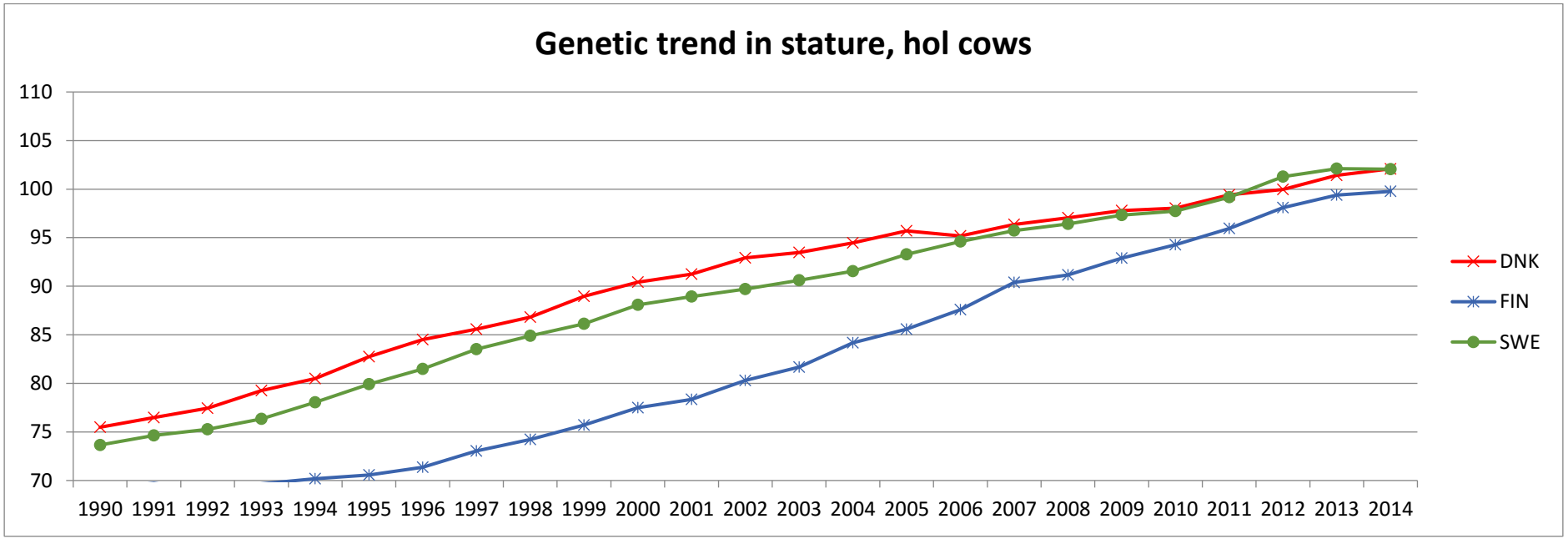
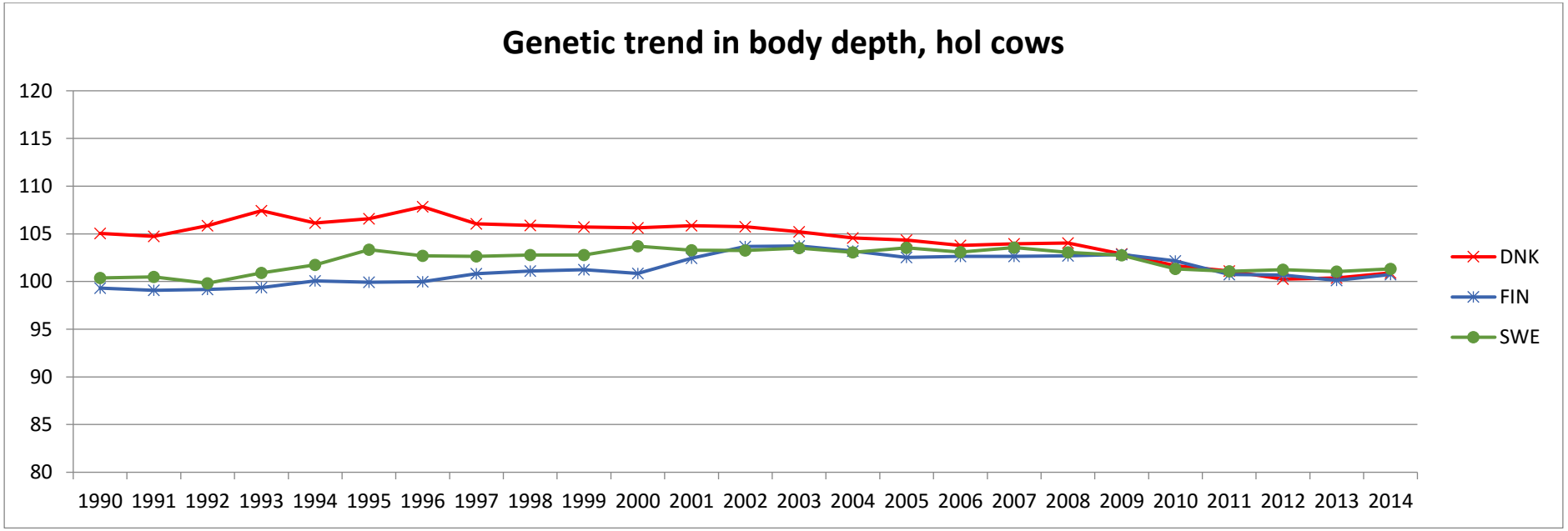

Genetic trend in daily carcass gain, hol cows
120
110
100
90
80
70
60
1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013
DNK
FIN
SWE


Genetic trend in carcass score, hol cows
130
120
110
100
90
80
70
1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013
DNK
FIN
SWE


Number of HOL cows in type evaluation
having official EBV
90000
80000
70000
60000
50000
40000
30000
20000
10000
0
1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014
DNK
FIN
SWE


Genetic trend in stature, hol cows
110
105
100
95
90
85
80
75
70
1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014
DNK
FIN
SWE


Genetic trend in body depth, hol cows
120
115
110
105
100
95
90
85
80
1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014
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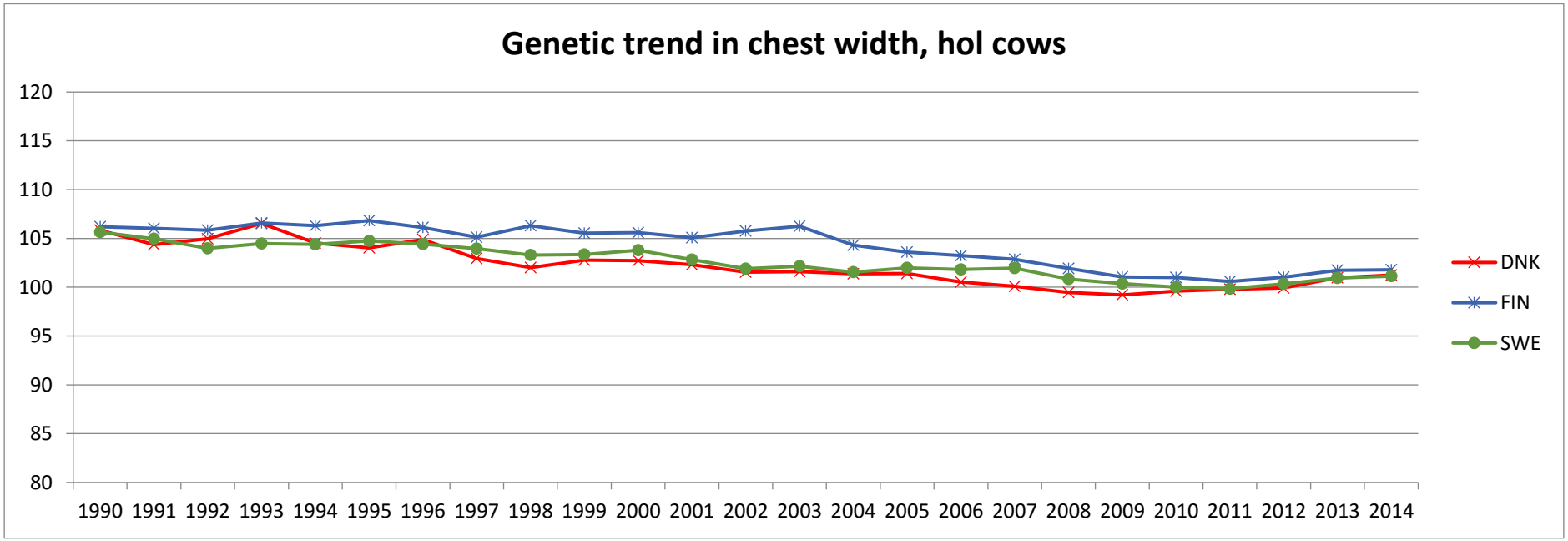
Genetic trend in chest width, hol cows
120
115
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105
100
95
90
85
80
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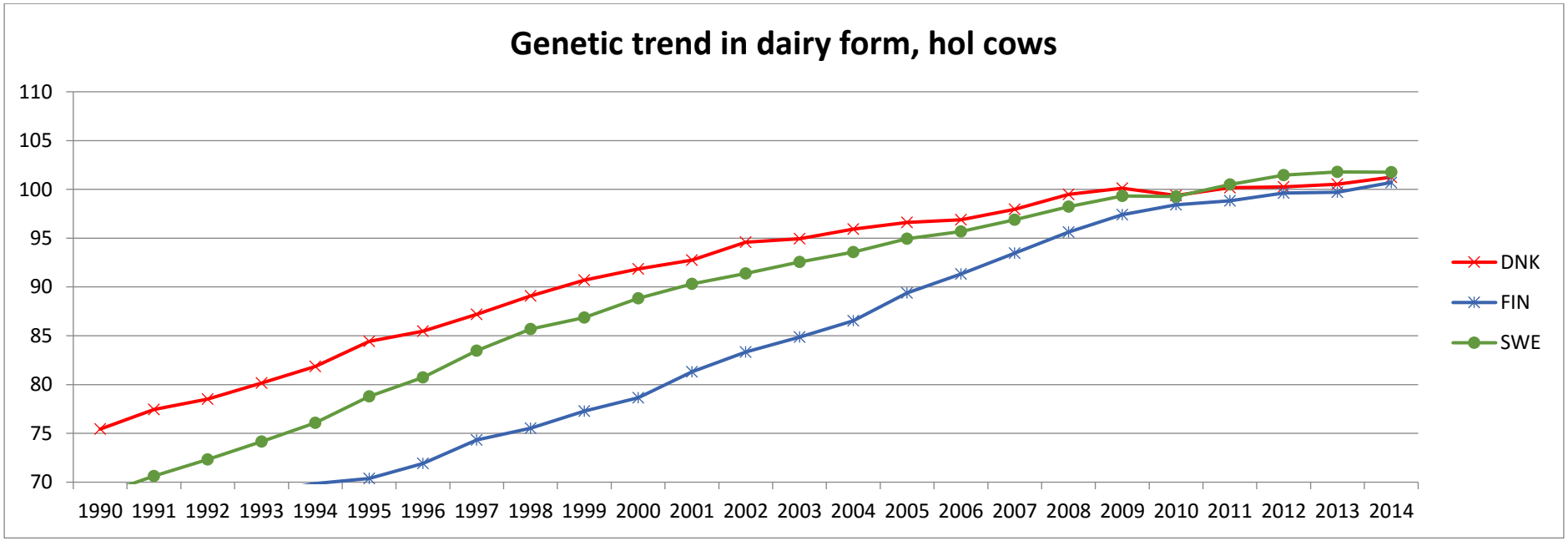
Genetic trend in dairy form, hol cows
110
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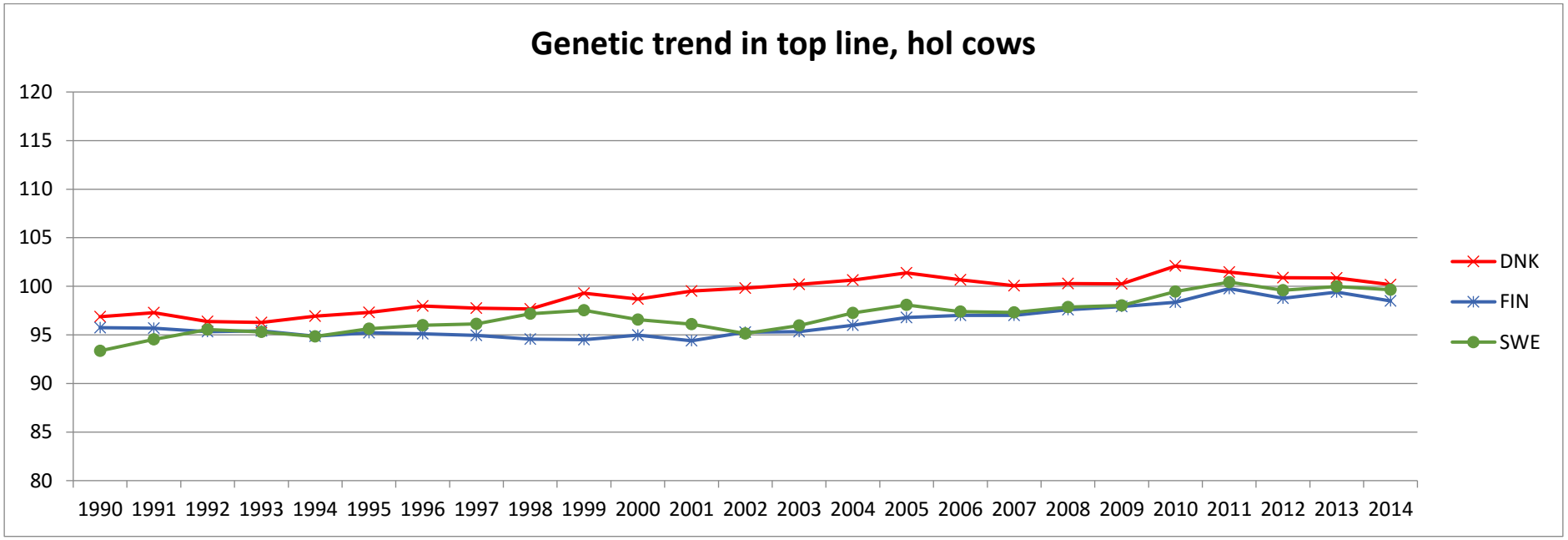
Genetic trend in top line, hol cows
120
115
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95
90
85
80
1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014
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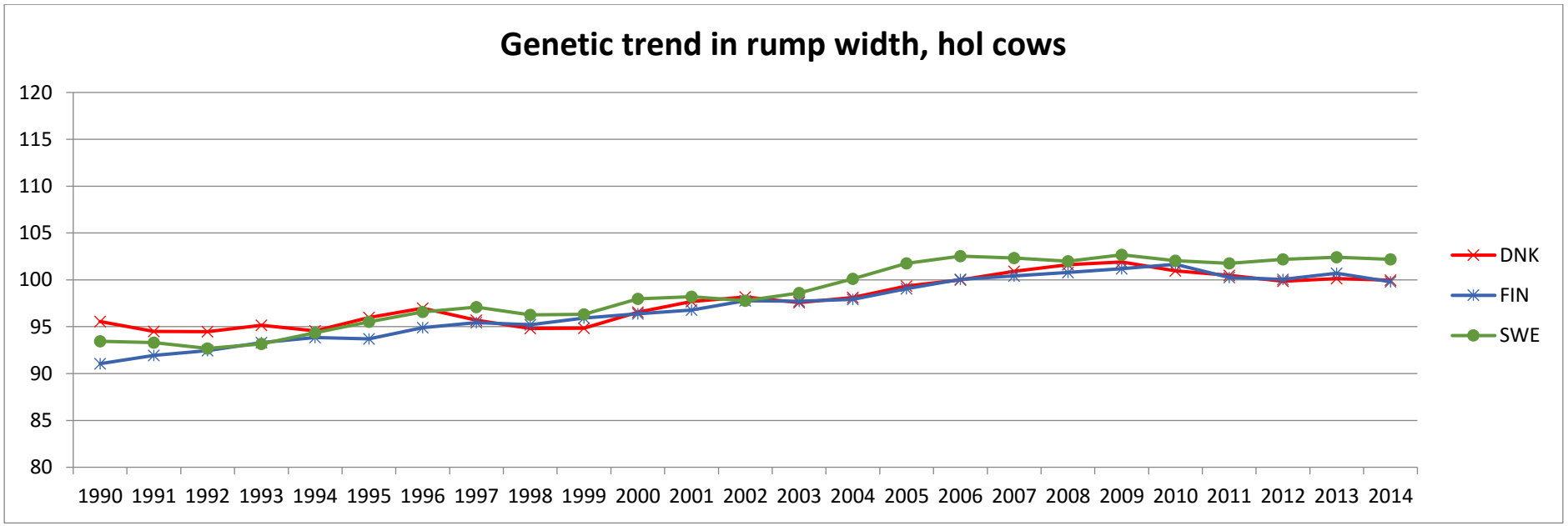
SWE


Genetic trend in rump width, hol cows
120
115
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105
100
95
90
85
80
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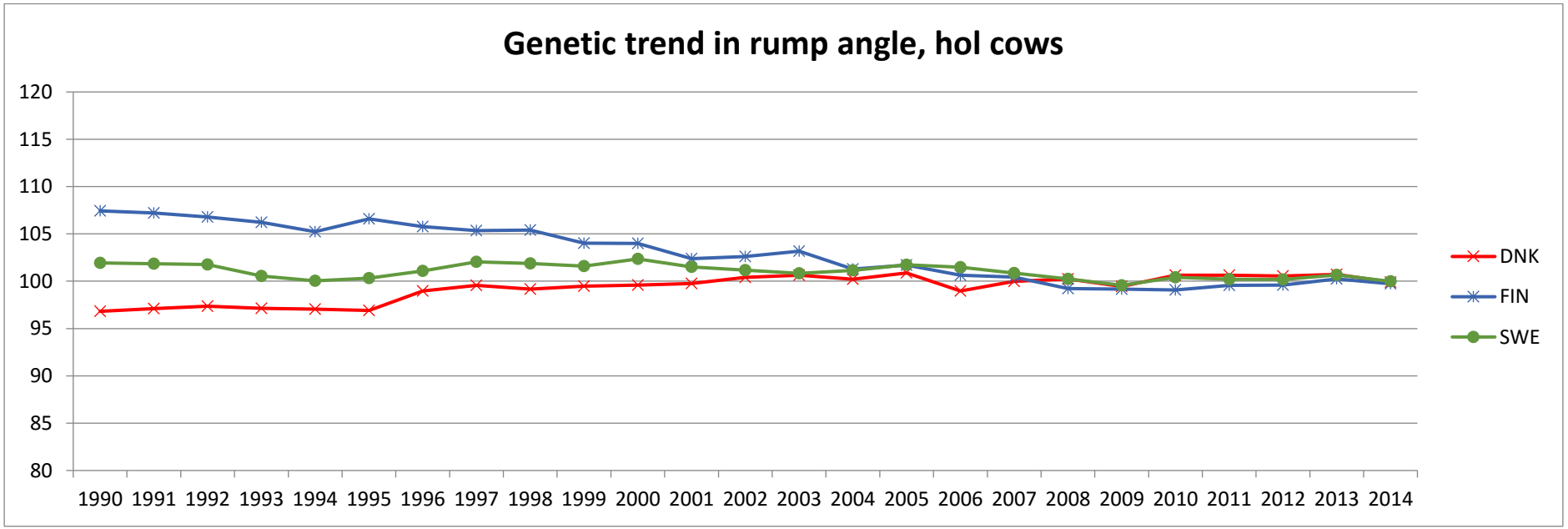
Genetic trend in rump angle, hol cows
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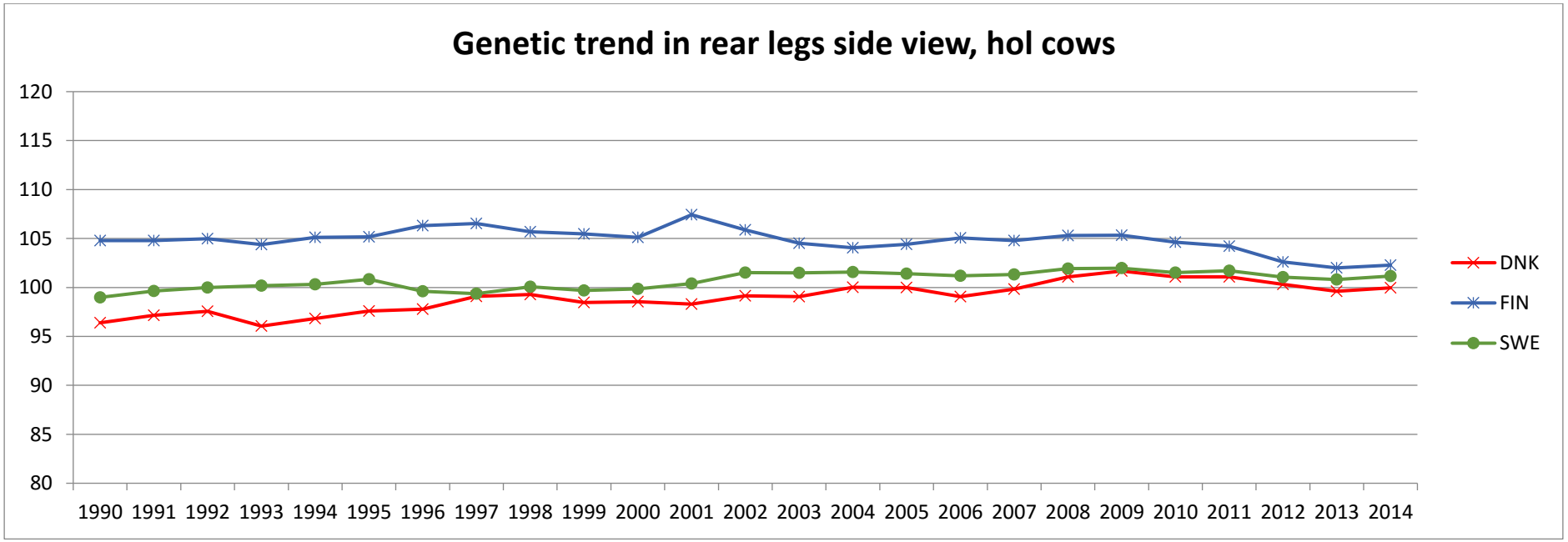
Genetic trend in rear legs side view, hol cows
120
115
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105
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95
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85
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DNK
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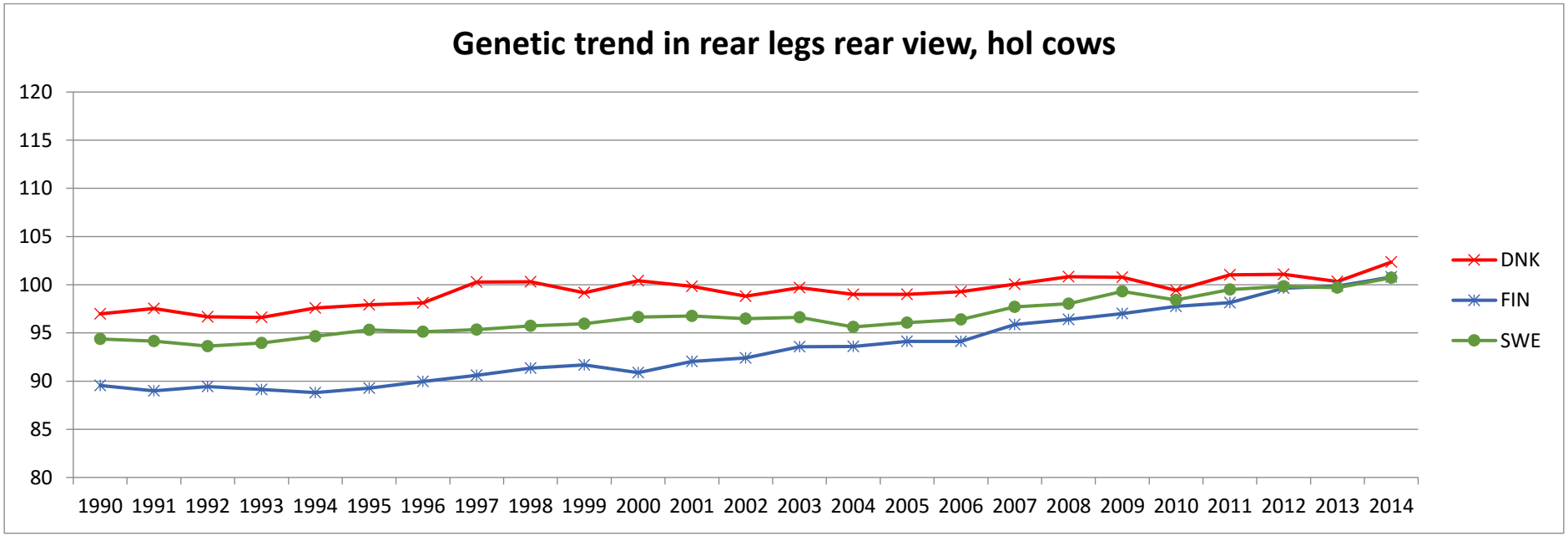
Genetic trend in rear legs rear view, hol cows
120
115
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1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014
DNK
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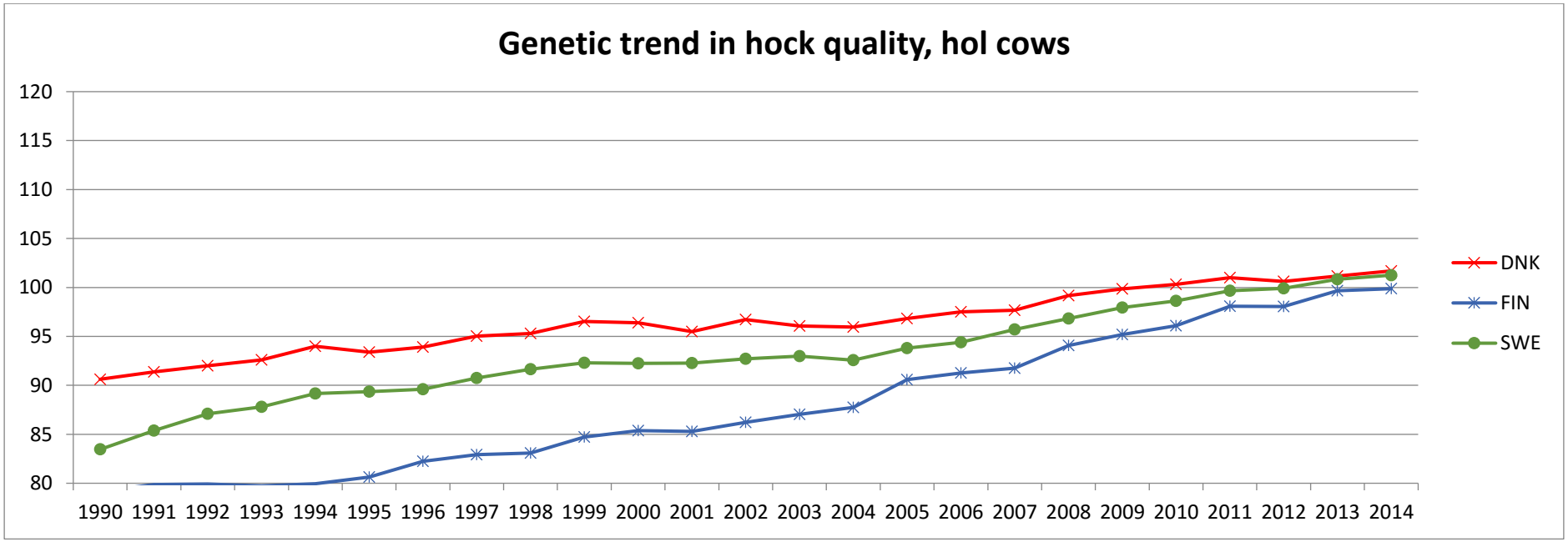
Genetic trend in hock quality, hol cows
120
115
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85
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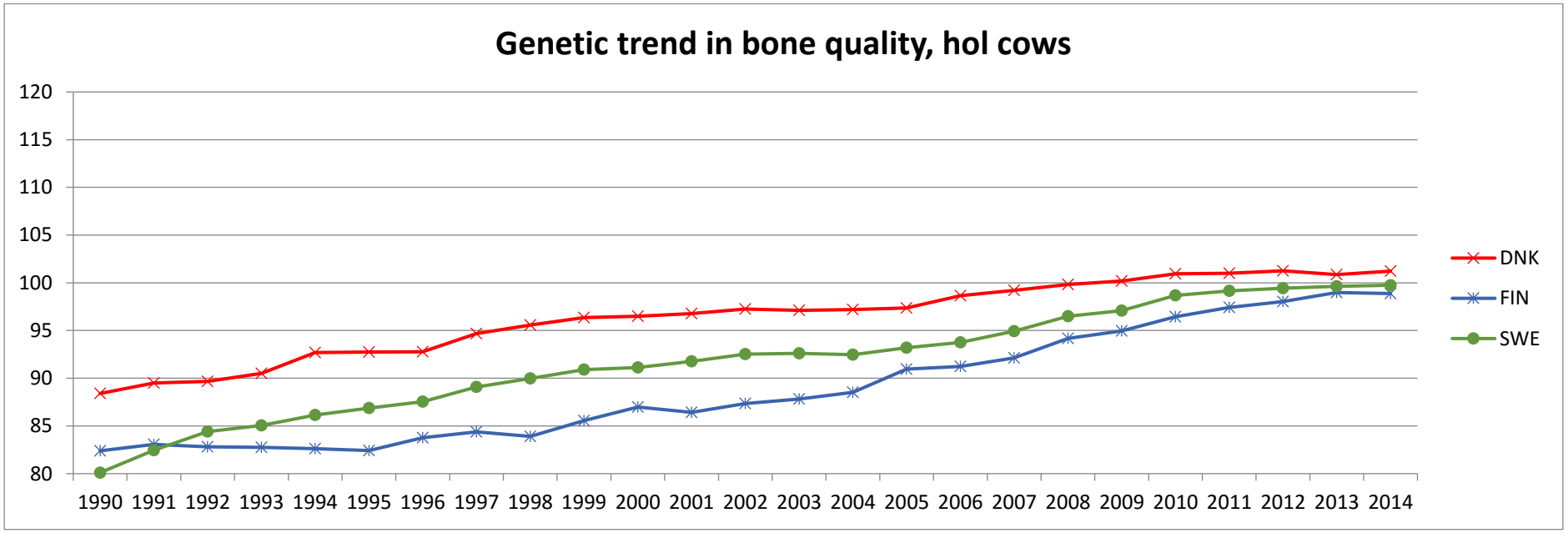
1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014
DNK
FIN
SWE


Genetic trend in bone quality, hol cows
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1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014
DNK
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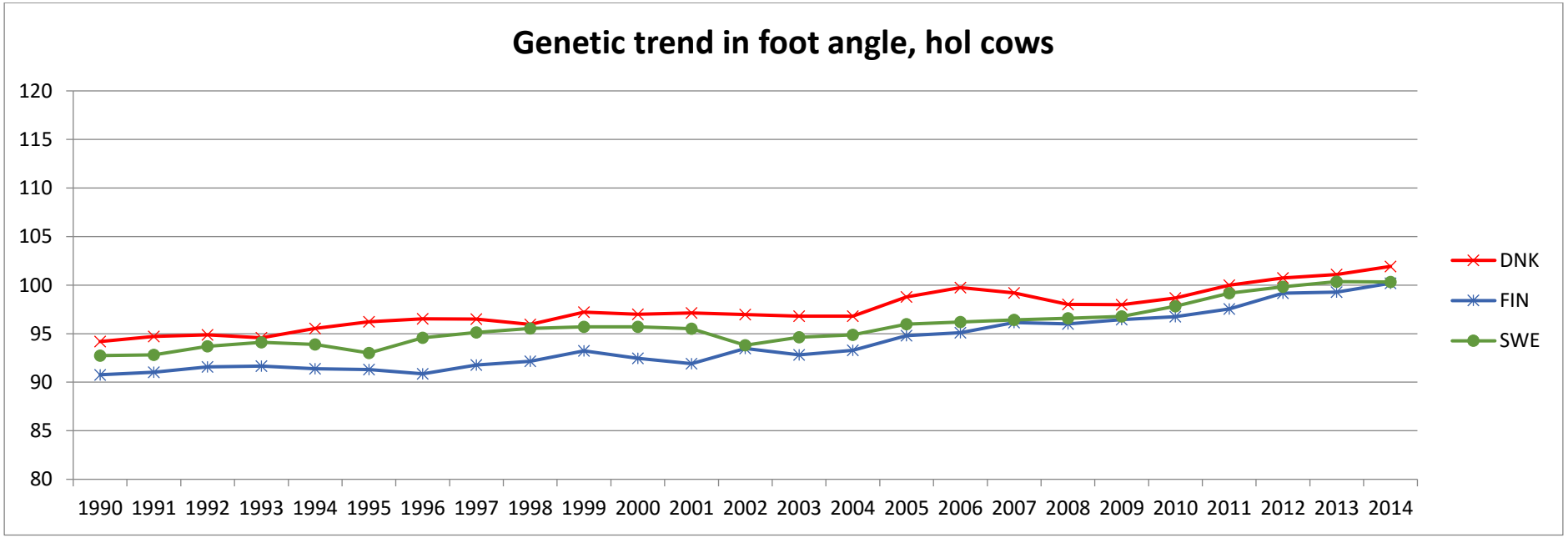
SWE


Genetic trend in foot angle, hol cows
120
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85
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1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014
DNK
FIN
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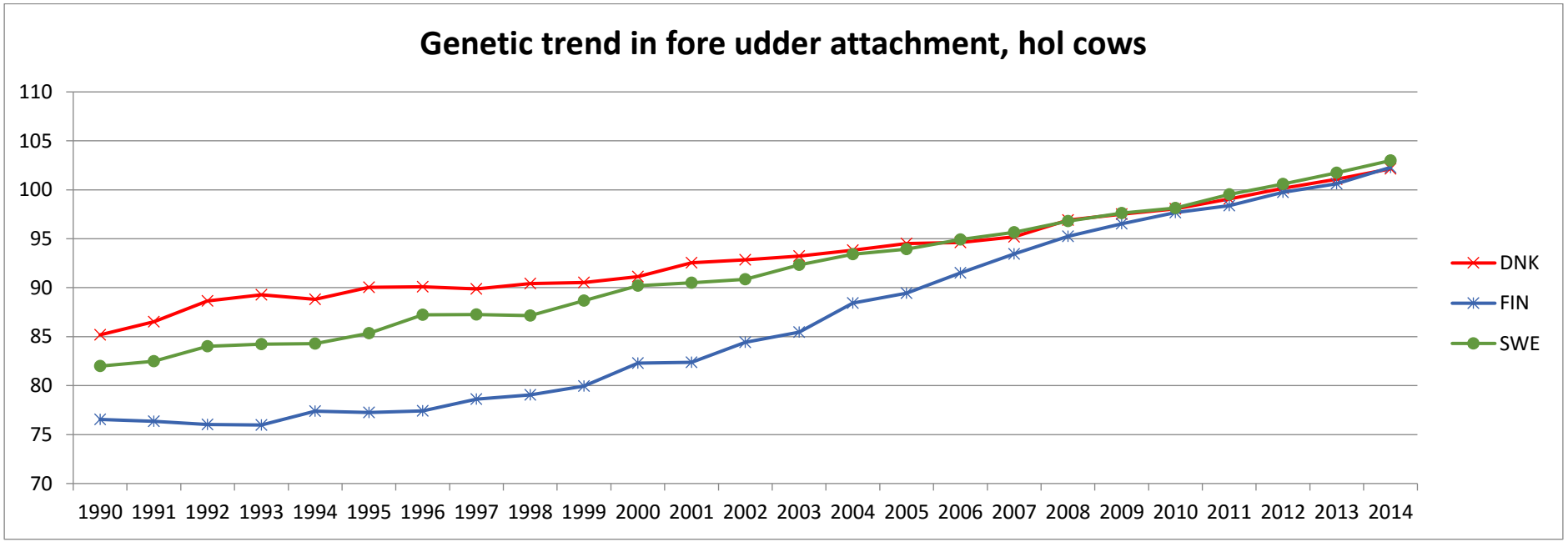
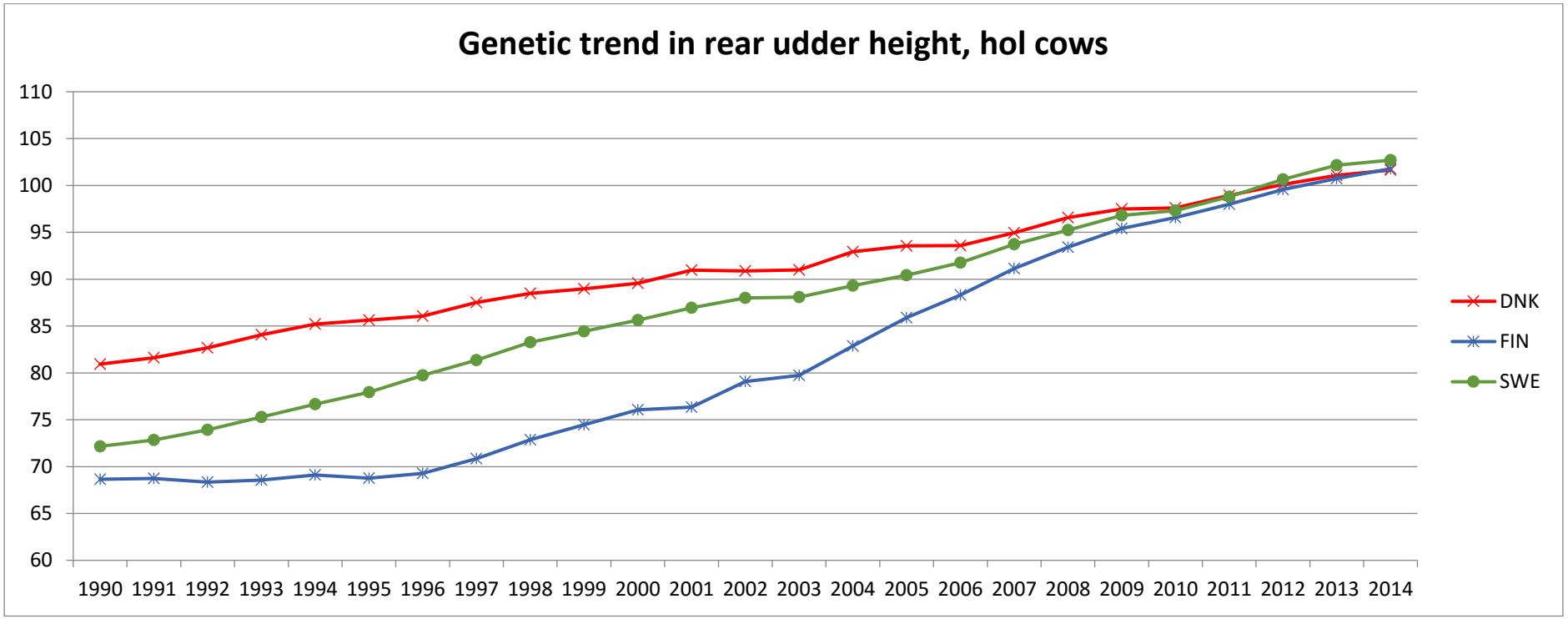

Genetic trend in fore udder attachment, hol cows
110
105
100
95
90
85
80
75
70
1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014
DNK
FIN
SWE


Genetic trend in rear udder height, hol cows
110
105
100
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1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014
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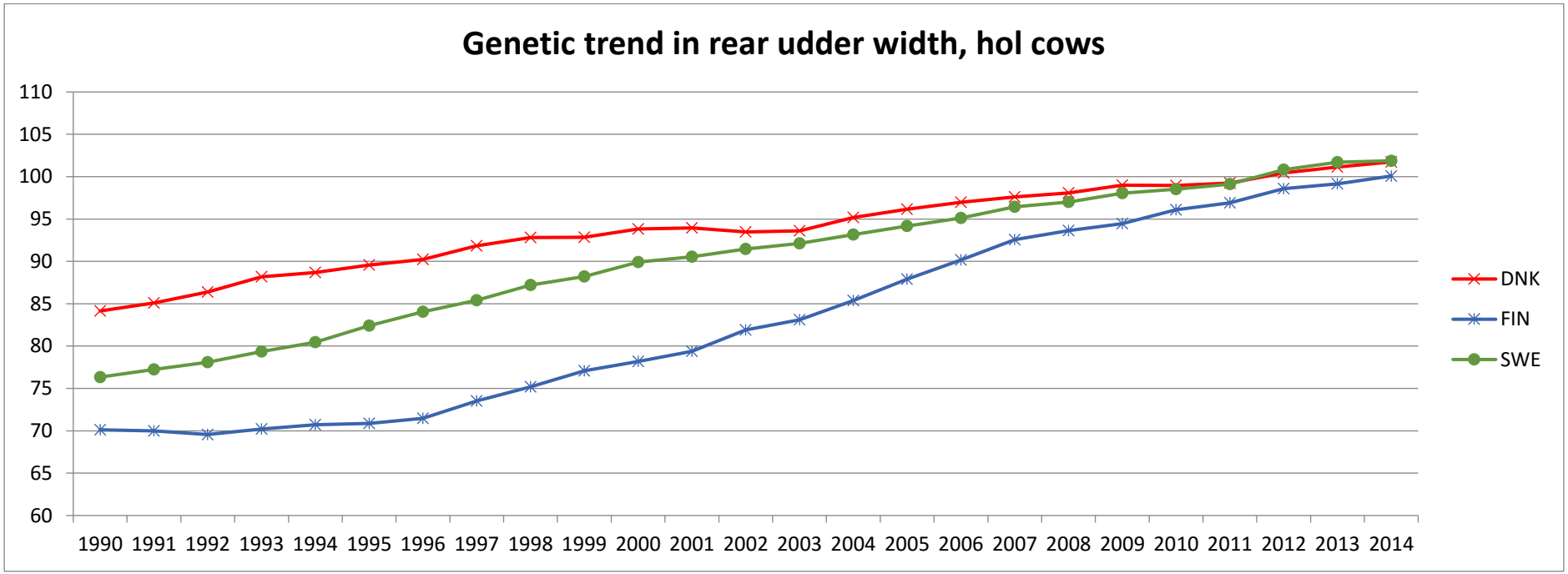
Genetic trend in rear udder width, hol cows
110
105
100
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1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014
DNK
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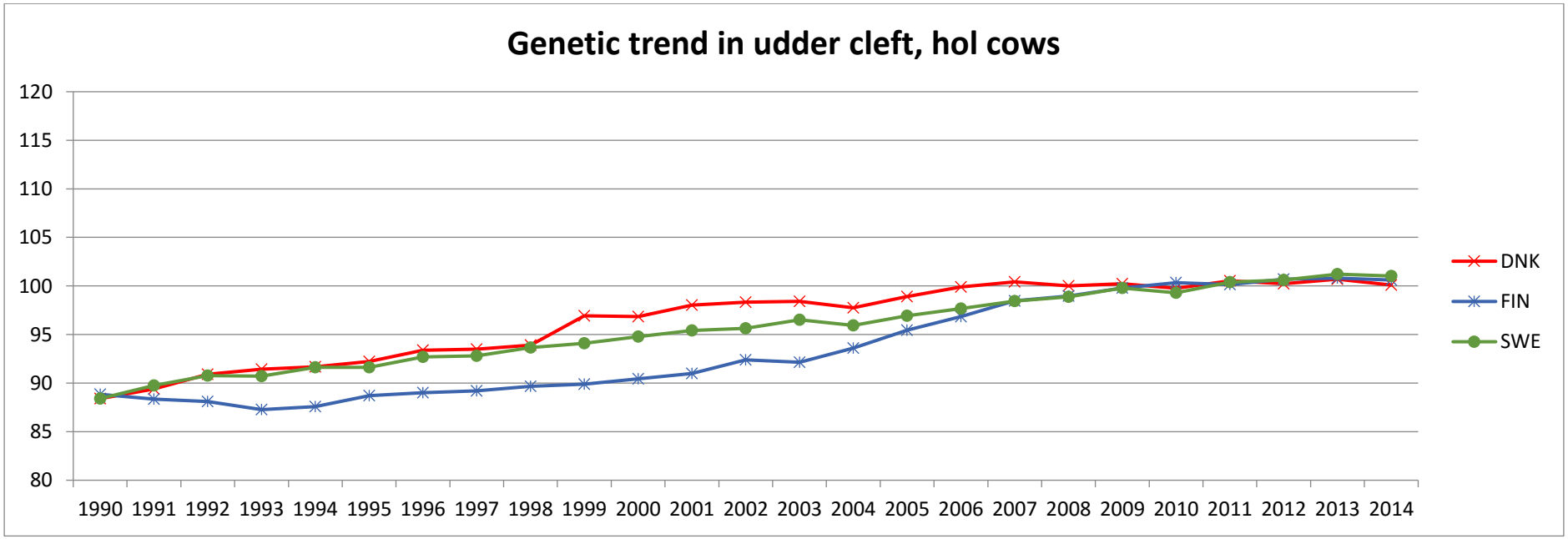
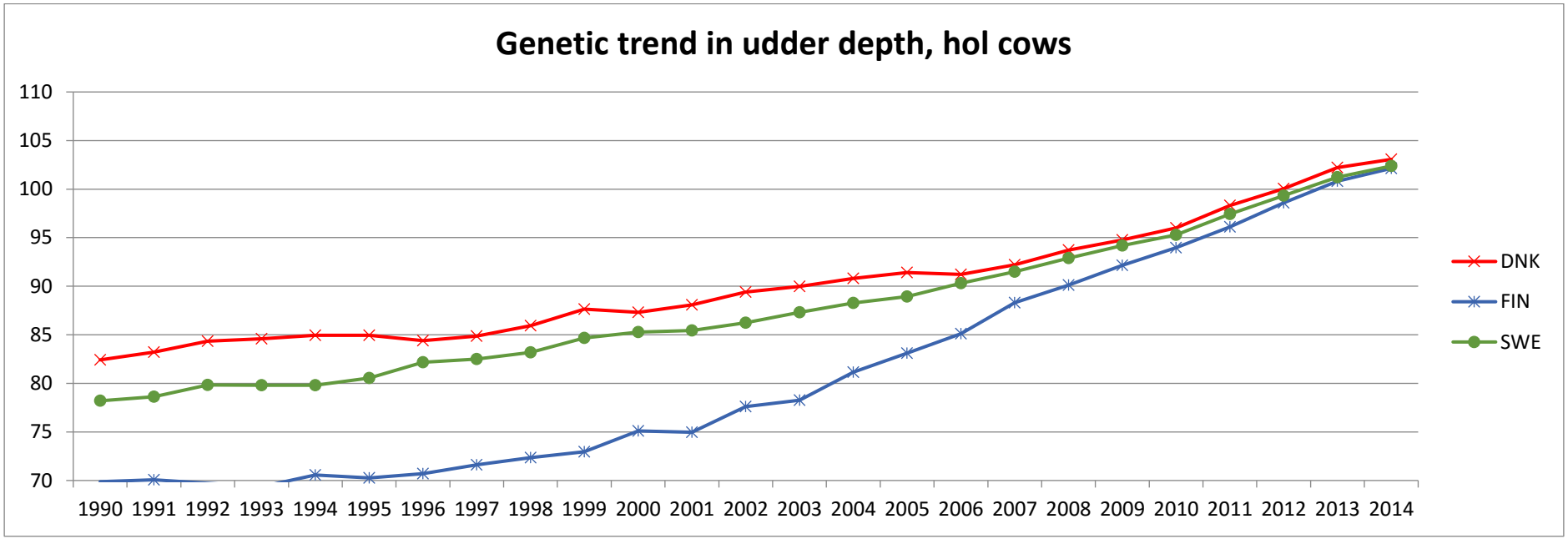
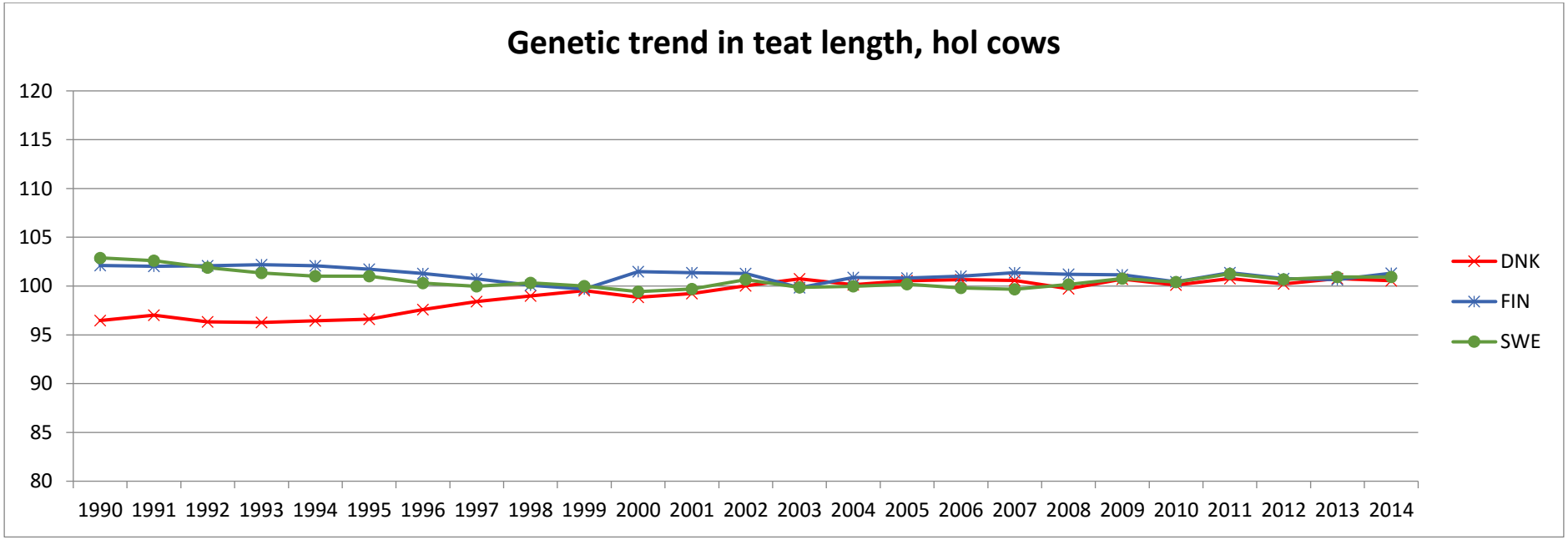
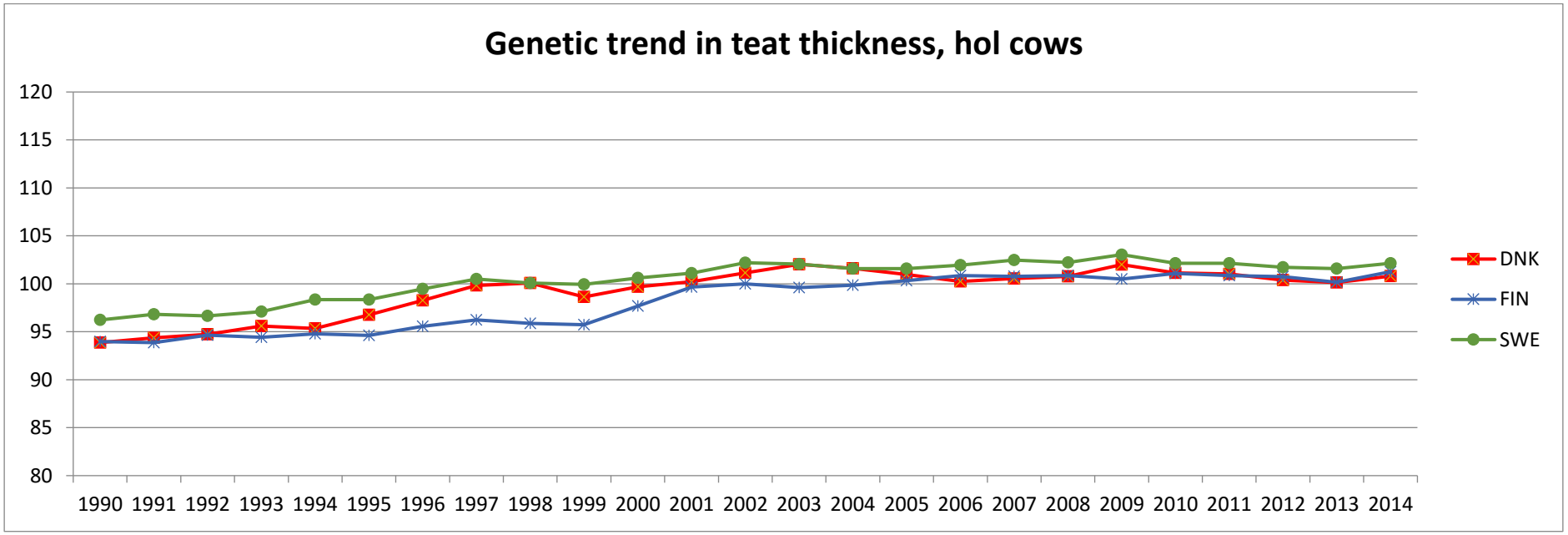

Genetic trend in udder cleft, hol cows
120
115
110
105
100
95
90
85
80
1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014
DNK
FIN
SWE


Genetic trend in udder depth, hol cows
110
105
100
95
90
85
80
75
70
1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014
DNK
FIN
SWE


Genetic trend in teat length, hol cows
120
115
110
105
100
95
90
85
80
1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014
DNK
FIN
SWE


Genetic trend in teat thickness, hol cows
120
115
110
105
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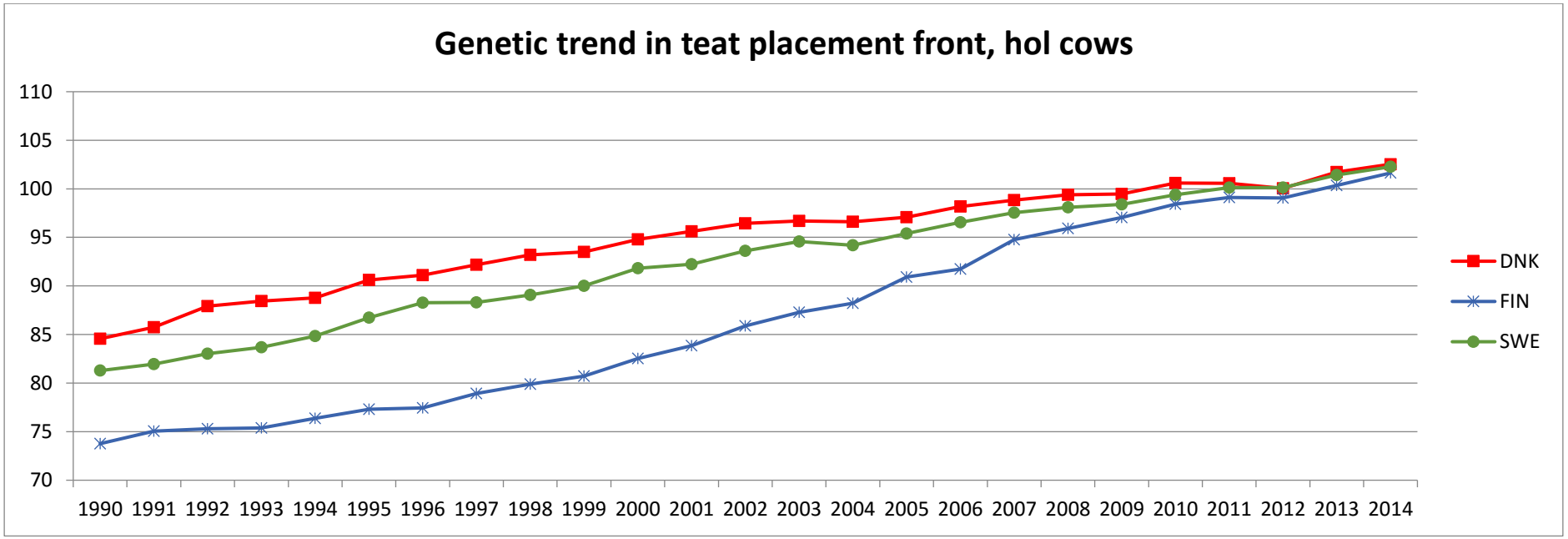
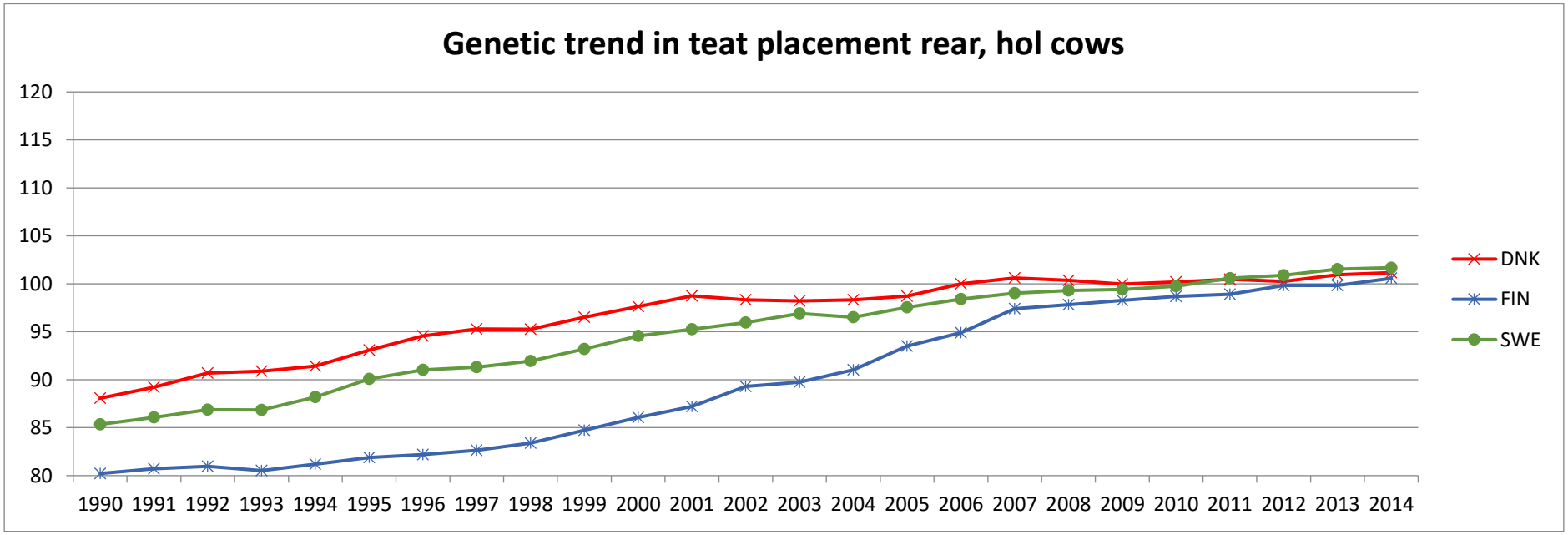
1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014
DNK
FIN
SWE


Genetic trend in teat placement front, hol cows
110
105
100
95
90
85
80
75
70
1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014
DNK
FIN
SWE


Genetic trend in teat placement rear, hol cows
120
115
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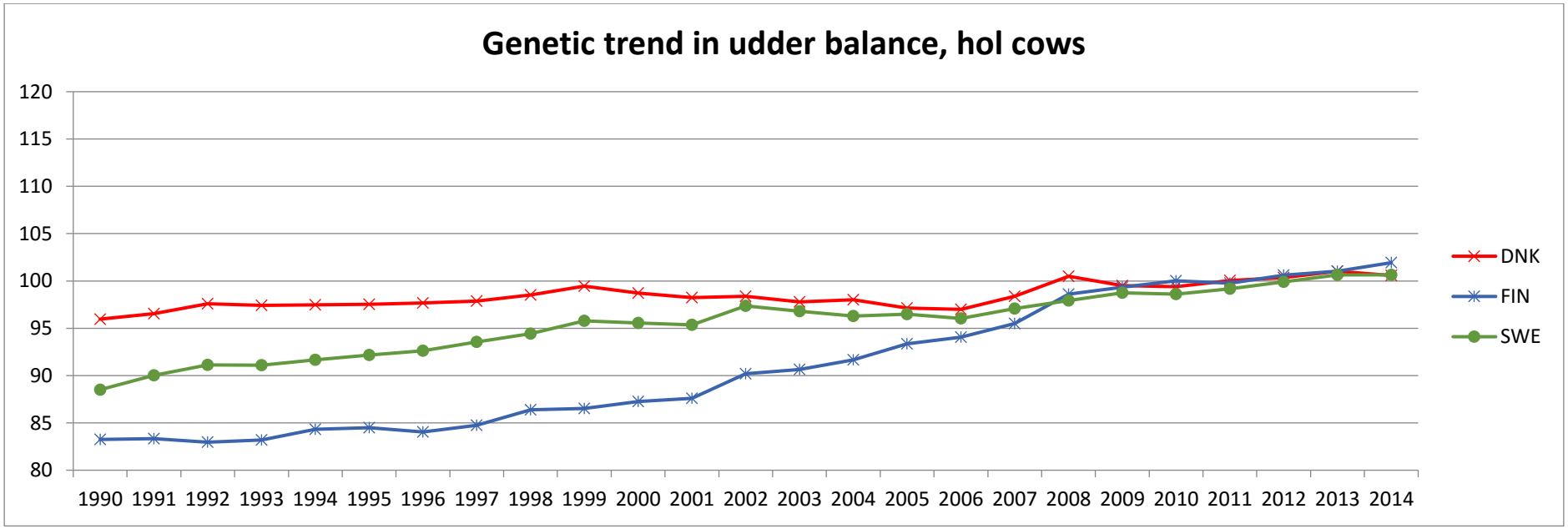
1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014
DNK
FIN
SWE


Genetic trend in udder balance, hol cows
120
115
110
105
100
95
90
85
80
1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014
DNK
FIN
SWE

Comparison of current HOL optimum values for conformation traits and classification scores from 2016 (until December)

number of scorings		58371	13037	16155
traits	**optimum**	DNK	FIN	SWE
1. Stature	***148*** *a)*	147.5	147.9	147.8
2. Body depth	***6*** *a)*	5.6	5.2	5.6
3. Chest width	***5*** *a)*	4.9	4.9	5.0
4. Dairy form	***6*** *a)*	4.8	5.2	5.2
5. Top line	***7*** *a)*	6.5	6.2	6.5
6. Rump width	**5.5** *a)*	5.0	5.5	5.3
7. Rump angle	**5** *a)*	4.9	4.8	4.8
8. Rear legs, side view	**5**	5.0	4.8	5.0
9. Rear legs, rear view	**8**	5.6	5.7	6.0
10. Hock quality	**9**	5.8	5.7	5.6
11. Bone quality	**8**	6.6	6.3	6.5
12. Foot angle	**6.5**	5.1	4.9	5.0
14. Fore udder attachment	**9**	5.5	5.6	5.6
15. Rear udder height	**9**	6.2	6.4	6.2
16. Rear udder width	**9**	5.5	5.8	5.6
17. Udder cleft/support	**8**	5.8	5.6	5.8
18. Udder depth	**9**	6.1	6.7	6.5
19. Teat length	**5.5**	4.9	5.3	5.4
20. Teat thickness	**5**	4.9	4.9	5.0
21. Teat placement (front)	**8**	5.6	5.4	5.4
22. Teat placement (back)	**5**	6.3	6.7	6.7
23. Udder balance	**5**	5.5	5.4	5.3

a) Note technical optimums are used in the EBV calculations