

## Table of Hash Anomaly with Fruit 2.1, Starting at Move 74 (not 75)

	4MB	8MB	16MB	32MB	64MB	128MB	256MB	512MB	1024MB
1 wke6	B-N-N-N	N-N-N-B	N-N-N-N	B-N-N-B	N-N-B-N	B-B-N-N	N-N-N-N	N-B-B-N	N
2 wkD8	B-B-N	B-B-N	N-N-N	B-N-N	B-B-N	N-N-B	B-B-B	N-N-N	N
3 wke8	N-N	B-B	B						
4 wkD6	B-B	B-N	N-B	B-B	B-B	B-B	B-B	B-B	B
5 wkD3	H-N	H-H	N-N	B-N	N-N	H-N	H-H	H-H	H
6 wke1	B-B	B-N	N-N	H-H	N-H	H-H	N-H	H-N	H
7 wkD1	N-b	N-N	B-N	B-N	B-B	N-B	B-B	B-B	B
8 wke3	N-B	N-N	N-B	N-B	N-N	B-N	N-N	N-N	N
9 wkF4	H-N	H-H	H-N	N-N	N-N	N-N	N-N	N-N	N
10 wka4	N-H	N-N	N-N	N-B	N-N	N-N	N-N	N-N	N
11 wkH4	N-N	B-N	B-B	B-B	B-B	B-B	B-B	B-B	B
12 wkc4	B-B	B							
13 wkc5	B-N	N-B	N-B	N-B	B-B	N-N	N-B	N-N	N
14 wkH5	B-B	B-B	H-B	H-N	H-H	H-N	H-N	N-N	N
15 wka5	B-B	N-B	B-B	B-B	N-b	B-B	B-N	B-N	B
16 wkF5	b-b	H-B	B-b	N-N	B-N	N-N	N-N	N-N	N
BB..NN	7432	7324	6235	6532	8125	7315	7225	6217	

### Legend:

B = bug shows on 12 and 13  
 b = bug shows on 12 but not 13  
 H = bug shows on 13 only  
 N = bug doesn't show

Row = one of 16 equivalent forms of the "hash bug position".

Column = hash table size setting.

First entry is the downloadable Fruit 2.1 32-bit windows executable.  
 The array of 781 64-bit Zobrist keys is undocumented in its public source.

Second entry is my June 13 recompile, filling the array with random bits from CERN's "HotBits" service, free daily download. This compile doesn't work with 1024MB hash.

Third entry is with simple-minded Z-keys  $R[i] = (i+1001)^5$ .

4<sup>th</sup> entry is with the PRG used by GnuChess 5.0.7.

The results are reproducible, either from initial program (re-)startup, or after selecting "Clear Hash" in the "Engine Parameters" dialog.

Hash sizes with improvement: 5    worse: 2    Tie: 1  
 Aggregate improvement: 5