

## BEHAVIOR AND CORTICOSTERONE LEVELS IN FIVE NEW AUTOSEXING HEN HYBRIDS FOR EGG LAYING

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### Abstract

Highly productive autosexing hybrids by feather color that are stress-resistant in organic production are being sought worldwide. The aim of the present study was to determine the most appropriate stress-resistant hybrid among five new autosexual ones, based on their behavior and corticosterone levels in cold, thermoneutral and hot environments.

Three hundred seventyfive hens from five hybrids ( $n = 75$ ), were included in the experiment. The five new autosex hybrids were created according to the following scheme: Hybrid I - a crossbreed between ♂ line P (Red Rhodeland) X ♀ line E (Bared Rock). The color of day-old chicks in males was black with a white dot on the head and light belly, and in females - black; Hybrid II - a crossbreed between ♂ line (New Hampshire) X ♀ line E (Bared Rock). The color in males was black with a white dot on the head, and in females - black; Hybrid III - a crossbreed between ♂ line P (Red Rhodeland) X ♀ line Ss (Sussex). The color in males was yellow down, and in the females - red-brown down; Hybrid IV - a crossbreed between ♂ line (New Hampshire) X ♀ line Ss (Sussex). The color in males was yellow down and in the females - red down; Hybrid V - a crossbreed between ♂ line I (Barneverder) X ♀ line E (Bared Rock). The color in the females was black. The behavior of hens was studied with a video camera for each group for 12 hours, over 4 consecutive days, taking into account the number of hens engaged in specific forms of behavior. The plasma corticosterone levels were assayed by means of commercial ELISA kit. The statistical analysis processing of the results was performed by means of ANOVA using the GraphPad InStat 3.06 software at a level of significance  $P < 0.05$ .

During the thermoneutral and hot periods, the highest number of egg laying hens was registered in Hybrid I and II,  $P I:V < 0.01$ ,  $P II:IV < 0.01$ ,  $P II:V < 0.001$ . The highest number of hens with comfortable behavior, performing a dust bath  $P I: III < 0.05$ ,  $P I:IV < 0.05$ ,  $P I:V < 0.05$  and feather cleaning,  $P I: II < 0.01$ ,  $P I:III < 0.01$ ,  $P I: IV < 0.05$ ,  $P I: V < 0.001$  was found in Hybrid I. The lowest number of aggressive acts came from hens from Hybrid I,  $P I: III < 0.01$ ,  $P I: IV < 0.05$ ,  $P I: V < 0.001$ , as well as the lowest corticosterone levels during the thermoneutral,  $P I: II < 0.01$ ,  $P I: V < 0.05$  and the hot period,  $P I: III < 0.05$ ,  $P I: IV < 0.05$ .

The birds from Hybrid I showed the best adaptive abilities during the three studied periods, which made this hybrid stand out as the most appropriate stress-resistant hybrid among the five new autosexing ones.

**Key words:** Hens, Autosexing hybrids by feather color, Corticosterone, Behavior.