

The objective of the present work was to determine the optimal protocol for timed AI on high-yield Holstein dairy cows. Hot season significantly reduced conception/AI to a similar extent for primiparous and multiparous cows and showed a significant interaction of protocol and season ($P = 0.001$). The conception per AI (Conception/AI) arising from first timed artificial inseminations on private dairy farms in Ismailia governorate, Egypt, was examined after using of the Double Ovsynch, Ovi synch 56, Resynch and Cider synch synchronization protocols. After studying the effect of parity on fertility and the result of synchronization protocols, the conception rate of the synchronization protocols in first lactation season Holstein dairy cows was (40%, 37%, 35% and 33%) for Double Ovi synch, Cider Synch, Resynch and Ovisynch56 respectively, and the conception rate of the protocols in second lactation season Holstein dairy cows was (36%, 26%, 33% and 33%) for Double Ovi synch, Cider Synch, Resynch and Ovisynch56 respectively. The conception rate of the synchronization protocols in first lactation season Holstein dairy cows were (56%, 46%, 44%, 37%) for Double Ovisynch56, Cider Synch, Resynch and Ovisynch56 respectively, and the conception rate of the protocols in second lactation season Holstein dairy cows were (46%, 36%, 35%, 34) % for Double Ovi synch, Cider Synch, Resynch and Ovisynch56 respectively. In summer season the conception rate for the protocols in mixed parity Holstein dairy cows was (36%, 30%, 28% and 22%) for Double Ovi synch, Cider Synch, Resynch and Ovisynch56 respectively. In winter season the conception rate of the synchronization protocols on mixed parity cows was (50.66 \pm 1.85, 39.00 \pm 20.10, 36.33 \pm 8.29, 35.00 \pm 12.58) for the Double Ovsynch, Cider synch, Resynch, Ovisynch56 respectively. The results indicate that Double Ovi sync tended to be associated with a higher conception/AI than other protocols regardless parity and the season. The conception rate decreases by increasing lactation number of inseminated cows. The parity and synchronization treatment resulted in a significant interaction ($P = 0.03$). The result showed that the effect of parity on fertility of inseminated dairy cows. Parity number, and season (winter and summer) were examined for their possible association with post synchronization. There was a significant difference between the conception rate of Double Ovsynch and other protocols ($p < 0.05$).