Title of Thesis : Expression of heterosis in relation to food utilization and conversion   
 in silkworm hybrids

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**ABSTRACT**

The present investigation entitled “**Expression of heterosis in relation to food utilization and conversion in silkworm hybrids”** was carried out at Division of Sericulture, SKUAST-J, at Udheywalla during spring 2015 and 2016. The experiment was laid out in completely randomized block design with nine treatments, one control and three replications. Data on thirteen commercial economic characters was recorded during rearing and eight parameters of ingestion, digestion, conversion of ingested food, digested food and approximate digestibility recorded during fourth and fifth larval instars and efficiency of cocoon production, cocoon shell production and percentage of cocoon shell weight was calculated. The data was computed and analyzed by analysis of variance and heterotic crosses were screened by using multiple trait index (E.I.) method.

The analyzed data revealed significant differences for egg trait and hybrid U6×ND3 expressed significantly higher value for egg characters. The larval duration depicted non significant results; however U6 x ND3 and CCI x U1 recorded shorter larval life of 23:17 days. Significantly higher weight gain and growth rate was recorded by the hybrid U6×ND3 while as maximum larval weight was achieved by the hybrid JD6× U6.Significantly higher cocoon yield by wt. and shell weight was registered by hybrid U6×ND3 while as hybrid CSR2 x PO3 exhibited significantly higher value for pupation rate followed by U6×ND3. Significantly higher value for singe cocoon weight characteristic obtained CSR5×SPO followed by hybrid U6×ND3. The total filament length was significantly higher in U6 x ND3 while as non breakable filament length was better in U1× NSP followed by U6×ND3.

For food utilization and conversion parameters, ingestion in vth instar was significantly higher in CSR2× PO3 followed by CSR4× PO1 and JD6 x U6 while as followed by U6 x ND3. Digestion in fourth instar was significantly higher in CSR2 x PO3 followed by CSR2×PO3 while as in fifih instar it was non significant among the hybrids studied. ECI in fourth and fifth instar exhibited significance for hybrid CSR5 x SPO while as hybrid JD6×U6 was significantly higher in fifth instar. ECD recorded non significant values in fourth instar. In fifth instar hybrid KA×ND5 and U6 x ND3 were significantly higher among other hybrids. Approximate digestibility and PECS recorded significant results. ECP and PCSW exhibited significant results. Based on the investigation and analysis of data by using multiple trait index evaluation method for thirteen commercially economic characters and eight food utilization and conversion parameters it can be concluded that hybrid U6 - ND3 can be utilized for field rearing after validation the results through multi location trials at farmer’s level.

**Keywords:** Mulberry, Food dynamics, Hybrids, Instar.