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Evaluation of various mulberry *Morus* spp. (Moraceae) cultivars for the rearing of the bivoltine hybrid race Shaanshi BV-333 of the silkworm *Bombyx mori* (Lepidoptera: Bombycidae)

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Abstract. The performance of the *Bombyx mori* Linnaeus bivoltine hybrid, Shaanshi BV-333, was evaluated on six mulberry cultivars of *Morus* spp. based on economic characters in rearing and mulberry leaf quality. The growth rate and morphological characteristics for all the cultivars were studied using several parameters. Specific characters such as disease resistance, survival percentage, cocoon weight, cocoon shell weight and single cocoon filament length were recorded during the rearing of silkworm larvae. Tested cultivars significantly differed in all parameters. Cultivars Kanva-2/M5, Thailand, Thika and S-36 exhibited superiority in rearing performance over other tested cultivars. Silkworms fed with cv. Thailand had the highest survival percentage of larvae in the short (S1) and long (S2) rainy seasons as compared with other cultivars. However, cv. Embu produced the lowest mortality during the dry season (S3), while S-41 produced the lowest survival rate in all seasons. Embu had significantly higher filament length and cocoon yield compared with the other cultivars during S3. However, S-41 performed poorly in survival percentage, cocoon yield, silk reeling and cocoon shell weight.

Key words: *Bombyx mori*, cocoon, silk filament, shell, reeling, mulberry cultivars

Introduction

The mulberry, *Morus* spp. (Moraceae), is a hardy deciduous perennial tree or shrub growing in temperate, subtropical and tropical climates and it is commonly used in sericulture for rearing the common silkworm *Bombyx mori* Linnaeus (Lepidoptera: Bombycidae). This insect is an oligophagous herbivore and depends mainly on the quality of mulberry leaves and environmental conditions for its development. Nutritious leaves play an important role in the silkworm growth and overall silk cocoon production. The mulberry leaf quality varies with different conditions such as environment, planting, pruning and soil (Horie and Watanbe, 1980; Datta, 1992; Bongale and Chaluvachari, 1995). Das *et al.* (1995) evaluated seven mulberry cultivars for their performance in rearing *B. mori* bivoltine hybrids and found that C763 was the best, followed by S1630 and C1730. Features of mulberry plants vary according to the variety (Aruga, 1994). At present, a large number of mulberry varieties are being cultivated and they mainly differ in tolerance to biotic and abiotic stresses. Successful sericulture depends on increased production of mulberry

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leaves with high nutritive values (Krishnaswami, 1978a,b; Krishnamurthy, 1983; Raina *et al.*, 1993).

In recent years, mulberry-based sericulture has been increasing in Kenya, Uganda and in other African countries. However, appropriate selection of the tropical cultivars based on the plant morphology, disease resistance, biochemical properties and performances in rearing *B. mori* races in different agro-climatic conditions is essential to select and exploit promising cultivars for better sericulture practices (Boraiah, 1986). Hence, a mulberry germplasm bank containing eight local and exotic cultivars of the genus *Morus* spp. was established at the *icipe* campus in Nairobi, Kenya.

This study reports the characteristics and performance of six mulberry cultivars for rearing the bivoltine hybrid race, Shaanshi BV-333, of *B. mori* with the aim of enhancing commercial sericulture in Kenya and other countries of the region, where this activity is increasingly perceived as a promising alternative source of income generation for rural small-scale farmers.

Materials and methods

Research site

The research work was carried out in 1998–1999 at *icipe*'s headquarters in Nairobi, Kenya (1790 masl, 36°. 89′E and 1.12 S), using six cultivars from the mulberry germplasm site adjacent to *icipe*'s premises. The Nairobi region enjoys two rainy seasons and one dry season. The short rainy season (S1) runs from mid-September to mid-December, the long rainy one (S2) from mid-March to May, and the dry season (S3) from mid-December to mid-March, while June to August have cold weather with some drizzling showers. The site soil is shallow, slightly yellowish and black with low humus content.

Mulberry cultivars

The mulberry germplasm collection, which was established on a 1 acre (0.4 ha) farm in 1993 next to *icipe*'s HQ, includes cultivars such as Kanva-2/M5, S-36, S-41 (*M. indica* L.), Thailand, Thika, Embu, Ithanga and Ex Limuru (*M. alba* L.). All cultivars were planted in a row system with $3' \times 3'$ spacing.

In both years, all plants were bottom pruned on 28 June and 14 March at 15 cm from ground level. About 7 tons of manure/ha were applied and mixed well in the rows. A booster dose of urea at 5–7 g/plant was administered using the ring method, 35 days post-pruning. After each application, the plot was irrigated. Cultural operations were done by weeding and clearing the mulberry farm. In this study, the following six cultivars from the *icipe* germplasm collection were selected for evaluation of their performance in rearing the silkworm, i.e. Kanva-2/M5, Thailand, Thika, Embu, S-36 and S-41.

One 5×6 m plot with 30 plants of each variety was used during the course of this study. Prior to the study, soil samples were collected from all the plots at 30 cm and tested for pH, NPK and micronutrients using standard methods (Bremner, 1965; Allison, 1965; Hesse, 1971; Page *et al.*, 1982; Nelson and Sommers, 1982). Data for number of branches were collected randomly from 20 plants of each cultivar. Data for leaf size, shoot height, internode distance and petiole length were obtained using 20 branches of five randomly selected plants of each cultivar at 75 days after pruning. Additionally, leaf texture and colour and young shoot stem colour were recorded from each cultivar.

Silkworm rearing assessment

Eggs of the silkworm *B. mori* bivoltine hybrid Shaanshi BV-333 were obtained from Shaanshi Seritech Ltd (Hyderabad, India) and incubated at 24 ± 2°C and 85–90% relative humidity (RH), in *icipe*'s silkworm breeding laboratory. About 97% egg hatch was recorded after 10 days of incubation. Brushing was done carefully. The batches of 250 silkworm larvae were reared from the early stage (late first to early third instars) to cocoon formation in 1×0.75 m wooden trays using leaves from one of the six cultivars. There were four replicate batches for each cultivar. Early stage rearing conditions were 24 ± 2°C and 85–90% RH, while late age conditions corresponded to 26°C and 65–70% RH. High-quality tender and mature succulent mulberry leaves were fed to the silkworm larvae (Krishnaswami *et al.*, 1973; Ullal and Narsimhanna, 1987; Aruga, 1994; Raina, 2000; Raina *et al.*, 2004). A specific lime formulation, i.e. a mixture of lime, paraformaldehyde and benzoic acid, prepared at *icipe* was applied by dusting once during the first and second stages, twice in the third stage and daily in the fourth and fifth stages post-cleaning and prior to feeding, to avoid nuclear polyhedrosis virus (NPV) and bacterial diseases (Ullal and Narsimhanna, 1987).

Larval and pupal mortality were recorded in each tray and cocoon spinning mountages during S1, S2 and S3 seasons. The 5-day-old cocoons were harvested, weighed and their yield recorded for each group. To compute and analyse other parameters, data were obtained from a set of 20 silkworm larvae randomly selected from each group of the silkworm rearing trays per cultivar during S1, S2 and S3, respectively. The larval growth was recorded in fifth instars during their early (1 day old), mid (4 days old) and late (7 days old) age, respectively. Cocoons, pupae and cocoon shell weights, and single cocoon silk filament length were measured for each season. The reeling of cocoons from each sample was done on an Epprouvitte (RK Industries, India), which is a single silk cocoon reeling device fixed with a counter to measure the length of filaments per cocoon. In one rotation, it unwinds 1 m of silk filament from the silk cocoon.

The data were analysed using SAS (SAS Institute Inc., 2002–2004). The ANOVA procedure was used to analyse the data and the means were grouped using Waller–Duncan *K*-ratio *t*-test. The total yield for each group of cultivars was recorded for all the three seasons.

Results

Cultivar properties and performances

The soil analysis showed a pH of 6.9–7.1 for H_2O and 5.7–6.1 for $CaCl_2$ and concentrations in the range of 0.25–0.28% for N, 10–11 ppm for P, 0.40–0.42 Me/100 g for K and 0.3–0.5 Me/100 g for Na, across all plots. The level of Ca of 6–8.2 Me/100 g was obtained from five plots, while the S-41 cultivar yielded 21 Me/100 g. The Mg level of 3.2–4 Me/100 g was found in four plots, while Embu and S-41 showed slightly higher values of 5.4–6.8 Me/100 g. Carbon was in the range of 3.9–4.5%. Compositions for micronutrients (ppm) were in the range of 14.5–15.0 for Cu, 90–98 for Fe, 250–258 for Mn and 35 for Zn.

All the parameters used showed significant differences in all the cultivars (Table 1). At 75 days after pruning, the height of the different mulberry cultivars averaged 1.6–1.9 m, except in Thika and S-41, which showed a comparatively slower growth pattern. All the studied mulberry plants had alternate and unlobed leaves except Thailand, which had both unlobed and lobed leaves. Very smooth, smooth and semi-smooth leaf textures were observed in Kanva-2/M5, Thailand, Thika and Embu, while rough leaves were recorded in S-36 and S-41. Newly sprouted leaves of Kanva-2/M5, Thika, S-36 and S-41 were pale green, compared with the brown and pale brown in Thailand and Embu, respectively. Mature leaves of S-41 were dark green with thick lamina whereas in Kanva-2/M5, Thailand and S-36 they were green. They were pale green in Embu and Thika.

Colour variations were also recorded in young shoots. In Embu cultivar, they were purplish-brown, while they were brownish in Thailand and greenish in the remaining cultivars. With 24.00 (± 1.01 SE) and 23.90 (± 0.59 SE), Thika and Embu had the highest number of branches per plant, respectively, while S-41 had the lowest number of branches. The largest leaf sizes were recorded in Embu and Kanva-2/M5. The highest petiole length was noted in S-36 and Embu and the lowest in Thailand and Thika. In all the tested cultivars, internodal distance ranged between 2.51 and 8.2 cm.

Rearing performance

Weight of silkworm cocoons, pupae, cocoon shell and survival percentage significantly differed among cultivars and seasons. During the short rainy season (S1), the highest mean weight of 4.27 g (± 0.11 SE) in 7-day-old fifth instars was observed for Kanva-2/M5 followed by Thailand, S-36 and Thika. Larvae reared on S-41 recorded the lowest weight of 3.09 g (± 0.08 SE). The maximum weight of cocoon was recorded in Kanva-2/M5 (1.92 ± 0.05 g), while the remaining mulberry cultivars ranged in the order Thailand > Thika > S-36 > Embu > S-41 (Fig. 1a). During the long rainy season (S2), 7-day-old larvae reared on Kanva-2/M5 recorded higher weight (4.30 ± 0.08 g), followed by S-36 (4.03 ± 0.11 g), and other cultivars ranked from Thailand > Thika > Embu > S-41 (Fig. 1b).

Kanva-2/M5 gave the highest cocoon weight (2.00 ± 0.05 g), while S-41 recorded the lowest (1.56 ± 0.04 g) (Fig. 1b). In the dry season (S3), larvae performed poorly and cocoon, pupal shell, pupal weight and survival percentage were low for all cultivars, except for Embu (Fig. 1c). The larval lifespan observed during S1 and S2 was 29 days, while it was 27 days during S3 season. The fifth instar duration was 8–9 days during S1 and S2 seasons, while during S3 a short lifespan of 7–8 days was observed.

Contrary to S1 and S2, the highest larval weight of 2.85 g (± 0.05 SE) in 7-day-old instars was observed in Embu cultivar, while the other cultivars ranged from Thika > Kanva-2/M5 > S-36 > Thailand > S-41. The *F*-values indicated that all the parameters measured (larval stages early, mid, late; cocoon, pupa and cocoon shell weights) were significantly different in all three seasons for all cultivars tested. Feeding on Thika and S-36 cultivars resulted in similar cocoon, pupa and shell weights in all three seasons. Similarly, silkworms fed on Kanva-2/M5 and Thailand cultivars resulted in comparable weights of early larval stages in all three seasons. In the mid-age larvae, a similar weight was noted in Kanva-2/M5 and Thailand during S1 and S2, while they differed in S3. However, late age larvae that had fed on Thailand leaves showed lower weights than those reared on Kanva-2/M5 in S2 and S3 (Fig. 1a–c).

The overall cocoon yield of each cultivar had distinctive weights. The highest yield was recorded in the Thailand cultivar during S2, followed by the same variety in S1 and Embu in S3. The lowest

Table 1. Growth rate and morphological characteristics of six mulberry cultivars at 75 days after pruning (mean ± SE)

Cultivar	Leaf texture	Colour			No. of branches	Height of tallest shoot (m)	Leaf size (cm)		Petiole size (cm)	Internode distance (cm)		
		NSL[1]	ML[2]	YS[3]			Length	Breadth		Top	Mid	Bottom
Kanva-2/M5	Smooth	Pale green	Green	Greenish	20.40 ± 0.83^{dc}	1.63 ± 0.01^{bc}	23.89 ± 0.30^{a}	16.99 ± 0.42^{a}	4.26 ± 0.14^{b}	3.61 ± 0.08^{a}	4.48 ± 0.08^{d}	5.69 ± 0.12^{c}
Thailand	Very smooth	Brown	Green	Brownish	21.60 ± 0.64^{bc}	1.65 ± 0.01^{b}	19.11 ± 0.23^{e}	14.04 ± 0.16^{cd}	3.87 ± 0.10^{c}	3.00 ± 0.14^{b}	6.16 ± 0.12^{b}	6.90 ± 0.16^{b}
Thika	Semi smooth	Pale green	Pale green	Greenish	24.00 ± 1.01^{a}	1.57 ± 0.01^{d}	21.29 ± 0.28^{c}	17.59 ± 0.30^{a}	3.81 ± 0.08^{c}	2.51 ± 0.07^{c}	3.93 ± 0.17^{e}	4.60 ± 0.13^{d}
S-36	Rough	Pale green	Green	Greenish	23.40 ± 1.10^{ab}	1.85 ± 0.01^{a}	21.74 ± 0.26^{c}	14.75 ± 0.26^{c}	5.48 ± 0.17^{a}	2.61 ± 0.13c	7.01 ± 0.27^{a}	8.20 ± 0.28^{a}
Embu	Smooth	Pale brown	Pale green	Purplish brown	23.90 ± 0.59^{a}	1.62 ± 0.01^{c}	22.57 ± 0.15^{b}	16.02 ± 0.36^{b}	5.27 ± 0.14^{a}	3.72 ± 0.15^{a}	5.01 ± 0.11^{c}	6.11 ± 0.19^{c}
S-41	Rough	Pale green	Dark green	Greenish	19.10 ± 0.54^{d}	1.50 ± 0.01^{e}	20.09 ± 0.23^{d}	13.45 ± 0.16^{d}	3.99 ± 0.13^{bc}	2.66 ± 0.13^{c}	5.04 ± 0.14^{c}	7.21 ± 0.10^{b}
F-values					6.32	99.37	27.85	32.18	31.64	23.54	49.81	53.6

Tabulated $F_{\alpha=0.05,5,114}$. Grouping was done using Waller–Duncan *K*-ratio *t*-test. Means in each column followed by the same letters are not significantly different at $\alpha = 0.05$.

[1] Newly sprouted leaves.

[2] Mature leaves.

[3] Young shoots.

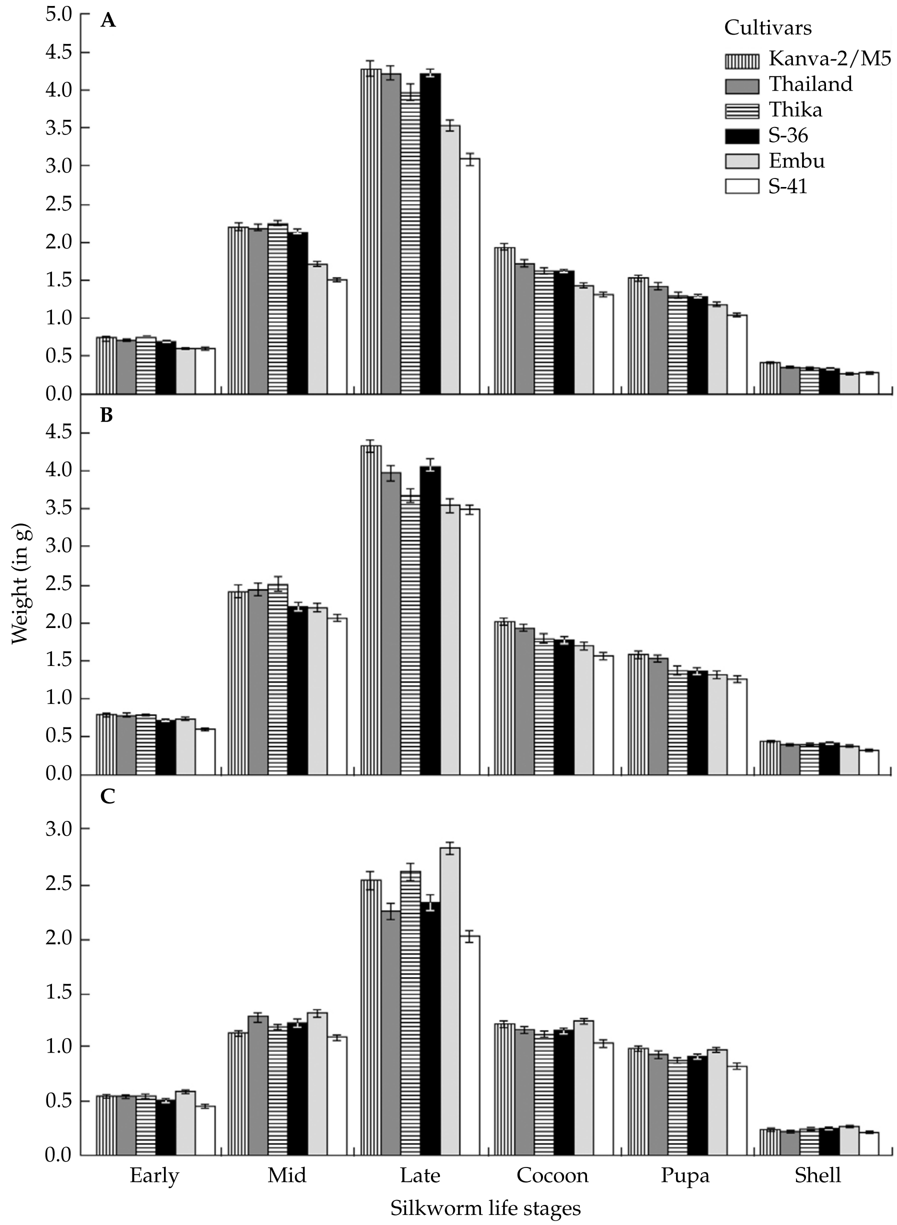

Fig. 1. Performance of the development stages of the bivoltine hybrid (Shaanshi BV-333) race of *Bombyx mori* reared on mulberry cultivars: (a) during the short rainy season. *F*-values: early = 11.09, mid = 58.63, late = 26.67, cocoon = 33.37, pupa = 22.24, cocoon shell = 26.89, $P < 0.0001$, ($F_{\alpha=0.05,5,114}$), $n = 20$. (b) During the long rainy season. *F*-values: early = 13.30, mid = 5.29, late = 12.05, cocoon = 9.69, pupa = 6.71, cocoon shell = 11.83, $P < 0.0001$, ($F_{\alpha=0.05,5,114}$), $n = 20$. (c) During the dry season. *F*-values: early = 8.11, mid = 6.93, late = 16.25, cocoon = 6.44, pupa = 5.26, cocoon shell = 3.79, $P < 0.0001$, ($F_{\alpha=0.05,5,114}$), $n = 20$. Mean bars (±SE) followed by the same letter(s) are not significantly different in each stage, Waller–Duncan *K*-ratio *t*-test at $\alpha = 0.05$

yields were recorded in S-41 during S1, S2 and S3 (Table 2).

During S1, Thailand exhibited the highest survival rate followed in the order of Thika > S-36 > Kanva-2/M5 > Embu >S-41 (Fig. 2). In S2, Thailand still maintained the highest survival rate followed by Thika > Kanva-2/M5 > S-36 > Embu > S-41. Conversely, the highest survival rate was noticed in Embu cultivar in S3, followed by Thailand > Thika > S-36 > Kanva-2/M5 > S-41 (Fig. 2).

There were significant differences among cultivars in filament length in all three seasons (Table 3). Kanva-2/M5 gave the highest filament length per cocoon in S1 followed by Thailand,

Table 2. Total silk cocoon yield in kilogram (mean ± SE) per 1000 larvae reared on different cultivars in three seasons

Cultivar	S1	S2	S3
Kanva-2/M5	1.538 ± 0.04	1.519 ± 0.02	0.929 ± 0.07
Thailand	1.599 ± 0.05	1.671 ± 0.03	0.992 ± 0.01
Thika	1.359 ± 0.03	1.509 ± 0.05	0.941 ± 0.04
S-36	1.197 ± 0.04	1.467 ± 0.01	0.943 ± 0.02
Embu	1.110 ± 0.02	1.377 ± 0.02	1.112 ± 0.04
S-41	0.789 ± 0.04	1.145 ± 0.03	0.432 ± 0.01

S1, S2, short and long rainy seasons, respectively; S3, dry season.

Thika, S-36, S-41 and Embu, respectively. In S2, the highest filament length was recorded in cv. Thailand and in S3 in cv. Embu (Table 3).

Discussion

Mulberry (*Morus* spp.) is grown in many parts of East Africa and selecting promising varieties and appropriate silkworm strains is one of the prerequisites for the success of commercial sericulture. Mulberry grows well in areas with temperatures ranging from 20 to 30°C with a capability to withstand a range of climate conditions. In Kenya, mulberry grows luxuriantly in a wide range of environmental conditions, from low to high altitudes (Saratchandra, 2000; Raina *et al.*, 2004).

Leaf N, K, S, Zn, Ca, Mg and Cu are significantly influenced by the status of soil nutrients (Rupa *et al.*, 1993). The pH levels affect the availability of micro- and macronutrients in the soil. Macronutrients like N, P and K are required in large quantities, while micronutrients only in small quantities (Gachene and Kimaru, 2003). Bongale *et al.* (2002) emphasized the importance of soil nutrient deficiencies by proving the significant effects of $MnSO_4$ on the M5 variety of mulberry in India. In our study, soil analysis revealed slightly acidic to alkaline pH levels with macro- and micronutrients in the normal range except for the somewhat higher values of Ca and Mg in plots planted with the S-41 and Embu varieties.

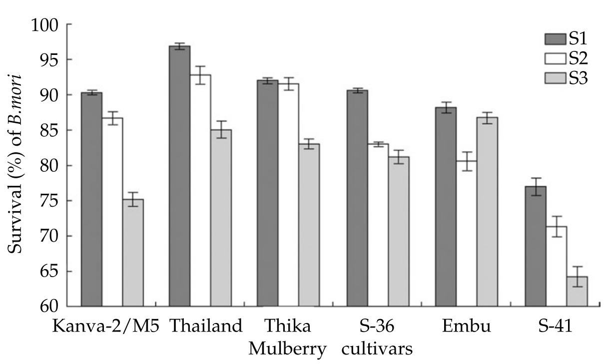

Fig. 2. Survival rate of the bivoltine hybrid (Shaanshi BV-333) race of *Bombyx mori* reared on various mulberry cultivars during the short (S1), long (S2) and dry (S3) seasons. *F*-value: S1 = 61.89, S2 = 30.16 and S3 = 33.60 ($F_{\alpha=0.05,8,15}$), $n = 4$. Means within a season followed by the same letter(s) are not significantly different in each cultivar, Waller–Duncan *K*-ratio *t*-test at $\alpha = 0.05$

Anota *et al.* (2003) demonstrated some agronomical characters in 10 mulberry varieties in South Queensland, Australia, and observed faster growth, higher leaf mass, larger stem diameter, longer internode distances and fewer branches in LV5 and LV6 varieties, with significant differences in their early growth stage. Weiguo *et al.* (2003) stressed on the efficiency of water utilization in four *M. alba* varieties. Susheelamma *et al.* (2000) screened 56 mulberry cultivars for block plantation under dry farming conditions and found significant variability in their morphological characters and anatomy. They recommended that the quality and yielding parameters should be considered when identifying cultivars for block plantation. Phukan *et al.* (2000) evaluated plant height and leaf yield in some improved mulberry varieties in India and found that cv. S-1635 was significantly better than the other ones tested.

In the present study, variations in mulberry morphology and growth were observed in six mulberry cultivars, namely Kanva-2/M5, Thailand, Thika, Embu, S-36 and S-41. These variations were reflected in a number of shoots per plant, shoot height and leaf lamina size, leaf and young shoot stem colour and internode distance. S-36 exhibited the highest and S-41 the lowest shoot length. The soil pH and other micro- and macronutrients in all the experimental plots showed a similar trend and were in the normal range. Tikedar and Anantha Rao (2001) in their studies on growth performance of the mulberry observed that internode distance, leaf size, shoot length, leaf number and weight had positive effects on the leaf yield and recommended them as suitable characters for selection of cultivars. The newly sprouted leaf, young shoot and stem colour could be used for variety identification.

The results on performance of the silkworm reared on the different cultivars tested in the present study indicate their significant effects on cocoon, larval, pupal and pupal shell weights. During S1 and S2, larvae reared on Kanva-2/M5 had the highest weight gain in the fifth instar and cocoon stages followed by Thailand and S-36. S-41 induced the lowest weight in both the seasons.

In all seasons, we observed significant differences in filament length among the cultivars. Kanva-2/M5 and Thailand varieties showed higher trends in improving filament length and other parameters during S1 and S2. In the dry season, all

Table 3. Average silk filament length (mean ± SE) from a single cocoon and *F*-values

Cultivars	S1	S2	S3
Kanva-2/M5	1103.05 ± 22.10[a]	1115.90 ± 23.45[a]	905.00 ± 26.35[b]
Thailand	1057.15 ± 23.18[ab]	1128.90 ± 23.86[a]	926.45 ± 22.74[ab]
Thika	1052.25 ± 20.73[b]	1117.20 ± 26.95[a]	834.25 ± 21.38[c]
S-36	1032.20 ± 17.39[b]	1085.30 ± 21.84[a]	827.20 ± 27.24[c]
Embu	895.55 ± 17.52[c]	1070.75 ± 26.30[a]	977.45 ± 18.40[a]
S-41	919.89 ± 17.61[c]	996.80 ± 15.41[b]	734.65 ± 13.95[d]
F-values	17.23	4.39	15.08

Tabulated $F_{\alpha=0.05,5,114}$. Grouping was done using Waller–Duncan *K*-ratio *t*-test. Means followed by the same letters are not significantly different at $\alpha = 0.05$.

cultivars performed poorly in terms of larval, cocoon and pupal shell weights except for cv. Embu. Tayade and Jawale (1984) evaluated four mulberry cultivars in the Marathwada region of India for the development of economic traits of the silkworm and reported the superiority of S-54 and Kanva-2/M5 over Kosen and LM2 cultivars for cocoon yield. Similar trends were also observed for Kanva-2/M5 evaluated in this study. However, Thailand proved its superiority in highest yield during both S1 and S2, while S-41 exhibited the lowest yield in all the three seasons.

The lack of disease-resistant cultivars constitutes one of the major limitations in initiating sericulture as a new venture in Africa. Venugopala and Jolly (1985) evaluated five mulberry varieties for disease tolerance and found MR2 to be more resistance over the rest, especially against powdery mildew infections. In our study, we observed fewer incidences of leaf spot and powdery mildew in Thailand than other cultivars tested. Leaf moisture content and water retention positively influence the silkworm larval growth and development (Chaluvachari and Bongale, 1995). Ashiru (2002) evaluated eight elite mulberry cultivars in Nigeria and highlighted the relationship between leaf moisture content and cocoon yields.

We recorded highest mortality levels in larvae fed on cv. S-41 and poor rearing performance throughout the three seasons of our study. The highest survival (96.9%) was recorded in silkworms reared on cv. Thailand, followed by Thika and Kanva-2/M5 during both rainy seasons (S1 and S2). However, the high survival rate of the insects on Embu and Thika during the dry season (S3) suggests that these cultivars withstand high temperature and low humidity better, and should thus be recommended for silkworm farming under semi-arid conditions. Our results for S-41 are similar to those reported by Ashiru (2002). He recorded 74 kg of cocoons per 100 disease-free layings from the Chul Thai-5 silkworm race when the insects were reared on cultivar S-30, and a highest larval mortality (49.60%) when fed with S-41. Previous research work was carried out in various agro-climatic zones of Asia and Africa and several varieties were screened for high quality and production of silk for sericulture practices (Jolly and Dandin, 1986; Kasiviswanathan, 1991; Das *et al.*, 1995; Fotedar and Dandin, 1997; Ram Rao *et al.*, 1997; Miranda *et al.*, 2002; Reddy *et al.*, 2002; Singhvi *et al.*, 2002; Raina *et al.*, 2004; Vijayan *et al.*, 2004).

Based on cocoon yield the cultivars Thailand, Thika, Kanva-2/M5 and S-36 were found to perform better for silk farming under the prevalent conditions of Central Kenya. The short and long rainy seasons are the most reliable periods for rearing of silkworms and cocoon production in this area. Embu cultivar performed well during the dry season and should be recommended for further research in the dryland areas of Kenya and other countries of East Africa to pave way for the advancement of sericulture.

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