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# MORPHOLOGICAL AND SYSTEMATIC STUDIES ON FEMALE FLOWERS OF MULBERRY TREES

BY

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With regard to the classification of mulberry trees in Japan, a considerable number of papers have appeared, among which are notable those by Dr. KOIZUMI, Dr. YENDO, and Dr. NAKAI. The present writer has engaged in morphological studies of mulberry flowers in order to ascertain whether or not the systematic features mentioned by Dr. KOIZUMI concerning some species of mulberry trees and certain cultivated forms, prevail in all the wild and cultivated mulberry trees spread over this country; and whether there exist such morphological relations among the forms of flowers and those of leaves as were formerly mentioned by the writer himself. This paper is prepared to report a part of the results of these studies, the details of which will be published later.

My gratitude is due to Prof. S. ITO and Dr. M. TATEWAKI for their constant guidance, to Prof. emeritus K. MIYABE and Dr. Y. TOCHINAI for their kind suggestions and advice, and also to experimental stations, and agricultural sericultural colleges all over the country for the specimens which they so kindly supplied.

## **Length and width of stigma, style, and female flower.**

The following table is based upon the results of the author's observations on the materials obtained Spring during the four years from 1931 to 1934. Fresh materials were preferred when available, but it was necessary at times to use specimens preserved in a solution made of 3 parts alcohol and 1 part formalin. The figures in the table denote the mean values of three measurements. Blanks show that the specimens treated were found either imperfect or wanting in part. Numbers attached to Noguwa denote the number of specimens. Length of female flowers is measured from the base of the ovary to the branching point of the stigma.

Item Name	Stigma		Style		Female Flower		Ratio of length of style to that of female flower	Ratio of width of style to that of female flower
	Length	Width	Length	Width	Length	Width		
Azuma-shidare	2.30	0.20	1.20	0.48	1.87	1.37	64.2	87.6
Aoki	1.48	0.19	0.60	0.47	1.50	1.30	40.0	46.2
Akaki	2.24	0.25	0.87	0.51	1.99	1.99	43.7	43.7
Aka-ichihei	2.50	0.30	0.77	0.56	2.03	2.04	37.9	37.7
Azumi-ichihei	2.63	0.37	—	—	2.23	2.33	—	—
Azumi-guwa	3.13	0.35	1.12	0.56	3.58	2.80	31.3	48.7
Ao-shodo	1.40	0.28	0.10	0.40	2.27	1.97	4.4	5.1
Akame-yanagida	1.95	0.23	0.80	0.58	1.90	1.84	42.1	43.5
Aokawa-rosoh	2.00	0.30	—	—	1.80	1.90	—	—
Bishamon	2.00	0.35	0.10	0.60	2.00	2.10	5.0	4.8
Bashoh	1.60	0.30	0.30	0.58	1.80	2.20	16.7	13.6
Bankoku-soh	3.90	0.21	0.60	0.75	2.00	1.80	30.0	33.3
Date-akaki	1.85	0.28	1.10	0.50	1.87	1.86	58.8	59.1
Daioh-nishiki	1.93	0.29	—	—	2.07	2.00	—	—
Date-ichibei	1.78	0.24	0.23	0.50	1.80	2.00	12.8	11.5
Daruma	1.77	0.25	—	—	2.03	1.78	—	—
Daiho-guwa	1.93	0.28	1.27	0.57	2.03	2.10	62.6	60.5
Daikoku-guwa	1.27	0.30	0.37	0.58	2.20	2.00	16.8	18.5
Dainoh-nishiki	1.83	0.30	0.37	0.61	3.20	1.68	11.6	22.0
Dohsan-guwa	—	—	1.03	0.40	1.99	2.40	51.8	42.9
Dohri-guwa	0.97	0.23	0.40	0.57	1.70	1.70	23.5	23.5
Echigo-aojiku	1.90	0.26	0.44	0.47	1.77	1.77	24.9	24.9
Eishichi	1.70	0.28	0.40	0.52	2.97	2.80	13.5	14.3
Fukushima-ohha	2.07	0.24	0.34	0.49	2.27	2.15	14.9	15.8
Fusoh-maru	1.60	0.33	0.13	0.45	2.90	2.40	4.5	5.4
Fushoh	1.57	0.17	0.28	0.50	1.82	1.50	15.4	18.7
Fushimagari-guwa	1.70	0.30	1.20	0.40	2.00	1.90	60.0	63.2
Futo-yamato	1.80	0.30	0.30	0.50	1.90	2.00	15.8	15.0
Furisode	1.24	0.20	0.60	0.43	1.40	1.26	42.9	34.1
Fure-kijinba	2.30	0.30	—	—	1.50	1.30	—	—
Fuka-yamagi	2.20	0.25	—	—	1.70	1.20	—	—
Fuse-ryuh	1.47	0.33	—	—	3.07	2.83	—	—
Fuhki-nishiki	2.10	0.21	0.70	0.50	1.40	1.30	50.0	53.8

Fuki	1.80	0.30	0.85	0.48	1.10	1.20	77.3	70.8
Futsu No. 5	2.05	0.20	0.60	0.54	3.00	2.90	20.0	20.7
Fuyeh	2.14	0.40	0.13	0.57	1.90	1.80	6.8	7.2
Gorohji	1.50	0.23	0.93	0.47	2.14	2.28	43.5	40.8
Gosho-erami	1.71	0.39	0.49	0.53	2.34	2.22	20.9	22.1
Ginryuh	1.42	0.26	0.64	0.57	1.84	1.72	34.8	37.2
Geboh-guwa	1.80	0.23	0.40	0.35	1.40	1.30	28.6	30.8
Gunma-bandoh	1.75	0.23	0.33	0.59	1.70	1.60	19.4	20.6
Gobo-guwa	2.65	0.14	1.90	0.59	2.10	2.00	90.5	95.0
Gunma-akagi	2.87	0.30	0.71	0.61	2.05	1.76	34.6	40.3
Gorohji-wase	1.60	0.37	1.10	0.44	1.89	1.97	58.2	55.8
Gin-bashoh	1.49	0.20	0.32	0.39	1.86	1.51	17.2	21.2
Ginbuto	1.63	0.21	0.31	0.42	1.40	1.55	22.1	20.0
Hiroe-guwa	1.40	0.30	0.20	0.60	2.40	2.60	8.3	7.7
Hirashimizu-wase	1.50	0.40	—	—	1.90	2.70	—	—
Hikojiroh	1.80	0.40	—	—	2.04	1.90	—	—
Hosoe	1.20	0.20	0.50	0.40	0.90	1.00	55.6	50.0
Hikae-guwa	2.10	0.30	0.10	0.60	1.70	1.70	5.9	5.9
Hotei	1.60	0.40	0.90	0.50	2.00	1.60	45.0	56.3
Hachijyoh-guwa	1.60	0.25	1.00	0.58	2.10	2.20	47.6	45.5
Hokunoh No. 10	2.19	0.19	1.42	0.40	1.92	1.86	73.9	76.3
Heijiroh	1.70	0.40	0.33	0.60	2.30	2.20	14.3	15.0
Hida-kuwa	1.88	0.33	1.05	0.55	1.55	1.52	67.7	69.1
Hassun-guwa	1.63	0.21	0.57	0.47	1.40	1.48	40.7	38.5
Hime-guwa	1.60	0.20	1.70	0.28	2.20	2.20	77.3	77.3
Hime-zuru	2.00	0.20	0.70	0.50	1.80	1.70	38.9	41.2
Haruiro-guwa	2.07	0.26	—	—	2.87	2.47	—	—
Isama-guwa	1.50	0.27	—	—	2.00	2.07	—	—
Iwase	2.03	0.38	0.37	0.57	2.30	2.17	16.1	17.1
Ichinose	0.29	0.22	0.40	0.67	1.80	1.77	22.2	22.6
Ihagi-wase	1.85	0.29	—	—	1.90	1.70	—	—
Itari No. 1	1.58	0.21	—	—	1.80	1.40	—	—
Izu-wase	1.80	0.30	1.00	0.30	2.60	2.00	38.5	50.0
Ichibei	2.09	0.24	1.09	0.55	2.18	2.23	50.0	48.9
Iriyama-takasuke	1.30	0.26	0.40	0.58	1.07	1.43	37.4	27.9
Izumi	1.80	0.28	0.27	0.45	1.53	1.60	17.6	16.9
Juhshima	2.05	0.17	0.77	0.51	2.12	1.84	36.8	41.8
Jiuhbei-guwa	1.48	0.21	0.59	0.50	1.00	1.08	59.0	54.6

Jiusen	1.60	0.67	0.30	0.53	2.30	2.20	13.0	13.6
Kuro-wase	2.11	0.20	—	—	2.50	2.40	—	—
Koban-wase	1.90	0.26	0.13	0.64	1.90	1.85	6.8	7.0
Kinkai-nezumigaeshi	1.37	0.16	—	—	3.00	2.50	—	—
Kasuga	1.54	0.51	0.20	0.59	1.65	1.60	12.1	12.5
Kataneo	1.93	0.31	0.23	0.60	2.23	1.79	10.3	12.8
Kohsen	1.64	0.61	0.53	1.17	1.54	1.30	34.4	40.8
Kohsen No. 2	1.03	0.15	1.01	0.23	2.40	1.72	42.1	58.7
Kumonryuh	1.98	2.10	0.55	0.41	2.90	3.20	18.9	17.2
Kuninasu	1.91	0.30	0.39	0.43	1.20	1.25	32.5	31.2
Kairyoh-aoichi	2.47	0.25	0.97	0.44	1.83	1.63	53.0	59.5
Kenmochi-soh	0.87	0.26	0.50	0.51	2.49	2.36	20.1	21.2
Kohhai-juhmonji	1.43	0.30	—	—	2.30	1.87	—	—
Keisoh	1.38	0.22	0.33	0.49	2.80	2.72	11.8	12.1
Kin-bashoh	2.10	0.37	1.06	0.51	2.75	2.20	38.5	43.2
Kairyoh-juhmonji	1.50	0.30	—	—	2.07	1.87	—	—
Kairyoh-wasejuhmonji	1.93	0.38	—	—	1.67	1.20	—	—
Kinjyoh	2.33	0.40	0.50	0.60	2.07	2.03	24.2	24.6
Kurimoto	2.41	0.33	0.11	0.60	1.90	1.60	5.8	6.9
Kani-kobore	2.93	0.30	0.47	0.70	2.80	2.43	16.8	19.3
Kozaemon	2.15	0.22	0.52	0.19	2.50	2.40	20.8	21.7
Kokusoh No. 13	1.76	0.25	0.26	0.50	1.93	1.69	13.5	15.4
Kokusoh E	1.72	0.16	0.22	0.49	1.80	1.60	12.2	13.8
Kanoh-guwa	2.10	0.27	0.96	0.60	1.60	1.60	60.0	60.0
Kurome-yamato	1.63	0.20	0.35	0.50	1.50	1.80	23.3	19.4
Kanrasoh	1.79	0.24	0.30	0.51	2.30	1.67	13.0	17.9
Kairyo-nezumigayeshi	1.52	0.25	0.25	0.54	2.28	2.24	10.9	11.2
Kairyo-rosoh	1.63	0.21	—	—	2.20	2.20	—	—
Kinryuh	1.03	0.24	1.10	0.60	2.50	2.07	44.0	53.1
Kaneko	2.25	0.24	0.99	0.51	2.06	2.25	48.1	44.0
Kanoh	2.17	0.22	0.17	0.60	1.73	1.53	9.8	11.1
Kyuhei	1.83	0.23	0.21	0.53	1.25	1.20	16.8	17.5
Kunitomi	1.76	0.27	0.40	0.46	1.80	1.67	22.2	23.9
Kuwaichi	2.70	0.22	0.46	0.55	2.30	2.20	20.0	20.9
Kanshichi	1.97	0.30	0.43	0.53	1.47	1.53	29.3	28.1
Kurokobore	1.27	0.21	0.57	0.46	1.90	1.80	30.0	31.7
Kasoh	1.10	0.20	0.13	0.57	2.60	2.37	5.0	5.5
Kurokomaki	2.89	0.14	1.30	0.32	2.10	2.40	61.9	54.2

Kokusoh No. 7	1.30	0.26	—	—	1.50	1.60	—	—
Kame-kuwa	1.90	0.16	1.53	0.46	2.70	1.67	56.7	91.6
Kanime	2.23	0.35	0.27	0.57	2.33	2.10	11.6	12.8
Kanton-guwa	2.15	0.26	—	—	2.80	2.65	—	—
Kahachi	1.70	0.24	0.97	0.48	2.05	2.00	47.3	48.5
Kokusoh No. 70	1.61	0.21	0.12	0.51	2.70	2.95	4.4	4.1
Koshiori-hime	2.77	0.22	0.67	0.49	1.70	1.60	39.4	41.9
Kokusoh No. 17	1.54	0.21	—	—	1.90	2.00	—	—
Kuro-kasuga	1.33	0.28	—	—	2.57	2.73	—	—
Kurimoto-wase	2.39	0.25	—	—	1.80	2.05	—	—
Kuroki-ichihei	1.97	0.30	0.40	0.50	2.03	1.98	19.7	20.2
Kokusoh No. C	2.07	0.30	—	—	2.00	2.00	—	—
Kubota-wase	2.10	0.21	0.30	0.50	1.80	2.00	16.7	15.0
Kohtaku-kinkobore	1.30	0.40	—	—	2.20	1.90	—	—
Kyuzaemon-kobore	2.30	0.22	0.10	0.50	1.20	1.40	8.3	7.1
Kiriko-chirimen	2.28	0.21	0.39	0.49	2.10	1.50	18.6	26.0
Motoyemon	1.80	0.26	0.50	0.53	1.40	1.50	35.7	33.3
Makuwa	2.85	0.42	0.92	0.52	2.46	2.08	37.4	44.2
Maruha-guwa	2.06	0.25	1.03	0.66	2.00	1.95	51.5	52.8
Murasaki-wase	1.85	0.19	0.71	0.45	2.19	1.89	32.4	37.6
Mizuuchi guwa	1.87	0.24	0.52	0.44	1.88	1.89	27.7	27.5
Mizusawa-guwa	1.70	0.29	0.50	0.45	1.93	1.74	25.9	28.7
Mikawa-kamekuwa	1.23	0.33	0.52	0.63	2.03	2.05	25.6	25.4
Miran No. 5	2.12	0.30	—	—	2.10	2.03	—	—
Mikino-kobore	1.88	0.24	0.98	0.37	2.02	1.80	48.5	54.4
Midori-nishiki	2.00	0.22	0.27	0.59	2.00	2.00	13.5	13.5
Mikawa-aomerokuroh	1.73	0.25	0.18	0.50	1.60	1.40	11.3	12.9
Muneshige-guwa	1.80	0.25	0.80	0.40	2.00	2.10	40.0	38.1
Medaka-wase	1.93	0.29	—	—	2.23	2.03	—	—
Midare-guwa	1.63	0.29	—	—	2.43	2.27	—	—
Mamono	—	—	0.70	0.52	1.80	1.87	38.9	37.4
Motoyamato	1.90	0.30	0.57	0.47	2.05	2.03	27.8	28.1
Mizukuguri	2.07	1.87	0.47	0.41	1.90	1.70	24.7	27.6
Mikawa-nakajima	2.30	0.30	1.10	0.60	2.00	2.30	55.0	47.8
Mitsume-guwa	1.93	0.30	0.43	0.50	2.30	1.90	18.7	22.6
Mizushima-wase	2.20	0.20	0.40	0.50	2.40	2.30	16.7	18.7
Mukashi-yamato	1.42	0.20	0.97	0.50	2.00	1.70	48.5	57.1
Makado-guwa	1.45	0.31	0.51	0.45	1.80	2.10	28.3	24.3

Manji-guwa	3.10	0.30	0.20	0.60	3.00	2.90	6.7	6.9
Nakamagi	1.83	0.28	0.19	0.59	2.40	1.94	7.9	9.8
Naganuma-guwa	1.94	2.04	0.36	0.67	2.15	1.85	16.8	1.95
Nohjiyoh	2.80	0.23	0.40	0.43	1.80	1.65	22.2	24.2
Noda-guwa	2.20	0.30	0.80	0.57	2.30	2.40	34.8	33.3
Norimune-guwa	1.50	0.22	0.30	0.60	2.30	2.40	13.0	12.5
Nemurasaki	2.20	0.20	1.70	0.60	2.40	2.20	70.8	77.3
Nagasawa-guwa	1.63	0.21	0.20	0.40	1.83	1.81	10.9	10.9
Nezumigayeshi	1.86	0.24	0.40	0.49	1.38	1.40	28.9	28.6
Nishiyamoto	1.90	1.80	0.27	0.60	2.10	2.00	12.9	13.5
Nagase-guwa	1.73	0.26	—	—	2.15	2.20	—	—
Nagasode-guwa	2.11	0.23	0.29	0.49	2.30	2.20	12.6	13.2
Noguwa 1	2.27	0.19	1.47	0.51	2.40	2.73	61.3	53.8
Noguwa 2	1.90	0.13	1.63	0.47	2.93	3.17	55.6	51.4
Noguwa 3	1.70	0.19	1.53	0.50	2.20	2.87	69.5	53.3
Noguwa 4	1.85	2.25	1.65	0.85	2.41	3.60	68.5	45.8
Noguwa 5	2.40	0.20	1.70	0.50	2.40	2.50	70.8	68.0
Noguwa 6	2.10	0.20	1.33	0.47	3.10	3.13	42.9	42.5
Noguwa 7	1.60	0.20	1.23	0.45	2.37	3.37	51.9	36.5
Noguwa 8	1.43	0.18	1.00	0.28	2.50	2.57	40.0	38.9
Noguwa 9	1.40	0.20	1.10	0.50	2.37	3.07	46.4	35.8
Noguwa 10	1.77	0.20	1.63	0.50	2.83	3.10	57.6	52.6
Noguwa 11	1.83	0.27	2.33	0.50	2.47	2.80	94.3	83.2
Noguwa 12	2.27	0.19	1.73	0.45	2.93	3.50	59.0	49.4
Noguwa 13	2.23	0.18	1.40	0.60	2.43	2.40	57.6	58.3
Noguwa 14	1.17	0.25	1.07	0.50	1.57	1.57	68.2	68.2
Noguwa 15	2.57	0.20	1.37	0.33	2.53	3.07	54.2	44.6
Noguwa 16	3.43	0.17	1.10	0.48	2.53	2.60	43.5	42.3
Noguwa 17	1.90	0.18	1.27	0.43	2.43	2.83	52.3	44.9
Noguwa 18	1.30	0.23	1.17	0.52	2.60	3.13	45.0	37.4
Noguwa 19	1.80	0.20	2.03	0.48	2.60	3.67	78.1	55.3
Noguwa 20	1.93	0.19	0.83	0.43	2.37	2.80	35.0	29.6
Noguwa 21	0.77	0.20	1.33	0.30	2.27	3.00	58.6	44.3
Noguwa 22	1.33	0.21	1.60	0.50	2.63	3.13	60.8	51.1
Noguwa 23	2.27	0.24	1.50	0.57	2.60	3.20	57.7	46.9
Noguwa 24	2.33	0.26	2.07	0.58	2.97	3.57	69.7	57.9
Noguwa 25	1.23	0.23	1.23	0.52	2.70	3.77	45.6	32.6
Noguwa 26	1.30	0.16	1.50	0.48	2.33	2.63	64.4	57.0

Noguwa 27	1.83	0.22	1.87	0.47	2.37	3.07	78.9	60.9
Noguwa 28	1.43	0.20	1.53	0.32	2.57	3.27	59.5	46.8
Noguwa 29	2.20	0.20	1.17	0.53	2.30	2.57	50.9	45.5
Noguwa 30	1.37	0.22	1.23	0.37	2.60	3.20	47.3	38.4
Noguwa 31	1.50	0.20	1.30	0.47	3.17	4.40	41.0	29.5
Noguwa 32	1.07	0.22	1.70	0.37	2.37	3.33	71.7	51.1
Noguwa 33	1.23	0.20	1.40	0.58	2.33	3.30	60.1	42.4
Noguwa 34	2.00	0.20	1.83	0.43	2.43	2.47	75.3	74.1
Noguwa 35	1.47	0.27	1.17	0.45	2.33	3.90	50.2	30.0
Noguwa 36	2.60	0.20	1.63	0.43	2.67	2.77	61.0	58.8
Noguwa 37	2.20	0.22	1.30	0.48	2.13	2.07	61.0	62.8
Noguwa 38	1.70	0.21	1.33	0.40	2.53	3.93	52.6	33.8
Noguwa 39	2.07	0.19	2.40	0.57	2.43	4.40	98.8	54.5
Ohfushi-magari	1.61	0.18	0.49	0.41	2.10	1.70	23.3	28.8
Ohshima-guwa	1.32	0.23	1.03	0.47	1.95	1.85	52.3	55.7
Ohso-guwa	1.47	0.22	1.23	0.52	2.67	2.43	46.1	50.6
Ohkane-guwa	1.67	0.21	0.60	0.42	1.43	1.37	41.9	43.8
Ohba-guwa	1.95	0.37	1.28	0.53	1.98	1.94	64.6	65.9
Otome-tsubakiguwa	1.73	0.27	0.40	0.57	1.93	1.73	20.7	23.1
Ohba-tanaka	1.93	0.28	0.97	0.58	2.20	2.13	44.1	45.5
Ohshuh-guwa	2.87	1.40	0.30	0.70	2.70	2.80	11.1	10.7
Ohchirimen	2.73	0.18	0.75	0.59	2.60	2.70	28.8	27.8
Ohba-wase	1.33	0.25	0.39	0.48	2.38	2.43	16.4	16.0
Oh-wase	1.51	0.26	0.39	0.38	2.00	1.86	19.5	20.9
Okinawa-guwa	2.20	0.33	1.53	0.57	2.38	2.30	64.3	66.5
Ohzeki-juhmonji	1.43	0.31	—	—	2.67	2.33	—	—
Ohkura-ohba	2.08	0.34	0.16	0.68	2.03	1.88	7.9	8.5
Onna-kunitomi	—	—	0.76	0.43	1.70	1.33	44.7	57.1
Ohdate	1.93	0.29	0.50	0.51	1.50	1.53	53.3	32.7
Ohba	1.93	0.30	0.63	0.49	2.03	1.97	31.0	31.9
Ohgon	1.13	0.23	0.83	0.37	2.40	1.99	40.7	41.7
Obata	0.66	0.30	0.47	0.42	1.67	1.67	28.1	28.1
Rokoku yasoh	1.71	0.31	0.30	0.38	1.90	1.80	15.8	16.7
Risoh	1.98	0.86	0.48	0.44	2.07	1.85	23.2	25.9
Rohachi	2.00	0.26	0.18	0.51	2.33	2.28	7.7	7.9
Rokuroh-wase	1.70	0.33	0.79	0.60	1.90	2.00	41.6	39.5
Rokunojiyoh	2.62	0.21	0.27	0.55	2.40	2.43	11.3	11.1
Ryuhzan	1.80	0.21	—	—	2.53	2.53	—	—



Ryohmen-guga	1.87	0.30	—	—	1.67	1.53	—	—
Shiro-goboh	2.10	0.20	1.28	0.47	2.10	1.90	60.9	67.4
Shina-kanton	2.70	1.93	0.55	0.63	1.70	1.80	32.4	30.6
Shiromeryuh	2.08	0.19	—	—	1.90	1.80	—	—
Satomi	1.36	0.17	1.66	0.57	2.40	3.00	69.2	55.3
Shuhu	2.07	0.30	0.32	0.68	1.77	1.52	18.1	21.1
Seijuhroh	1.99	0.50	0.39	0.52	2.34	2.18	16.7	17.9
Shinshiro	1.88	2.05	0.39	0.42	1.83	1.65	21.3	23.6
Shiro-makado	1.50	2.63	0.28	0.48	1.80	1.50	15.6	18.7
Shihoh-maru	2.03	1.90	0.25	0.51	2.00	1.95	12.5	12.8
Shiroishi-guwa	2.40	0.20	0.63	0.52	1.60	1.35	39.4	4.67
Suji-kuwa	2.03	0.31	0.40	0.57	2.07	1.67	19.3	23.9
Sodefuri	—	—	2.62	3.20	4.00	3.90	65.5	67.2
Sosuke-wase	2.63	0.24	0.59	0.48	1.93	1.63	30.6	36.2
Sagami-wase	2.35	0.22	0.20	0.60	2.00	1.90	10.0	10.5
Sakigake-wase	1.53	0.28	—	—	1.90	2.05	—	—
Sansuh-wase	2.02	0.20	1.34	0.47	2.70	2.40	49.6	55.8
Shimizu-wase	2.00	0.19	0.47	0.44	2.40	2.20	19.6	21.4
Saichi	2.23	0.15	0.44	0.51	1.80	2.00	24.4	22.0
Shiro-nezumigaeshi	2.05	0.34	0.76	0.62	1.50	1.78	50.7	42.7
Shimamura-wase	1.87	0.25	—	—	2.20	2.20	—	—
Shohji	1.79	0.31	0.44	0.53	1.80	1.70	24.4	2.59
Shamu	1.83	0.31	—	—	3.07	2.93	—	—
Sohsuke	2.03	0.24	1.00	0.43	2.13	1.87	46.9	53.5
Shirakiyamoto	2.00	0.28	0.50	0.51	1.73	1.63	28.9	30.7
Shioume-kuwa	2.17	0.22	1.10	0.44	2.10	1.87	52.4	58.8
Sapporo-guwa	1.53	0.26	—	—	2.20	2.20	—	—
Shikishima	3.56	0.45	1.17	0.95	3.17	2.89	36.9	40.5
Shimamura	2.00	0.22	0.17	0.56	2.13	1.87	7.9	9.1
Sunakawa-nishiki	1.67	0.24	—	—	2.10	1.93	—	—
Senmatsu	1.65	0.35	0.46	0.44	2.32	2.29	19.8	20.1
Shidare-guwa	1.45	0.21	—	—	2.17	1.97	—	—
Shuhkakuichi	2.17	0.29	—	—	2.69	2.49	—	—
Shiro-shidare	1.30	0.20	—	—	2.40	2.00	—	—
Shirome-keisoh	1.33	0.22	—	—	1.99	1.98	—	—
Shinjiyo-nishiki	1.30	0.27	0.43	0.40	2.13	2.07	20.2	20.8
Suigen	2.10	0.24	0.23	0.47	1.43	1.37	16.1	16.8
Shihohsaki	1.48	0.23	—	—	2.30	1.70	—	—

Shihoh	2.60	0.27	0.35	0.55	2.00	2.30	17.5	15.2
Tsuruta	1.98	0.30	0.59	0.58	1.99	1.86	29.6	31.7
Tanba-gengoroh	2.04	0.23	0.17	0.67	2.30	2.50	7.4	6.8
Toyokuni	2.60	0.45	0.26	0.53	2.80	2.60	9.3	10.0
Tako-wase	1.90	0.26	0.54	0.46	1.57	1.88	28.9	28.7
Tenryuh	1.53	0.20	0.16	0.46	1.90	2.00	8.4	8.0
Teikoku-guwa	1.76	0.20	0.57	0.44	2.90	2.70	19.7	21.1
Taiwan-wase	1.81	0.20	0.45	0.45	3.20	2.60	14.1	17.3
Tokusen	1.43	0.23	0.29	0.44	1.95	1.80	14.9	16.1
Tohkyoh-ohha	2.53	0.22	0.49	0.50	1.20	1.10	40.8	44.5
Tsukimaru	1.60	0.30	2.00	1.80	3.60	3.20	55.6	62.5
Takatomi	1.93	0.20	1.07	0.52	2.73	2.57	39.2	42.0
Taiyoh	2.03	0.30	1.13	0.53	1.40	1.59	80.7	71.1
Taishohsen	2.21	0.27	0.61	0.56	2.15	1.74	28.4	35.1
Tama-chijimi	1.33	0.40	0.80	0.61	1.60	1.42	50.0	56.3
Takagi	1.36	0.40	0.63	0.80	2.13	2.23	29.6	28.3
Tanba-akagi	2.00	0.40	0.93	0.46	2.20	2.50	42.3	37.2
Takao-guwa	2.13	0.40	0.53	0.47	1.67	1.50	31.7	35.3
Tanba-maru	2.26	0.30	0.60	0.37	2.50	2.23	24.0	26.9
Tsubaki-guwa	2.06	0.23	0.44	0.39	1.40	1.20	31.4	36.7
Tako	2.05	0.25	0.67	0.47	1.84	1.95	36.4	34.4
Tsukasa-guwa	1.07	0.30	0.23	0.68	1.50	1.37	15.3	16.8
Tamba-kunitomi	1.53	0.20	0.67	0.44	2.23	2.03	30.0	33.0
Takara-guwa	1.67	0.23	—	—	2.00	2.07	—	—
Tanbagi	1.67	0.25	0.57	0.53	2.42	2.24	23.6	25.4
Takasuke	1.97	0.31	0.54	0.57	1.96	1.98	27.6	27.3
Tsuchiba	2.57	0.20	0.58	0.47	2.20	2.00	26.4	29.0
Tohsuke	2.04	0.19	1.03	0.58	2.53	2.30	40.7	44.8
Toyorame	1.57	0.23	0.37	0.57	1.60	1.70	23.1	21.8
Tohsuke-wase	1.80	0.28	0.53	0.52	2.00	2.10	26.5	25.2
Uriguwa	2.13	0.30	0.56	0.52	1.27	1.27	44.1	44.1
Uguisu-wase	1.84	0.31	1.56	0.54	2.00	1.89	78.0	82.5
Wakanoura	1.60	1.70	0.35	0.38	2.20	2.40	15.9	14.6
Wasukejuhmonji	1.50	0.35	—	—	2.83	2.67	—	—
Wase-juhmonji	1.45	0.32	—	—	3.80	5.00	—	—
Yasunaka-guga	1.87	0.22	0.51	0.59	2.20	2.20	23.2	23.2
Yamagata-kunitomi	1.63	0.26	0.53	0.53	1.80	1.67	29.4	31.7
Yadome	1.80	0.25	1.07	0.60	2.07	1.91	51.7	56.0

Yanagida	1.68	0.30	0.63	0.50	1.48	1.61	42.6	39.1
Yaei	1.60	0.26	0.10	0.30	2.70	3.10	3.7	3.2
Yajima	1.50	0.30	0.20	0.37	1.50	1.40	13.3	14.3
Yamato-guwa	1.23	0.30	0.70	0.50	1.73	1.57	40.5	44.6
Yamanaka-takasuke	2.24	0.42	0.42	0.47	1.55	1.63	27.1	25.8
Yokoyama-wase	1.40	0.20	1.70	0.43	2.30	2.20	73.9	77.3
Yoshitoku	1.40	0.22	1.40	0.50	2.20	2.40	63.6	58.3
Yaheiji	3.40	0.32	0.80	0.50	1.80	1.80	16.7	16.7
Yoh-guwa	1.00	0.20	0.15	0.50	1.70	1.80	8.8	8.3
Yuhgiri	1.90	0.28	0.50	0.50	1.90	1.65	26.3	30.3
Yohro-guwa	1.97	0.29	0.23	0.60	2.07	1.92	11.1	11.9
Yohkaichi	1.60	0.29	0.53	0.54	1.93	1.87	27.5	28.3
Yenshuh-takasuke	2.03	0.2	1.78	0.54	2.00	2.01	89.0	88.6
Zizan	1.40	0.18	0.28	0.84	2.77	2.03	10.1	13.8

The above shown results of observations of the female flowers of both wild and cultivated mulberry trees in Japan may be summarized as follows:--

1. Among the species now considered indigenous to Japan, *Morus bombycis* KOIDZ., *Morus acidosa* GRIFF., *Morus Kagayamae* KOIDZ., and the apparently allied races are characterized by a longer style. The ratio of the length of style to that of female flower is over 25 % in the races apparently allied to *Morus bombycis* KOIDZ., e. g. Tohsuke, Aoki, Hida-kuwa; over 45 % in *Morus Kagayamae* KOIDZ.; and over 50 % in the races apparently allied to *Morus acidosa* GRIFF., e. g. Okinawa-guwa.

2. In foreign species the above-mentioned ratio is rather small, being roughly estimated at less than 25 % in *Morus alba* LINN. e. g. Kumonryu, Sujikuwa, and Senmatsu; in *Morus multicaulis* PARR. e. g. Kurimoto, Eishich, and Kasuga; and their apparently allied races. This ratio is smaller in *Morus multicaulis* PARR. than in *Morus alba* LINN. The style is wanting in a few races of the former, e. g. Fukayamagi, Fuseryu, and Nagase. Only a few exceptions are found in the above-mentioned ratio of the width of the female flower to that of the style.

3. Such is also the case in the ratios between either length or width of the stigma and those of the style respectively, with only a few exceptions.

4. The ration of the length of style to that of the female flower is almost in proportion to the ratio of the length of leaf tip to that of leaf blade.

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