

VEGETATIVE AND FRUIT CHARACTERISTICS OF *BER* (*ZIZIPHUS MAURITIANA* LAMK.) CULTIVARS OF RAJASTHAN GROWN IN THE THAR DESERT

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Most popular *ber* cultivars from the *ber* orchards in Jaipur, Alwar, Bharatpur and Jodhpur districts in the north-west India were collected and grown at the Central Arid Zone Research Institute, Jodhpur. Jodhpur has a hostile agroclimate with erratic and low precipitation (av 365 mm/year), high aridity index (74-78%), high wind velocity (20 km/hr), high potential evapo-transpiration (6 mm/day) coupled with low fertility soils having high infiltration rate (9 cm/hr). The cultivar 'Tikadi' grows locally at Jodhpur. Cultivar 'Nimaj' was collected from a village Nimaj near Jodhpur, cultivars 'Katha' and 'Chhuhara' from Alwar, Ramgarh, Tijara (Alwar district) and Deeg (Bharatpur district) and cultivars 'Maharwali', 'Bagwadi', 'Kali' and 'Lam' were collected from Amer and Chomu in Jaipur district. Cultivar 'Gola' collected from Delhi and 'Seb', 'Jogia' and 'Mundia' introduced earlier from Uttar Pradesh were already adapted at Jodhpur. All these were budded on *bordi* (*Ziziphus mauritiana* var. *rotundifolia*) root-stock. (Figs. I & II) The vegetative and fruit characteristics alongwith the peak fruiting period of these twelve cultivars under the climatic conditions of the *Thar* desert are described in this paper.

'Seb' :

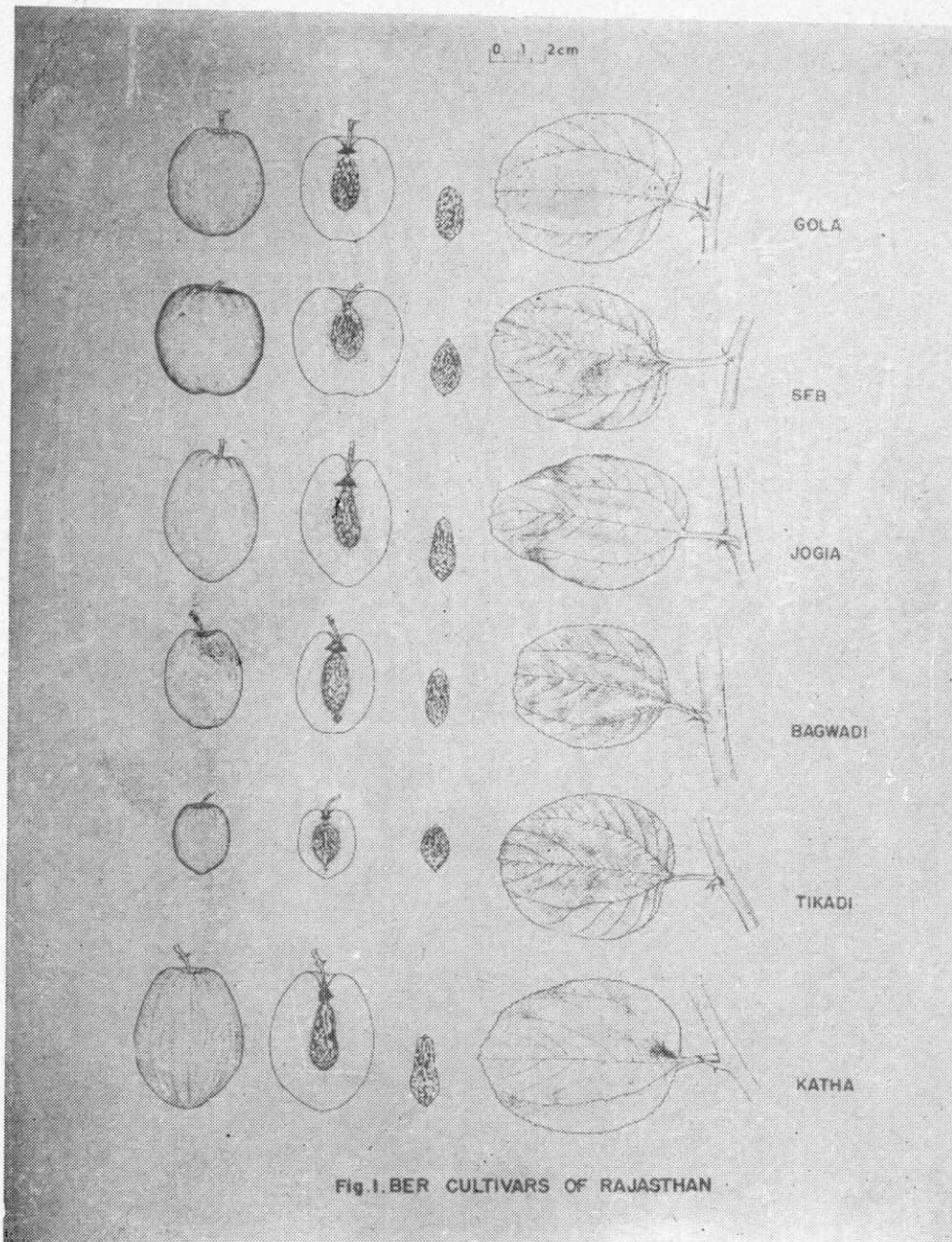
Erect trees. Leaves oval, size 7.1 x 4.5 cm. broad; dorsal surface of young leaf light green, green in old, ventral surface tomentose; apex sub-acute, slightly curved; base broad; petiole light with purple tinge on dorsal and light green on ventral surface, length 1.8 cm.

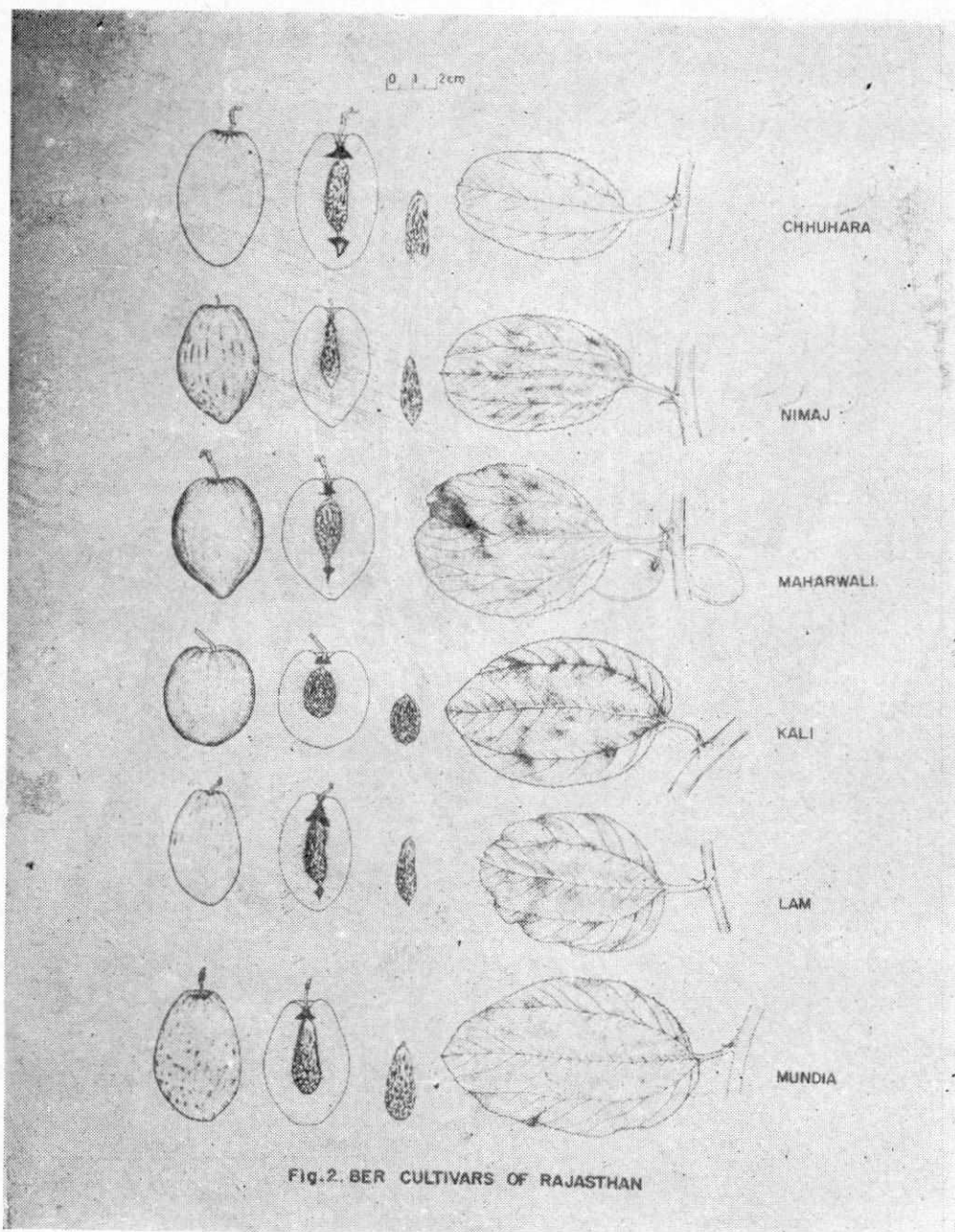
Shoots round to angular; new shoot dark purple from base to the apical end; hairy; node purple; thorns two, one long and straight and another small, curved, brown and hairy.

Fruit round, apple shaped; styler end round with a depression at the centre; stem end broad, deeply grooved; skin yellowish green with brown specks, slightly rough; pulp white, hard; size 3.6 x 3.3 cm; weight 24.6 g; pulp/stone ratio 14.4; TSS 16.8° Brix; cavity at stem end. Stone oboval, 2.3 x 1.3 cm. Early Cultivar. Fruits ripen during middle of January to middle of February.

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'Gola' :

Spreading trees. Leaves cordate, size 6.7 x 4.2 cm, broad; dorsal surface green in young leaves turning dark glossy green in old; ventral surface tomentose; apex obtuse; old leaves curved towards ventral surface; base broad; petiole light green on both the surfaces; length 1.2 cm.

Shoots round; new shoot dark purple both at the base and apical end, hairy; node dark purple; thorns two, one long and straight and another small and curved, brown and hairy.

Fruit round; styler end flat; stem end round; skin bright yellow, smooth and glossy; pulp white, soft; size 3.8 x 3.5 cm; pulp/stone ratio 14.3; weight 21.4 g; TSS 21° Brix; cavity present at the stem end. Stone oval, 2.2 x 1.2 cm.

Early cultivar. Fruits ripen during early January to end of January.

'Jogia' :

Semi-erect trees. Leaves oblong, size 6.5 x 4.4 cm, broad; dorsal surface of young as well as old leaves pale green; ventral surface tomentose, apex sub-acute, slightly curved at margin and apex; base broad; petiole light green on both the surfaces, length 1.4 cm.

Shoots round to angular; new shoot dark purple from base to apical end, hairy; node dark purple; thorns two, one straight and the other curved, both branched, dark brown in colour, hairy.

Fruit oblong; styler end bluntly tapering; stem end ridged; skin yellowish green with ridged surface; pulp white, semi-soft; size 4.9 x 3.3 cm; weight 24 g; pulp/stone ratio 24; TSS 14° Brix; cavity at stem end.

Early cultivar. Fruits ripen during middle of January to end of January.

'Mundia' :

Semi erect trees. Leaves oblong, size 6.5 x 4.5 cm, long; dorsal surface of young leaf pale green turning green in old; ventral surface tomentose; apex sub-acute; curved at margin; base tapering; petiole light green with purple tinge on dorsal and light green on ventral surface; length 1.6 cm.

Shoots angular; new shoot light green from base to the apical end, hairy; node purple; thorns two, one straight and the other curved, both weak, brown with dark brown tip, hairy.

Shoot round to angular; new shoot dark purple from base to the apical end; node purple; thorns two, one long, curved and the other small, curved, light green with dark brown tip, hairy.

Fruit oblong; styler end beaked; stem end with rising shoulders; skin yellowish green, smooth; pulp white, hard; size 3.9 x 2.8 cm; 17.7 g; TSS 14.9° Brix; pulp/stone ratio 22.2; cavity at both ends. Stone oblong oval, 3.0 x 1.1 cm.

Late cultivar. Fruits ripen during third week of February to early March.

'Bagwadi' :

Spreading trees. Leaves oval, size 7.2 x 4.3 cm, broad; dorsal surface glossy green in young leaves turning dark green in old; ventral surface tomentose; apex obtuse; flat with broad base; petiole light green on both the surfaces, densely hairy, length 1.9 cm.

Shoot round to angular; new shoot light purple at the base turning light green at apical end covered with dense hair; node light purple; thorns two-one long, curved upward and the other small, curved downward, light brown covered with dense hair.

Fruit oval; styler end round; stem end round with shallow notch and prominent ridges; skin yellowish green, smooth; pulp white, soft; TSS 14.8° Brix; size 3.8 x 3.0 cm; weight 19.5 g; pulp/stone ratio 27; cavity at both ends.

Mid season cultivar. Fruits ripen during third week of January to early February.

'Kali' :

Spreading trees. Leaves oblong, size 6.5 x 4.0 cm, broad; dorsal surface light green to pale green in young leaf turning glossy green in old; ventral surface tomentose; apex sub acute; flat; base tapering; petiole light green with slight purple tinge and hairs on dorsal surface, light green on ventral surface, length 0.9 cm.

Shoot round to angular; new shoot dark purple from base to apical end, hairy; node dark purple; thorns two-one long curved upward and the other small curved downward, light green at base with dark brown at the apical end, hairy.

Fruit obovate; styler end round; stem end slightly ridged; skin greenish yellow, smooth; pulp white, soft; pulp/stone ratio 16.3; weight 22 g; size 3.8 x 3.0 cm, TSS 20.6° Brix; cavity at stem end only. Stone oval, 2.2 x 1.2 cm.

Mid season cultivar. Fruits ripen during end of January to early February.

'Lam':

Erect trees. Leaves oblong, size 6.6 x 4.2 cm, broad; dorsal surface of young

leaves pale green turning glossy dark green; ventral surface tomentose; apex sub acute; leaf curved at margin and apex; base broad; petiole light green covered with white dense hairs on dorsal surface and pale green on ventral surface, length 1.4 cm.

Shoot round to angular; new shoot dark purple from base to the apical end, hairy; node dark purple; thorns two, one long curved and the other small curved, light green with brown tip, hairy.

Fruit oblong; styler end round; stem end narrow; skin yellow; smooth; pulp white, soft; size 4.3 x 2.7 cm; weight 15 g; pulp/stone ratio 20.4; TSS 16.4° Brix, cavity at both ends. Stone oblong, 2.8 x 0.8 cm.

Mid season cultivar. Fruits ripen during end of January to middle of February.

'Katha':

Semi-erect trees. Leaves oval, size 7.2 x 4.3 cm, broad; dorsal surface of young leaves pale green turning glossy green in old; ventral surface tomentose; apex sub-acute; curved margin with broad base; petiole light green with purple tinge on both surfaces, length 1.6 cm.

Shoot round to angular; new shoot purple from base to the apical end, densely hairy; node light purple; thorns two-one long and straight and the other small and curved, dark brown, densely hairy.

Fruit oval; styler end round; stem end round and ridged; skin yellow, smooth and glossy; pulp white, hard; size 4.7 x 3.6 cm; weight 34 g; pulp/stone ratio 25.1; TSS 18.9° Brix; cavity at stem end. Stone oblong pyriform, 3.0 x 1.2 cm.

Late cultivar. Fruits ripen during third week of February to early March.

'Chuhara':

Erect trees. Leaves oblong, size 7.8 x 4.5 cm, long; dorsal surface pale green in young leaves turning green in old; ventral surface tomentose; apex sub-acute, curved; base tapering; petiole light green with purple tinge on dorsal and light green on ventral surface, length 2.3 cm.

Shoot round to angular: new shoot light green, hairy, no pigmentation at the node; thorns two, one straight and weak (absent at later stage) and the other curved downwards, dark brown and hairy.

Fruit oval; styler end round; stem end broad, skin yellowish green, smooth and glossy; pulp white, semi-soft, size 4.7 x 2.8 g; weight 20 g; pulp/stone ratio 19; TSS 22° Brix; cavity at both ends. Stone oblong, 3.3 x 0.8 cm.

Mid season cultivar. Fruits ripen during middle of January to end of January.

Out of these twelve cultivars grown in Rajasthan, 'Gola', 'Jogia', 'Mundia' and 'Katha' are popular also in other States of India. Descriptions on their characteristics conform to those available from Uttar Pradesh, Haryana, Punjab and Delhi (Singh and Khanna, 1968; Singh *et al.*, 1971, 1972; Teotia *et al.*, 1974; Randhawa and Biswas, 1966) with slight differences obviously due to the climatic variations. The cultivar 'Katha' seems almost identical to 'Umran' of Haryana and Punjab and 'Ajmeri' of Gujarat (Vashishtha, 1983). Cultivars 'Maharwali', 'Bagwadi', 'Kali', 'Lam', 'Nimaj', 'Tikadi' and 'Chhuhara' are other selections from the *ber* plantations of Rajasthan.

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