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*Short communication*

# High-yielding multicut coriander variety, Arka Isha

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## ABSTRACT

**Coriander (*Coriandrum sativum* L.) is one of the important leafy vegetables having a pleasant aroma. Very little research work has been done on improvement of leafy coriander and only a few local varieties, low-yielding and with low aroma, are available in the market. Research work at Indian Institute of Horticultural Research has resulted in development of a leafy coriander variety, Arka Isha, with a high yield potential and good aroma. It is a multicut variety where the plants are bushy, leaves are broad and leaf lobes are short, and the variety is late flowering. Yield is 3.74t ha$^{-1}$ by pulling at 40 days after sowing, and 11.98t ha$^{-1}$ by cutting. Leaves have 167.05mg 100g$^{-1}$ of Vitamin C, with good aroma and keeping-quality.**

**Key words:** Leafy coriander, variety, yield

Coriander (*Coriandrum sativum* L.) is one of the important leafy vegetables grown throughout our country. It has a pleasant aroma and is mainly used for garnishing food preparations. (Anon, 2001 and Shivashankara *et at*, 2003) Its leaves are rich in Vitamins A, C and minerals. Though many improved varieties are available in coriander as a seed-spice, very little work has been done in improvement of leafy coriander. As such, there is a great paucity of research data in this crop which has tremendous significance in the Indian context.

Presently, in the market some local varieties that are low yielders and some types with low aroma are available. Therefore, with an objective of developing leafy coriander varieties with a high yield potential and good aroma, a breeding programme was initiated at the Indian Institute of Horticultural Research. This resulted in the development of a high yielding variety, Arka Isha.

## Development & performance of coriander variety, Arka Isha

Arka Isha *(Coriandrum sativum* var. *microcarpum* L.) was developed through mass selection from IIHR Acc. No. 19528. It has been tested for five years during Kharif and Rabi seasons at the Vegetable Farm, IIHR, along with two Checks, viz., Jaipur Local (*Coriandrum sativum* var. *microcarpum* L., Cutting type) and Bangalore Local (*Coriandrum sativum* var. *vulgare* L., Pulling type). 'Arka Isha' gave an average yield of 3.74t ha$^{-1}$. by pulling, while the Check variety, Bangalore Local, recorded 2.34t ha$^{-1}$ (Table 1). Per cent yield increase in Arka Isha by pulling, over Bangalore Local, was 59.7%. By cutting, 'Arka Isha' yielded 11.98t ha$^{-1}$ (in 3 cuts), which was 55.78% higher

**Table 1. Performance of coriander Selection 'Arka Isha', at IIHR, Hessaraghatta, by pulling (yield in t ha$^{-1}$)**

| Variety | 1998-99 | | 99-2000 | 2000-01 | | 2001-02 | 2010-11* | Mean |
|---|---|---|---|---|---|---|---|---|
| | Kharif | Rabi | Rabi | Kharif | Rabi | Rabi | Rabi | |
| Arka Isha | 2.40 | 2.35 | 3.33 | 3.89 | 5.78 | 4.44 | 4.02 | 3.74 |
| Bangalore Local | 1.63 | 1.47 | 2.13 | 2.44 | 3.44 | 2.78 | 2.52 | 2.34 |
| CD. (P=0.05) | 0.36 | 0.47 | 0.38 | 0.42 | 0.19 | 0.25 | 0.28 | 0.34 |
| CV (%) | 20.30 | 19.00 | 15.60 | 19.20 | 3.60 | 8.40 | 16.50 | 14.60 |
| Per cent increase over Bangalore Local | | | | | | | | 59.7 |

*Experiment resumed after a gap, for confirmation of results

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**Table 2. Performance of coriander Variety 'Arka Isha', at IIHR, Hessaraghatta by cutting (Yield in t ha$^{-1}$)**

| Variety | 1998-99 | | 99-2000 | 2000-01 | | 2001-02 | 2010-11* Season | | Mean |
|---|---|---|---|---|---|---|---|---|---|
| | Kharif | Rabi | Rabi | Kharif | Rabi | Rabi | Kharif | Rabi | |
| Arka Isha | 12.42 | 13.24 | 8.79 | 10.99 | 13.13 | 14.44 | 9.46 | 13.44 | 11.98 |
| Jaipur Local | 7.41 | 7.11 | 5.27 | 7.78 | 7.67 | 9.90 | 8.08 | 8.30 | 7.69 |
| CD. (*P=0.05*) | 3.05 | 1.23 | 0.58 | 1.44 | 0.97 | 1.19 | 1.79 | 0.68 | 1.31 |
| CV (%) | 20.60 | 19.70 | 12.50 | 15.40 | 18.50 | 16.00 | 5.65 | 13.40 | 16.59 |
| Per cent increase over Jaipur Loca | | | | | | | | | 55.78 |

*Experiment resumed after a gap, for confirmation of results

**Arka Isha**

**Table 3. Plant characters of 'Arka Isha' and Check varieties**

| Sl. No. | Character | Arka Isha | Bangalore Local | Jaipur Local | CD. (*P=0.05*) |
|---|---|---|---|---|---|
| 1 | Days to 50% flowering | 50.00 | 35.00 | 45.00 | 4.37 |
| 2 | Plant height (cm) | 22.20 | 21.60 | 20.30 | 2.13 |
| 3 | Leaf weight/ plant (g) | 8.15 | 6.32 | 8.02 | 1.24 |
| 4 | Stem weight / plant (g) | 2.80 | 4.40 | 2.30 | 0.92 |
| 5 | Plant weight (g) | 14.00 | 11.30 | 12.00 | 2.49 |
| 6 | Days to first harvest | 40.00 | 30.00 | 40.0 | 4.25 |

than in Jaipur Local (7.69t ha$^{-1}$) (Table 2). Means of various quantitative parameters are given in Table 3. 'Arka Isha' is a late flowering variety compared to the Checks. Leaves of 'Arka Isha' recorded essential oil content of 0.083%, which was significantly higher than in the Check variety. Jaipur Local (0.043%) (Table 4) Bangalore Local recorded a higher essential oil content of 0.088%. Physico chemical composition and keeping quality parameters of 'Arka Isha' and Check varieties are depicted in Table 5.

## Salient features of coriander variety Arka Isha

- High yielding, multicut type (3 cuttings can be taken)
- Plants bushy, leaves broad and leaf lobes short
- Late flowering (50 days after sowing)
- First cutting at 40 days after sowing and subsequent cuttings at 15 day intervals
- Yield 3.74t ha$^{-1}$ by pulling at 40 days after sowing and 11.98t ha$^{-1}$ by cutting (3 times)
- Leaf moisture 82.4 %, Total Soluble Solids 17.6 % and Vitamin C content 167.05 mg 100g$^{-1}$
- Leaf essential oil yield 0.083%, with good aroma
- Keeping quality at Room Temperature (RT) 3 days, and at Low Temperature 3 weeks, without losing aroma when stored in polythene bags (100PE gauge)

**Table 4. Essential oil yield and its constituents in 'Arka Isha' and Check varieties**

| | Arka Isha | | Bangalore Local | | Jaipur Local | | S.Em.± | |
|---|---|---|---|---|---|---|---|---|
| | Leaf | Herb | Leaf | Herb | Leaf | Herb | Leaf | Herb |
| A. Oil yield (%) | 0.083 | 0.053 | 0.088 | 0.032 | 0.043 | 0.037 | 0.011 | 0.005 |
| B. Constituents (in relative percentages) : | | | | | | | | |
| 1. Decanol | 27.89 | 55.19 | 33.49 | 53.17 | 32.31 | 54.03 | 2.86 | 6.92 |
| 2. E-2-decene-1-ol | 17.11 | 5.92 | 19.11 | 5.88 | 20.22 | 5.98 | 4.25 | 0.69 |
| 3. E-2-undecenal | 3.35 | 6.25 | 4.82 | 5.98 | 3.45 | 7.06 | 0.93 | 1.22 |
| 4. E-2-dodecenal | 6.93 | 2.75 | 8.31 | 3.11 | 8.31 | 3.26 | 0.47 | 0.27 |
| 5. E-2-tetra-decenal | 7.11 | 3.05 | 8.35 | 3.09 | 8.34 | 3.94 | 2.42 | 0.63 |

**Table 5. Physico- chemical composition and keeping - quality parameters of 'Arka Isha' and Check varieties**

| Sl. No. | Parameter | Arka Isha | Bangalore Local | Jaipur Local |
|---|---|---|---|---|
| Fresh leaves | | | | |
| 1 | Moisture (%) | 82.40 | 90.00 | 85.00 |
| 2 | Total solids (%) | 17.60 | 10.00 | 15.00 |
| 3 | Vitamin C (mg/100g) | 167.05 | 98.36 | 79.61 |
| 4 | Greenness of leaves (grade) | 4.22 | 4.00 | 3.91 |
| 5 | Aroma (Grade) | 3.58 | 3.25 | 3.88 |
| Three days after storage in polythene bags at Room Temperature (RT) | | | | |
| 1 | Greenness of leaves (grade) | 3.25 | 2.83 | 3.25 |
| 2 | Aroma (Grade) | 3.00 | 2.83 | 2.42 |
| 3 | Keeping quality (days) | 3.00 | 2.00 | 2.00 |
| Two weeks after storage in polythene bags at Low Temperature (Refrigerator) | | | | |
| 1 | Greenness of leaves (grade) | 3.92 | 3.33 | 3.67 |
| 2 | Aroma (Grade) | 3.17 | 3.33 | 3.00 |
| 3 | Keeping quality (days) | 14.00 | 14.00 | 14.00 |
| Three weeks after storage in polythene bags at Low Temperature (Refrigerator) | | | | |
| 1 | Greenness of leaves (grade) | 3.70 | Spoiled | Spoiled |
| 2 | Aroma (Grade) | 2.50 | | |
| 3 | Keeping quality (days) | 21.00 | | |

Note: Grades: 5-Very Good, 4-Good, 3- Average, 2- Bad (unsatisfactory), 1-Very Bad (Unacceptable)

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