

## Nutrient uptake and yield of okra (*Abelmoschus esculentus* L. Monech) as influenced by integrated plant nutrient supply

KAJAL A. JADHAV, A.S. PATIL AND N.B. MANE DESHMUKH

See end of the article for authors' affiliations  
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Correspondence to :

**KAJAL A. JADHAV**  
Department of Soil Science  
and Agricultural Chemistry,  
Mahatma Phule Krishi  
Vidyapeeth, Rahuri,  
AHMEDNAGAR (M.S.)  
INDIA

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### ABSTRACT

A field experiment conducted to study the nutrient uptake and yield of okra as influenced by intergrated plant nutrient supply revealed that recommended dose of NPK (100 : 50 : 50 kg ha<sup>-1</sup>) along with 10 Mgha<sup>-1</sup> FYM and *Azospirillum* recorded highest nutrient uptake of 41.29 kg N, 3.99 kg P and 42.11 kg K ha<sup>-1</sup>. The combined use of organic manures, inorganic fertilizer and biofertilizers (NPK + 10 Mgha<sup>-1</sup> FYM + *Azospirillum*) registered the highest fruit yield (92.71 q ha<sup>-1</sup>).

**Key words :** Okra, Integrated, Nutrient, Uptake, Yield.

**O**okra (*Abelmoschus esculentus* L. Monech) is an annual vegetable crop grown from seed, either as a mixed crop or sole crop. In Maharashtra it occupies an area of 25000 ha with annual production of 1,50,000 MT (Anonymous, 2000.) It is valuable as a food, chiefly for its minerals, vitamins, calcium and fair source of iron. It also attributes several medicinal properties and efficiently used in curing many diseases like fever, catarrhal attack and chronic dysentery. Organic sources such as FYM and SW-PMC have been known to increase the efficiency of applied nutrients (Shinde *et al.*, 1993).

In view of the above the present study was conducted to study the nutrient uptake and yield of okra as influenced by integrated plant nutrient supply (IPNS).

### MATERIALS AND METHODS

A field experiment was conducted during the year 2001-02 at the Central Campus, Mahatma Phule Krishi Vidyapeeth, Rahuri, to study the nutrient uptake and yield of okra (*Abelmoschus esculentus* L. Monech) as influenced by integrated plant nutrient supply.

The soil of the experimental field was clay in texture with a P<sup>H</sup> 7.51 and EC 0.43 dSm<sup>-1</sup>. The KMnO<sub>4</sub>-N, Olsen P and NH<sub>4</sub>OAC - K were low (210 kg ha<sup>-1</sup>), moderately high (27 kg ha<sup>-1</sup>) and high (257 kg ha<sup>-1</sup>), respectively. The soil was moderately high in organic carbon content (0.60%). The treatments were laid in randomized block design and replicated thrice. The treatments consists of:

- T<sub>1</sub> : Absolute control,
- T<sub>2</sub> : 100 : 50 : 50 kg ha<sup>-1</sup> NPK (Recommended dose),
- T<sub>3</sub> : NPK (100 : 50 : 50 Kgha<sup>-1</sup>) + 10 Mgha<sup>-1</sup> FYM,
- T<sub>4</sub> : NPK (100 : 50 : 50 kgha<sup>-1</sup>) + 10 Mgha<sup>-1</sup> SW-PMC + *Azospirillum*,
- T<sub>5</sub> : NPK (100 : 50 : 50 Kgha<sup>-1</sup>) + 15 Mg ha<sup>-1</sup> SW-PMC + *Azospirillum*,
- T<sub>6</sub> : NPK (100 : 50 : 50 Kgha<sup>-1</sup>) + 20 Mgha<sup>-1</sup> SW-PMC + *Azospirillum*,
- T<sub>7</sub> : NPK (100 : 50 : kgha<sup>-1</sup>) + 10 Mgha<sup>-1</sup> FYM + *Azospirillum*,
- T<sub>8</sub> : NPK (100 : 50 : 50 kgha<sup>-1</sup>) + *Azospirillum*,
- T<sub>9</sub> : SW-PMC 20 Mgha<sup>-1</sup> + *Azospirillum*,
- T<sub>10</sub> : SW-PMC 20 Mgha<sup>-1</sup>.

The *Azospirillum* was applied @30 gkg<sup>-1</sup> seeds of okra before sowing. The manure and fertilizer application were done as per the schedule. The crop was sown on 22-03-2002 with 30 x 15 cm in spacing by dibbling. Representative surface soil sample from each plot of the experimental site was collected (up to 22.5 cm) before sowing of okra to know the initial fertility status of the soil.

### RESULTS AND DISCUSSION

#### *Nutrient uptake:*

#### *Nutrient uptake in fruit:*

The data pertaining to nutrient uptake supply at harvest are depicted in the Table 1. The data indicated that the uptake of nitrogen, phosphorus and potassium in okra fruit at harvest were significantly increased with use of organic fertilizers *viz.*, SW-PMC, FYM and