PACKAGE OF PRACTICES OF POINTED GOURD (*Trichosanthes diocia*)

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Among the indigenous cucurbit plants, pointed gourd occupies an important place.

It is a dioecious annual or perennial herbaceous vegetable, also known as “green potato”. One of the choicest cucurbit vegetable liked by many.

Grown widely throughout Asia, Australia & Bangladesh.

Parts of pointed gourd plant are used as vegetable in all sorts of traditional food recipes.
It is a tropical vegetable crop native to India (Indo-Malayan region).

- Widely cultivated in Eastern part of India, plains of N-India from Punjab to Assam.
- Extensively cultivated all over Bihar, W Bengal, Odisha & Assam.
- Bengal-Assam area is the primary centre of origin of pointed gourd.
- It is cultivated in an estimated area of 10,000
Vine are pencil thick in size. (2n=22)

Leaves: dark green, cordate, ovate, oblong, rigid, simple & not lobed.

Roots-tuberous with long tap root system

Flowers: dioecious, tubular white with 16-19 days from initiation to anthesis time for pistillate flowers, 10-14 days for staminate flowers, stigma remains viable for approximately 14 hrs.

Fruits: globose to oblong, smooth, striped.
Long, dark green with white stripes
Gourds, 15-30 cm long.
Subject: ceremonies, 5-8 cm long
has higher nutrient content than other bottle gourds (Pandit & Hazra 2008). It is a rich source of vitamin A (153µg/100g), C, and nutrients like Mg, K, P, Cl.

It is rich in protein; protein levels are 10 times higher than of bottle gourd & 4 times that of ridge gourd, ridge gourd & ash gourd.

It is a good source of minerals & carbohydrates. It is low in cholesterol & fat.
<table>
<thead>
<tr>
<th>Nutrient</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calories</td>
<td>92 %</td>
</tr>
<tr>
<td>Fat</td>
<td>0.7 g</td>
</tr>
<tr>
<td>Protein</td>
<td>0.2 g</td>
</tr>
<tr>
<td>Carbohydr</td>
<td>0.5 g</td>
</tr>
<tr>
<td>Sodium</td>
<td>3.0 g</td>
</tr>
<tr>
<td>Potassium</td>
<td>2.2 g</td>
</tr>
<tr>
<td>20 kcal</td>
<td>20 kcal</td>
</tr>
<tr>
<td>Sodium</td>
<td>30 mg</td>
</tr>
<tr>
<td>Potassium</td>
<td>40 mg</td>
</tr>
<tr>
<td>1.7 mg</td>
<td>153 mg</td>
</tr>
<tr>
<td>Nutrient</td>
<td>Value</td>
</tr>
<tr>
<td>-------------------</td>
<td>------------------------------</td>
</tr>
<tr>
<td>Sodium</td>
<td>83.0 mg</td>
</tr>
<tr>
<td>Potassium</td>
<td>17.0 mg</td>
</tr>
<tr>
<td>Chlorine</td>
<td>4.0 mg</td>
</tr>
<tr>
<td>Phosphorus</td>
<td>0.66 ppm (in dry edible matter)</td>
</tr>
<tr>
<td>Protein</td>
<td>2.1 ppm (in dry edible matter)</td>
</tr>
<tr>
<td>- Amino acid</td>
<td>3.99-4.09%</td>
</tr>
<tr>
<td>Constituents</td>
<td>amount</td>
</tr>
<tr>
<td>-------------</td>
<td>---------------</td>
</tr>
<tr>
<td>Zinc</td>
<td>5.4 mg</td>
</tr>
<tr>
<td>Calcium</td>
<td>4.2 mg</td>
</tr>
<tr>
<td>Phosphorus</td>
<td>531 mg</td>
</tr>
<tr>
<td>Phosphorous</td>
<td>73 mg</td>
</tr>
<tr>
<td>Energy</td>
<td>55 kcal</td>
</tr>
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</table>

Extracts possesses hemagglutination activity, which will soon be the conclusion (author et al. 1997).
hydrate binding protein (specifically galactosian & kenoth et al. 2004).

S

nature fruits used as vegetables.

Young leaves are very nutritive & are used as leaf vegetable. Shoot tips are also consumed. (Anon 1998)


Fruits are used in making curry & fried.
food for convalescents

diuretic & laxative properties

ardiotonic

recommended for bronchitis, biliousness, high fever, thirst

reduces cholesterol & blood sugar (Sharma & 1988; Chandrasekar et al., 1989)

for curing blood & skin diseases, also purifies blood

reduce the feeling of food satiation & excessive thirst

2 cups to drink increases digestive strength
as pointed gourd cultivation is intensive & very derivative.

Gourd is one of the important cucurbitaceous vegetables of northern India especially in the Gangetic plains.

The cultivation of this vegetable is done on riverbanks, soils in river beds which is unsuitable for cereals, and the production.

Gourd fruits give a good cash return.
Warm, humid climate.

Cold / frost are unfavorable for plant growth. Therefore, crop remains dormant during winter. Its growth starts only with the onset of spring.

It requires sandy to sandy loam soil with good drainage. It is commonly grown in river beds.
propagation is avoided due to poor germination ability to determine sex of the plants before sowing (50% plants may be male).

Lines with 8-10 nodes per cuttings are suitable for planting. Emasculated plants should be partially or fully defoliated to check defoliation.

- plant distance: 1.5-2 m x 1.5-2 m
- (1989; Yadav, 1989)

Note: male ratio of 9:1 is optimum for ensuring...
August in plains/uplands
November in Diara lands/medium

River system requires 8000 cuttings/ha with a spacing of 1.5x 1 m plant to plant.
Liner system requires 4500-5000 plantings/ha with a spacing of 1 x 1 m plant to plant.

Liner bed cultivation requires 3500-4000
DIFFERENT METHODS OF PLANTING

• Lunda and Lachhi method
• Moist lump method
• Straight vine method
• Small rooted cuttings
1-1.5m long with 8-9 nodes are folded an “8” known as lunda or lachhnu. Lay flat in the pit

3-5cm deep in the middle in to soil and cover with fresh cow dung

Lump method

3m vine circled over a lump of moist soil leaving both ends free and plant leaving both end above the ground.

Growing vine develops root and exposed ends give sprout
Plant vine method

Stems are planted end to end horizontally 15cm deep into furrows filled with mix of compost and soil.

Rooted cuttings:

Cuttings with 3-4 nodes treated with IBA @100 ppm

Placed in poly bags contains mix of soil: sand: and FYM at 1:1:1

Suckers:

Suckers are uprooted and planted in the mounds

Easy and faster method

Size of 58.53g with application of NPK 60:60:60 kg/ha
Planting of cuttings
Yield preparation before planting of cutting.

Kumar et al. (1989) recommended 90:60:40 NPK2O/ha for maximum return.

Kumar et al. (1987) reported maximum early & total marketable fruit with rates of 90:60 kg/ha while Kumar et al. observed maximum no. of fruits/plant when both N & P @ 60 kg/ha.

For a good yield, half of N & full P & K @ the time of planting & remaining half of N was applied at the time of flowering.
During winter the growth of meristemata is retarded to a great extent. Therefore vines are pruned 15 cm from the ground before the dormancy (Dec-Nov) sets in.
helps in suppression of weeds & protects from rotting in contact with soil. (Diweda et al., 1999) recommended application @0.5 kg/ha with 2 hand weeding is ideal for crop weed free.

Vines require aerial support systems for maximum fruit production. (Prasad & Srivastava et al., 1987) reported 14% higher yield on vines in bower system compared to those grown without.
Critical utility of innovation

Low cost as compared to other trailing systems.

Increase yield up to 38.1% over farmers’ average.

Plucking of fruits.

Efficiency in intercultural operation.

Improved quality of fruits as there is no rotting.

Suitable for high rainfall area.

Suitable for small and marginal farmers.

 DOE selected for the year — silver pine.
starts fruiting from Dec & continues up to Jan. The 2\textsuperscript{nd} flush begins with the rains & continues till Oct.

Harvesting of fruits is done at mature greenible stage i.e. at 15-18 days after fruit set. Harvesting of fruits at weekly interval gives more yield: 75-90q/ha but subsequent years yield increases up to 150-200 q/ha.

Gourds pointed gourd produces maximum yield for three years, after which yielding potential gradually decreases (Gopakumar & Subbi 1988).
Singh (1989) recommended treatment of Pointed Gourd fruits with Waxol (12%) for increasing the shelf-life up to 8 days.

In ordinary condition pointed gourd fruits can be easily kept at room temperature for 3-4 days.
Immature fruits
a HYV. Developed by ICAR research complex for the eastern region Ranchi, Jharkhand.

Green fruits with blunt ends are 5-8 cm long, solid, thin skin & good for table as well as preparation of sweets. Average yield is **230-280 q/ha** on vertical staking. Recommended for upland & plateau regions of Gangetic plains of U.P., plains of **Odisha** & W.B. Also been introduced to Telengana region of A.P.
Diara Rokha: A vigorously growing ITTV developed at ICAR research complex for eastern region Ranchi, Jharkhand.

Fruits are greenish white, 8-10 cm long & tapering on both sides.

Avg. yield 200-300 q/ha on vertical bower system. Recommended for plains & plateau region of Bihar.

Vendra parwal-1: Developed at Rajendrapur Agriculture University, Samastipur, Bihar. Highly suitable for cultivation in Diara land.
Average yield is 140-150 q/ha.

**Rajendra parwal-2**: Developed at Rajendra Agriculture University, Samastipur, Bihar. This variety is also suitable for Diara land cultivation. Plants are dark green with white stripes. Hence, it is suitable for cultivation in Bihar & U.P. Avg. yield 150-170 q/ha.
Faizabad parwal-1: Developed at NARENDRA UNIVERSITY OF AGRICULTURE & TECHNOLOGY, Faizabad, U.P. It produces very attractive green round fruits. The yield is 150-170 q/ha and is recommended for commercial cultivation in U.P. and eastern parts of Bihar.

Faizabad parwal-3: Fruits are spindle shaped and less striped. They are excellent for culinary purpose. The yield is 125-150 q/ha.
red soil.

ight green colour, spindle shaped with tapering stem, skin is smooth and thin without hair. It is recommended for bower system of cultivation.

HYBRID-1: It is the 1st parwal variety introduced in the country. Flower are very attractive, large sized, dark green and weighing about 30-35g. Early maturing, can be harvested for 6-8 days under normal room tempt.

ield 280-300q/ha. It is adopted to upland

P Odisha, W.R. & parts of Assam.
CHES HYBRID -2: It is a high yielding variety producing dark green stripped fruits. The weight of each fruit is 25-30g. The yield is 300-400 q/ha.

Ghhoti Hilli: Fruits are medium sized, oval-shaped, with a prominent white striped , blunt at both ends.

Sandali: Fruits are medium sized, egg shaped, greenish with prominent white striped.
Hilli: Fruits are oblong, length of fruit is avg. 9.6 cm, width is avg. 3 cm
- Greenish fruit with white stripe, tapering towards distal end with disperse neck.

Shankolia: Fruits are medium long
- Resembling to both shank & shell
- Tapering towards both side & greenish
CHPG-15 has been identified as most promising of pointed gourd & it is tolerant to powdery mildew, Fusarium wilt.

Local Varieties:

- W.B-Kazil, Bombay, Damodar.
- U.P- Dandli, Kalyani, Guli, Bihar Sharif
- M.P-Green Oval, Green long Striped, White Oval
- Bihar- Sopari Safeda, Miria, Santokhwa

Among the local types Dandli has the heaviest fruit.
Pandey & Nair (1972) recorded maximum fruit set (80%) with application of NAA @ 200-300 ppm.

@ 100-500 ppm also induces parthenocarpy in cv. Wellington,

Application of GA3 @ 40 ppm increases the no. of flowers by 20% resulting in increased fruit set by 18.7%.(Batra,1999)

Application of silver nitrate @ 1000 ppm induces hermaphroditism in pepper. (Hoque et al., 2002)

Silver nitrate also induces parthenocarpy.

Application of 100 mg/l IBA increases rooting of vine cuttings at 1-3 nodes (Pandey & Ram 2000)
The reliability of quality planting material is a major consideration in pointed gourd cultivation round the year, so optimization of in-vitro plantlet development can be a tool for large scale propagation & conservation of germplasm. Plant regeneration in pointed gourd has been achieved from shoot tips, nodal explants, mature/mature cotyledons (Hoque et al. 1995) (Murashige & Skoog) medium is widely used for micropropagation in pointed gourd.
combination with a low concentration of an auxin, NAA or IBA. (Yadava & Dhir 1995; Hoque et al; Debnath et al 2000; Kumar 2008)

& Thomas (1999) reported that a combination (1.0μm) & IBA (0.2 μm) is the most suitable for shoot development.

shows that best initial microshoot response was recorded with basal nodal segment on the media containing kinetin @ 8.0 mg/l. (Kundan Kisore et al 2012)

92% regeneration was obtained from cotyledons.

physiologically immature & mature seeds culture.
Rooted plantlets of pointed-gourd
THANK YOU