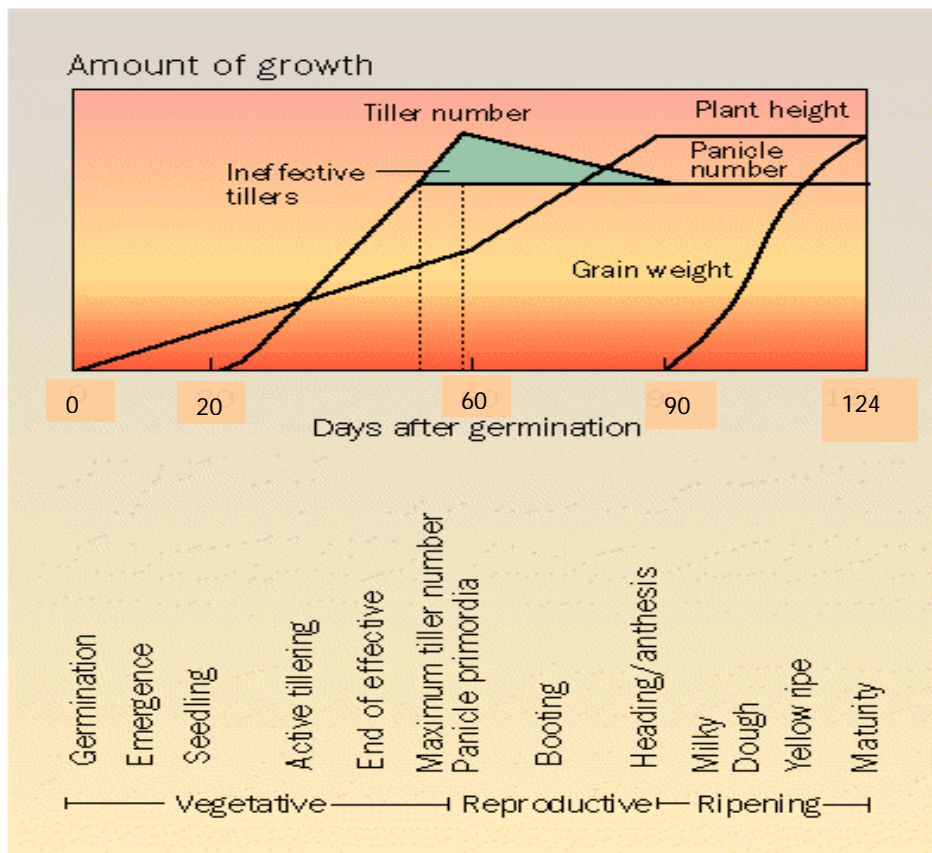


**SRI (SYSTEM OF RICE INTENSIFICATION) METHOD OF PADDYCULTIVATION  
UNDER FARMERS FIELD SCHOOL IN GHANASAREN WATERSHED AT BHALUDUNGURI, NUAPADA**

**The growth duration of the rice plant is 3-6 months, depending on the variety and the environment under which it is grown**

During this time, rice completes two distinct growth phases

- Vegetative and
- Reproductive



**The vegetative phase is subdivided into**

- Germination
- Tillering

**The reproductive phase is subdivided into**

- Stem elongation
- Panicle initiation
- Panicle development
- Flowering
- Milk grain
- Dough grain and
- Mature grain stage

A 125-day variety, when planted in a tropical environment, spends about 60 days in the vegetative phase, 30 days in the reproductive phase, and 35 days in the ripening phase.

### Agro-ecosystem of FFS area at a glance

*Ghanasarien micro-watershed* comprises of three villages namely Bhaludongri, Bhairajpur and Gudvelli under Duajhar G.P., Block-Khariar in Nuapada district. The village is located between the parallels of Latitude 19° 3' to 21°55' N and Longitude 82° 20' to 83° 47' E at an altitude of 540-560mt. above MSL. The annual average rainfall is 1379.20 mm but very erratic in nature. During the crop growth period the rainfall pattern was May-29.8mm, June-321.4mm, July-434.4mm, Aug-334.2mm, Sept-244.3mm, Oct-9.4mm. The temperature in April was 27 & 45, May 29 & 44 and in June 29 & 43 degree centigrade minimum and maximum respectively. It falls under the Western Undulated agro-climatic zone having 6 No. of Farming Situations. The Khariar block comes under the agro-ecological situation which is characterized by Black soil, medium rainfall and medium elevation. The soil type is Black, mixed red and black. The water holding capacity is 35-40%. The soil reaction is 6.8 to 7.8 and the CEC 40-60m.e/100gm. The cropping Intensity is 142%. Last year the Rice –Fallow Cropping System was followed.

### Transplanted Rice management time table for *HYB-1059 BPT Var.* under SRI method

**Note:** Time table is for a medium duration variety (125-135 days)  
Numbers refers to days after transplanting (DAT);  
Main field (FFS Plot) size: 1 acre (4000 mt<sup>2</sup>)

-12	0	25	45	70	75	124
Nursery Management	Planting	Max tillering	P.I	Heading	Flowering	Maturity
<b>Pre-Planting Management</b>						
<b>Land Preparation</b>						
-30 to -27	<ul style="list-style-type: none"> <li>• <b>MAIN FIELD PREPARATION</b></li> <li>• Summer Ploughing is done in the FFS plot by using two bullock pairs.</li> <li>• Preliminary leveling has been done by bullock drawn leveler.</li> <li>• The main field is ploughed once more.</li> <li>• Preliminary weeding has been done (manually).</li> </ul>					
-27 to -18	<ul style="list-style-type: none"> <li>• Application of FYM (6 tone/acre)</li> <li>• Then the field is flooded under rains &amp; puddled along with incorporation of existing weeds to the soil for improvising its fertility.</li> <li>• The land is leveled second time and the second puddling done.</li> </ul>					
-18 to -13	<ul style="list-style-type: none"> <li>• Third puddling was done</li> </ul>					

-13 to -8	<ul style="list-style-type: none"> <li>Final puddling and leveling</li> </ul>
- 1	<ul style="list-style-type: none"> <li>The main field is marked by wooden marker at a spacing of 10". Single seedlings are transplanted at the criss-cross method, at the point the seedling is transplanted</li> <li>In the field Multiplex (Micro-nutrient) is applied and 1 ft. width field channel is left in every 2 miter gap.</li> </ul>
<b>Nursery Management</b>	
-13	<ul style="list-style-type: none"> <li>The seeds of 2 Kg/ 16 mt<sup>2</sup> after treatment with <b>cow urine</b> is broadcasted thinly for raising seedlings</li> <li>Seed Treatment process</li> <li>Seeds treated with cow urine for 7-8 hrs and the seeds are left for drying and kept under shade for another 7 hrs</li> </ul>
-12 to -10	<ul style="list-style-type: none"> <li>Two Nursery beds (raised) were prepared with size (8X1x0.15) Mt each and putting 30 cm channels in between in one corner of the field with using well pulverized fertile soil. <ul style="list-style-type: none"> <li>The first layer- 1 inch well decomposed cow dung.</li> <li>The second layer- 1.5 inch well pulverized fertile soil.</li> <li>The third layer - 1 inch decomposed cow dung.</li> <li>The fourth layer- 2.5 inch thick well pulverized fertile soil totaling to 6 inch.</li> </ul> </li> </ul>
<b>Post-planting Management</b>	
<b>Crop Establishment</b>	
0	<ul style="list-style-type: none"> <li>The tender seedlings of 10-12 days old are uprooted care fully without damaging the root stock.</li> <li>The seedling root treatment was done by the solution of Azospirillum, Potash, Azatobacter, PSM.</li> <li>The seedling were transplanted by giving a L-shaped root system easy establishment at the enter section point marked by the marker.</li> <li>3 +/- (2) cm water level is maintained</li> <li>12 to 15 days as seedling were transplanted at 4 to 6 leaf stage at a depth of 2-3 cm</li> <li>There are 16 numbers of seedlings per metre<sup>2</sup></li> </ul>
+12 to +15	2 to 3 seedlings per mt <sup>2</sup> were gap field.
<b>Weed Management</b>	
-20 to -25	<ul style="list-style-type: none"> <li>At summer ploughing weeds &amp; crop stubbles are uprooted &amp; collected manually out of the field.</li> <li>The bunds are trimmed.</li> </ul>
-10 to +12	<ul style="list-style-type: none"> <li>The bunds are cleaned and given a lap of mud.</li> </ul>

15 to 60	<ul style="list-style-type: none"> <li>The weed growth is high and the weeding has been done at 15, 30, 60 DAT by <i>Mandwa</i> weeder (pre-fabricated locally made MS Iron suitable for the agro-ecological zone) so as to reduce the cumbersome working of farmers around 16 Km. in one acre for weeding.</li> </ul>				
Nutrient Management					
Zone	Season	Stage	N	P	K
			Kg/Acre		
Western Undulating-Nuapada	Kharif	a) main field preparation (-30 days)	FYM 6 ton/ ac		
		b) – 5 to – 1 DAT Multiplex	20 Kg/ ac		
		c) 0 stage -30 Kg/ ac DAP	6	15	-
		d) 60 DAT – 25 kg/ acre Urea	12		
Water Management					
0	<ul style="list-style-type: none"> <li>Less water depth (2-3 cm) for easy and shallow transplantation was maintained</li> </ul>				
+3 to 40	<ul style="list-style-type: none"> <li>Maintained shallow water depth (2-3 cm)</li> </ul>				
+40 to +80	<ul style="list-style-type: none"> <li>Increase water level in the field (5-7 cm) Most critical period for moisture</li> </ul>				
+80 to 100	<ul style="list-style-type: none"> <li>Reduce water depth to 2-3 cm</li> </ul>				
+100	<ul style="list-style-type: none"> <li>Gradually with draw water from field (for maturation and easy harvest)</li> </ul>				
Pest and Disease Management					
<ul style="list-style-type: none"> <li>The swarmy catter-pillar was detected &amp; Monocrotophos was sprayed as a remedial measure.</li> </ul>					
Post production					
+120 to 124	<ul style="list-style-type: none"> <li>The Crop attend physiological maturity at 105 DAT.</li> </ul>				
	<ul style="list-style-type: none"> <li>Drained the field 10-15 days before harvest</li> </ul>				
	<ul style="list-style-type: none"> <li>Harvested the crop around 20-25% moisture in the grain.</li> </ul>				

## Specific observations in different crop stages:

### Germination:

It took 4-5 days for 85% and 6 days for 95% germination of seeds in the nursery bed. At this stage plants were found to bear at least 4 to 5 leaves with height of 5 to 6". The nursery bed is given irrigation by the *rose cane* in every 5 days interval. The raised beds were provided with the drainage channels of 1 ft. width.

### Early seedling growth stage:

The 4 to 5 leaved seedlings are transplanted in the field after root treatment with Azotobacter, Azospirillum, PSM and Potash solution. The growth in the initial stage is found very sluggish up to 10 to 15 DAT. The stem becomes a bit strong and the new leaves start to develop. The seedlings get established at 15 DAT. The roots start tapering to the soil and a good anchorage is found due to the L-shaped growth of the roots. The conventional transplanting results in roots taking u-shape and clumping after growth and seedlings stand at an angle (45°). The water is maintained at 2-4 cm deep. Weeding is done by the *Mandwa* weeder. The weeds are incorporated into the soil so as to improve the soil fertility.

### Tillering:

The tillering continues up to 60 DAT. Profuse tillering is observed at this stage. The effective tillers per hill were on an average 30 to 35 tillers. At this stage the field is maintained dry and wet alternately. At this stage the weeding operation was done by the *Mandwa* weeder and incorporated into the soil. The tillering growth was in geometric progression as is seen in the graph enclosed. The number of clumps per acre was 64000 per acre. The tillering, its growth and development phase is also known as *Phyllocron* stage of the crop.

### Stem Elongation:

The stem elongation continued up to 80 DAT and in the vegetative log phase. In this stage the crop switches over from vegetative to reproductive phase. The water was maintained at 3-5 cm. In this period of time the stem elongated 2 to 3 cm in every week.

### Panicle Initiation:

At 60 to 75 DAT the panicle initiation started. The field is maintained alternately dry and wet.

### Panicle Development:

At 75 to 80 DAT the rachis get fully developed.

### Flowering:

At 80 to 85 DAT the flowering gets completed. At this stage the water is maintained at 4 to 6 cm. The pest- *Swarmy caterpillar* is detected and Monocrotophos altered with Nuvacron is applied for its control.

#### Milk Grain:

The milk grain formation gets completed within 90 DAT. The number of grains on an average is 80 to 100 per panicle.

#### Dough Grain:

The grains complete dough stage within 95 to 100 DAT. The grains are filled and the coloration changed from whitish color to golden yellow color.

#### Mature grain stage:

The grain continues to mature up to 120 DAT. The crop cutting was carried under 5x5 mt. space at two locations and the yield is found to be 24 qtl. per acre in the FFS plot.

	<b>Phyllocron Stage</b>										
<b>WEEK</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b>	<b>11</b>
<b>New Tillers</b>	1	0	0	1	1	2	3	4	6	8	9
<b>Complete Tillers</b>	1	1	1	2	3	5	8	12	18	27	36