Cotton

Recommendation released in last 10 years

2019-20	1	The cotton genotype AKH -13-51 is recommended as resistant source against jassid on the basis of jassid infestation, morphological and biochemical traits.
	2	Under irrigated condition, planting of Phule Dhanwantary *deshi* cotton variety at 45 cm (row) x 15 cm (plant) is recommended for obtaining higher seed cotton yield and monetary returns for high density planting.
	3	In kharif cotton, under drip irrigation, there are 29, 29 and 14 per cent saving in water, electricity and labour units, respectively and 27 per cent increase in productivity as compared to surface irrigation. Therefore, it is recommended that the cotton cultivators be encouraged to adopt drip irrigation.
2017-18	4	Based on infestation of jassids and physio-chemical characters of cotton, the genotype GISV 272 is recommended as resistant source against jassids.
	5	Intercropping of Dill or Coriander or Fenugreek or Spinach in Bt. Cotton in 1:3 row proportions is recommended for higher yield and net returns in Northern part of Scarcity Zone (Rainfall zone 3 and 4) of Maharashtra.
	6	Spraying of profenophos 50 EC @ 20 ml at 60 days after sowing followed by emamectin benzoate 5SG @ 4.4 g at 80 days after sowing and lambda cyhalothrin 5 EC @ 10 ml at 100 days after sowing is recommended for control of cotton pink bolworm.
	7	The Tables developed by Mahatma Phule Krishi Vidyapeeth for tahsils of Western Maharashtra are recommended for estimating weekly water and irrigation requirement of Safflower, Sweet corn, Cotton and Tomato crops by different irrigation methods. Further, the maps developed in Geographical Information System (GIS) are recommended for estimating weekly water and irrigation requirement at any specific locations by different irrigation methods.
2016-17	8	The 60 % of crop evapotranspiration (ETc) water throughout the crop growth period is recommended to minimize the reduction in irrigated cotton yield under water scarcity conditions in medium deep soils of western Maharashtra. The boll development stage (85-150 days) is found as most sensitive stage and water stress during this stage should be avoided.
	9	Three sprays of flonicamid 50% WG @ 2 gm per 10 liters of water are recommended at an interval of 15 days starting from occurrence of the pests for the control of aphid, jassid, thrips and whitefly on cotton.
	10	Following IPM module is validated and recommended under need base Condtions in non-Bt cotton. 1. Seed treatment with thiamethoxam 30% FS @ 10 ml/kg seed. 2. Planting one row of maize and cowpea alternate at one meter distance around the field as border crop and at every 9th row of cotton alternate line of maize, cowpea and setaria. 3. Application of 5% NSE at 30 and 45 DAS 4. Use of pheromone traps @ 5 /ha for each for monitoring of E. vittella and H. armigera at 45 DAS. 5. Release of Trichogramma chilonis @ 2 lacs/ha (10 cards/ha) at 60 DAS. 6. Application of 10 ml HaNPV in10 l water (500 LE/ha) at 75 DAS. 7. Installation of 'T' shaped bird perches @ 25/ha at 80 DAS. 8. Installation of pheromone traps @ 5 /ha for monitoring of Pectinophora

		gossypiella at 85 DAS. 9. Spraying of profenophos 50% EC @ 20 ml/10 l water at 90 DAS. 10. Use of yellow sticky traps @ 10 /ha for whitefly monitoring at 100 DAS. 11. Spraying of triazophos 40 % EC @ 20 ml/10 l water at 105 DAS for control whiteflies and pink boll worm. 12. Spraying of lambda cyhalothrin 5% EC @ 10 ml/10 l water at 120 DAS control of pink boll worm.
	11	The increase of 189.86 per cent in Minimum Support Prices of cotton during 1996-97 to 2013-14 is not enough to cover increase in 476.87 per cent increase in the inputs prices. Therefore, it is recommended that there is need to maintain the parity between Minimum Support Prices and input prices or there is need to give adequate compensation through incentives to the producers, so as to safeguard the interest of cotton grower in Maharashtra.
2015-16	12	The following regression equation showing interrelationship between aphid incidence on cotton and weather parameters is recommended. **Equation:** Aphid Incidence =107.734 - 3.085×T_{max}+ 0.713×T_{min} - 0.551×WS - 0.081×RF. Where, Aphid-Aphid population (in equation), T_{max}- Maximum temperature (°C), T_{min} - Minimum temperature (°c), WS -Wind speed (km hr^{-1}), RF -Rainfall (mm). The resulting negative value in equation will indicate absence of aphid incidence and positive value indicates possibility of occurrence of incidence.
	13	The following regression equation showing interrelationship between jassid incidence on cotton and weather parameters is recommended. **Equation:** Jassid Incidence = 154.48-1.87×T_{max}+1.21×T_{min}-1.30×RH-I Where, Jassid - Jassid population (in equation), T_{max} -Maximum temperature (^{0}C), T_{min}-Minimum temperature (^{0}C), RH-I - Morning relative humidity (%). The resulting negative value in equation will indicate absence of jassid incidence and positive value indicates possibility of occurrence of incidence.
	14	The following regression equation showing interrelationship between thrip incidence on cotton and weather parameters is recommended. **Equation:** Thrip Incidence =198.55-3.23×T_{max}+1.44×T_{min}-1.33×RH-I+0.47×WS Where, Thrip -Thrip population (in equation), T_{max}-Maximum temperature(^{0}C), T_{min}-Minimum temperature(^{0}C), RH-I -Relative humidity morning (%), WS -Wind speed (km hr^{-1}) The resulting negative value in equation will indicate absence of thrip incidence and positive value indicates possibility of occurrence of incidence.
	15	The following regression equation showing interrelationship between whiteflies incidence on cotton and weather parameters is recommended. **Equation:** Whiteflies Incidence= 41.97-0.68×T_{max}-0.18×RH-I-0.18×BSS

<table>
<tr><td></td><td></td><td>Where,
Whiteflies -Whiteflies population (in equation), T_{max}-Maximum temperature (°C), RH-I - Relative humidity morning (%), BSS - Bright sunshine hours (hours day^{-1}).
The resulting negative value in equation will indicate absence of whiteflies incidence and positive value indicates possibility of occurrence of incidence.</td></tr>
<tr><td></td><td>16</td><td>The following regression equation showing interrelationship between Alternaria blight disease incidence on cotton and weather parameters is recommended.
PDI = - 59.67 – 2.58 x T_{min}+ 1.31 x RH-I + 0.15 x RF
Where,
PDI - Percent Disease Index, T_{min}- Minimum Temperature (14.4-22.8°C), RH-I - Morning Relative Humidity (86-93%) and RF - Rainfall (0.3-59.9 mm)
The resulting negative value in equation will indicate absence of Alternaria blight incidence and positive value indicates possibility of occurrence of incidence.</td></tr>
<tr><td></td><td>17</td><td>In Bt. Cotton - Wheat cropping sequence, planting of cotton at 90 cm x 60 cm spacing with 10 tonne FYM and 5 equal splits of Nitrogen (25 kg ha^{-1} each) at planting, 30, 45, 60 and 75 days after planting , basal dose of Phosphate (65 kg ha^{-1}) at planting and 3 splits of potash 50 % (33 kg ha^{-1}) as basal dose, 25% each at 30 and 60 days after planting (16 kg ha^{-1}) followed by 75 % recommended dose (90:45:30, N:P_2O_5:K_2O kg ha^{-1}) to wheat is recommended for consistent cotton equivalent yield in medium deep soils of western Maharashtra</td></tr>
<tr><td></td><td>18</td><td>Sowing of kharif Bt. cotton followed by rabi wheat in sequence at 75-150 x 75 cm paired row and 15 x 15 cm (6 lines / bed) on BBF (90 cm top and 120 cm base), respectively with single lateral per bed and 100% ETc water at an alternate day and recommended dose of water soluble fertilizers through drip for higher yield, returns and efficient water and nutrient use is recommended on medium deep soils of western Maharashtra.</td></tr>
<tr><td>2014-15</td><td>19</td><td>In deep black soils of Western Maharashtra for maximum returns, water saving, maintaining soil health and reduce leaf reddening, planting of Bt cotton be done under drip irrigation with 100% ETc at alternate day and recommended dose of nitrogen (125 Kg N ha^{-1}) in six splits through band placement as per given schedule is recommended.
<table>
<tr><th rowspan="2">Split No.</th><th rowspan="2">Application period</th><th rowspan="2">Dose of N to be applied</th><th colspan="3">Quantity of fertilizers to be applied (Kg ha^{-1})</th></tr>
<tr><th>N</th><th>P_2O_5</th><th>K_2O</th></tr>
<tr><td>1</td><td>1st week</td><td>20% at the time of sowing</td><td>25</td><td>12.5</td><td>12.5</td></tr>
<tr><td>2</td><td>4th week</td><td>16% 30 days after sowing</td><td>20</td><td>10</td><td>10</td></tr>
<tr><td>3</td><td>6th week</td><td>16% 45 days after sowing</td><td>20</td><td>10</td><td>10</td></tr>
<tr><td>4</td><td>8th week</td><td>16% 60 days after sowing</td><td>20</td><td>10</td><td>10</td></tr>
<tr><td>5</td><td>10th week</td><td>16% 75 days after sowing</td><td>20</td><td>10</td><td>10</td></tr>
<tr><td>6</td><td>12th week</td><td>16% 90 days after sowing</td><td>20</td><td>10</td><td>10</td></tr>
<tr><td colspan="6">Phosphorus (62.5 P_2O_5 Kg ha^{-1}) and Potassium (62.5 K_2O Kg ha^{-1}) as per recommended dose</td></tr>
</table></td></tr>
<tr><td></td><td>20</td><td>Two to three sprays of buprofezin 25% SC @ 20 ml per 10 liters of water at 15 days interval are recommended for the control of sucking pests (aphid, jassid,</td></tr>
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<table>
<tr><td></td><td></td><td>thrips and whitefly) on cotton</td></tr>
<tr><td></td><td>21</td><td>Three sprays of readymix insecticide (chlorpyriphos 50% + cypermethrin 5%EC) or (cypermethrin 3% + quinalphos 20%EC) @ 20 ml per 10 liters of water at 15 days interval are recommended for the control of sucking pests and bollworms on non-Bt cotton.</td></tr>
<tr><td>2013-14</td><td>22</td><td>Application of 10 t FYM ha^{-1} with nitrogen, phosphorus and potassium nutrient for 40 q ha^{-1} yield target of Bt. Cotton and maintaining the soil fertility is recommended for medium deep black soils of Western Maharashtra.
<table>
<tr><td>With FYM</td><td>Without FYM</td></tr>
<tr><td>FN= 9.58 X T- 1.15 X SN -1.42 X FYM
FP_2O_5=3.62X T- 2.99 X SP-1.59 X FYM
FK_2O=8.32X T– 0.45 X SK–3.77X FYM</td><td>FN = 10.36 X T – 1.21 X SN
FP_2O_5 = 4.62 X T – 3.83 X SP
FK_2 = 8.57 X T - 0.46 X SK</td></tr>
</table>
Where, FN, FP_2O_5 and FK_2O are fertilizer N, P_2O_5 and K_2O in kg ha^{-1} respectively. T is yield target in q ha^{-1} from 30-45 q for Bt. cotton and SN, SP and SK are soil available N, P and K in kg ha^{-1}</td></tr>
<tr><td></td><td>23</td><td>Under Bt. cotton wheat cropping sequence in medium deep black soils of Western Maharashtra nutrient application as per 55 qha^{-1} yield target of Bt. Cotton with 10 t ha^{-1} FYM + incorporation of wheat straw and 50 q ha^{-1} yield target of wheat with residual effect of FYM + wheat straw is recommended for higher monetory return, benefit cost ratio as well as soil fertility improvement.
<table>
<tr><th>Bt. Cotton</th><th>Wheat</th></tr>
<tr><td>FN = 9.58X T– 1.15 X SN – 1.42 X FYM
FP_2O_5 = 3.62 X T–2.99X SP–1.59 X FYM
FK_2O = 8.32X T – 0.45X SK–3.77X FYM</td><td>FN = 7.54 X T – 0.74 X SN
FP_2O_5 = 1.90X T – 2.88 X SP
FK_2O = 2.49 X T – 0.22 X SK</td></tr>
</table>
Where FN, FP_2O_5 and FK_2O are fertilizer in kg ha^{-1} respectively. T is yield target (qha^{-1}) for Bt. Cotton and Wheat. SN, SP and SK are soil available N, P and K kg ha^{-1} respectively.</td></tr>
<tr><td></td><td>24</td><td>Application of recommended dose (120:60:60 NPK kg /ha) in water soluble form through drip in 14 weekly splits as per given schedule alongwith 3 foliar sprays of 2 % urea phosphate at 30, 45 and 60 DAP is recommended for higher yield and efficient water and nutrient use for Bt cotton in medium deep black soils.
Fertilizer Schedule: Per cent nutrients to be applied in 14 weekly splits
<table>
<tr><th rowspan="2">Days after planting</th><th colspan="2">N</th><th colspan="2">P</th><th colspan="2">K</th></tr>
<tr><th>%</th><th>(kg/ha)</th><th>%</th><th>(kg/ha)</th><th>%</th><th>(kg/ha)</th></tr>
<tr><td>1-21 (3 equal weekly splits)</td><td>30</td><td>36.0</td><td>22</td><td>13.2</td><td>10</td><td>6.0</td></tr>
<tr><td>22-63 (6 equal weekly splits)</td><td>25</td><td>30.0</td><td>40</td><td>24.0</td><td>30</td><td>18.0</td></tr>
<tr><td>64-77 (2 equal weekly splits)</td><td>28</td><td>33.6</td><td>30</td><td>18.0</td><td>22</td><td>13.2</td></tr>
<tr><td>78-98 (3 equal weekly splits)</td><td>17</td><td>20.4</td><td>8</td><td>4.8</td><td>38</td><td>22.8</td></tr>
<tr><td>Total</td><td>100</td><td>120</td><td>100</td><td>60</td><td>100</td><td>60</td></tr>
</table></td></tr>
<tr><td></td><td>25</td><td>Sowing at 120 cm x 60 cm of irrigated Bt cotton in Western Maharashtra is recommended for the management of sucking pests (aphids, jassids, thrips and whiteflies).</td></tr>
<tr><td></td><td>26</td><td>Spray Diafenthiuron 50 WP @ 12 g or Acetamiprid 20 SP @ 2g per 10 liters of water mixing when jassid and whiteflies population reaches to economic threshold level on Bt cotton, if required, second spray at an interval of 15-20 days is recommended.</td></tr>
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<tr><td></td><td>17</td><td>To avoid the para wilt incidence under irrigated conditions, the sowing of Bt cotton be undertaken from 2nd fortnight of May to first week of June with 8-15 days irrigation interval.</td></tr>
<tr><td></td><td>28</td><td>The economic study of farm ponds in Ahmednagar district revealed an increase in net income (63.95 %), irrigated area (9.86 %), productivity of bajara (16.91 %), cotton (10.07 %), pomegranate (5.94 %), sweet orange (3.54 %), sapota (2.08 %) and number of crossbred cows (33.33 %). Therefore, it is recommended that the construction of farm ponds on large scale be encouraged among the farmers in Drought Prone Area of the state.</td></tr>
<tr><td>2012-13</td><td>29</td><td>Soil application of $FeSO_4$ @ 25 kg ha-1 + $ZnSO_4$ @ 20 kg ha-1 mix with FYM and nutrient application based on yield targeting equations to Bt cotton in iron and zinc deficient soil is recommended for higher yield, monetary return, minimising reddening and increase in availability of iron and zinc in Inceptisols of Western Maharashtra.</td></tr>
<tr><td></td><td>30</td><td>Application of systemic insecticide 25 EC carbosulfan or 25 EC oxydemeton methyl or 36 EC monocrotophos with water (in 1:4 ratio) at 30, 45 and 60 days after sowing over 4-5 inch green stem is recommended for the control of sucking pests of cotton.</td></tr>
<tr><td></td><td>31</td><td>Spraying of 5 SG emamectin benzoate @ 4.4 g per 10 litres of water after observing 5 - 10 per cent green boll damage is recommended for the control of cotton bollworms.</td></tr>
<tr><td>2011-12</td><td>32</td><td>Seed treatment of carbosulfan 25DS @ 40g/kg seed is recommended for the control of cotton jassids (Amrasca bigutula bigutula) in early growth stage.</td></tr>
<tr><td></td><td>33</td><td>In Western Maharashtra, due to higher adoption of manure and N, P and K fertilizers, the yield gap of Cotton, Onion and Suru and Adsali Sugarcane planting types decreased by 20, 44 and 10 and 21 per cent, respectively. It is, therefore, recommended to increase the awareness amongst the cultivators to use the recommended levels of the inputs.</td></tr>
<tr><td>2010-11</td><td>34</td><td>In Deccan canal tract of Western Maharashtra under summer irrigated condition, planting of Bt cotton at 90 x 90 cm spacing with fertilizer dose of 125 Kg N, 65 kg P_2O_5 and 65 kg k_2O per hectare is recommended for obtaining higher seed cotton yield and monetary returns.</td></tr>
<tr><td></td><td>35</td><td>Cultivation of BT cotton using 0.75 -1.50 x 0.75 m paired row planting and fertigation with 75% of recommended dose of water soluble fertilizers in thirteen weekly split as per enclosed schedule is recommended in medium deep black soils for improved seed cotton productivity, better water and nutrient use and enhanced economical benefits.
<table>
<tr><th>Days after planting</th><th>Nitrogen (N) Kg/ha</th><th>Phosphorous (P) Kg/ha</th><th>Potassium (K) Kg/ha</th></tr>
<tr><td>10-30 (3 weekly splits)</td><td>18</td><td>09</td><td>05</td></tr>
<tr><td>31-65 (5 weekly splits)</td><td>36</td><td>22</td><td>18</td></tr>
<tr><td>66-100 (5 weekly splits)</td><td>36</td><td>14</td><td>22</td></tr>
<tr><td>Total</td><td>90</td><td>45</td><td>45</td></tr>
</table></td></tr>
<tr><td></td><td>36</td><td>Application of two sprays of DAP (2%) at 15 days interval during boll development stage in addition to recommended dose of FYM (10 tone) and inorganic fertilizers (125:63:63 kg NPK/ha) is recommended for the management of leaf reddening of Bt. Cotton grown under summer irrigated condition of Western Maharashtra</td></tr>
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	37	Soil application of *Pseudomonas fluorescens* or *Paecilomyces lilacinus* (cfu 2 x 10^6/g) @ 2.5 kg/ha through 100 kg FYM at sowing is recommended for the management of reniform nematode (*Rotylenchulus reniformis)* infesting cotton.
2009-10	38	Planting of Bt. hybrid cotton at 90 x 90 cm in ridges and furrows and irrigated by alternate furrow irrigation at 75 mm CPE (9 to 10 days interval) is recommended for obtaining higher seed cotton yield, higher monetary returns, maximum water use efficiency, water.
	39	Pre emergence application of Pendimethalin (30 EC) @ 1 kg a.i. ha^{-1} one spray and post emergence application of Quizalofop-ethyl (5 EC) @ 0.05 kg a.i. ha^{-1} two sprays at 30 and 60 DAS is recommended for effective weed control in summer irrigated cotton for Deccan canal tract of Western Maharashtra.