**SUPPLEMENTARY DATA**

**Table S2. Planting Plan for D.I Garum and D.I Jatisari**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Group | Initial Planting Date | Planting Period | Crop Commodity Area (Ha) | | | | | |
| **Garum Irrigation Area** | | | **Jatisari Irrigation Area** | | |
| **Rice** | **Sugarcane** | **Secondary Crop** | **Rice** | **Sugarcane** | **Secondary Crop** |
| 1 | 11-Nov | MT I | 7 | 11 | 19 | 1 | 4 | 3 |
| 2 | 21-Nov | 12 | 18 | 30 | 4 | 17 | 4 |
| 1 | 11-Mar | MT II | 6 | 11 | 20 | 1 | 4 | 3 |
| 2 | 21-Mar | 9 | 18 | 33 | 4 | 17 | 4 |
| 1 | 11-Jul | MT III | 0 | 11 | 0 | 0 | 4 | 2 |
| 2 | 21-Jul | 0 | 18 | 0 | 0 | 17 | 2 |

**Table S2. Table of recapitulation of irrigation water requirements for rice crop**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Rice Plant Water Requirement MT I (Group 1) | | | | | | | | | Rice Plant Water Requirement MT I (Group 2) | | | | | | |
| Month | **Decade** | **Stage** | **Kc** | **ETc** | **Eff rain** | **Irr Req** | | **DR** | **Stage** | **Kc** | **ETc** | **Eff rain** | **Irr Req** | | **DR** |
| **coeff** | **mm/dec** | **mm/dec** | **mm/dec** | **mm/day** | **L/s/ha** | **coeff** | **mm/dec** | **mm/dec** | **mm/dec** | **mm/day** | **L/s/ha** |
|
| Oct | 2 | Nurs | 1.2 | 4.8 | 0 | 4.8 | 0.48 | 0.62 |  | | | | | | |
| 3 | Nurs/LPr | 1.08 | 45.3 | 21.6 | 49.4 | 4.94 | 6.71 | Nurs | 1.2 | 5 | 19.6 | 0 | 0 | 0 |
| Nov | 1 | Nurs/LPr | 1.06 | 42.6 | 121.6 | 67.9 | 6.79 | 9.23 | Nurs/LPr | 1.06 | 42.6 | 121.6 | 25.7 | 2.57 | 3.30 |
| 2 | Init | 1.1 | 41.8 | 178.4 | 0 | 0 | 0 | Nurs/LPr | 1.06 | 40.5 | 178.4 | 59.2 | 5.92 | 7.60 |
| 3 | Init | 1.1 | 40.7 | 153.3 | 0 | 0 | 0 | Init | 1.1 | 40.7 | 153.3 | 0 | 0 | 0 |
| Dec | 1 | Deve | 1.1 | 39.8 | 118.9 | 0 | 0 | 0 | Init | 1.1 | 39.6 | 118.9 | 0 | 0 | 0 |
| 2 | Deve | 1.11 | 38.9 | 102.8 | 0 | 0 | 0 | Deve | 1.1 | 38.7 | 102.8 | 0 | 0 | 0 |
| 3 | Mid | 1.12 | 43 | 88.2 | 0 | 0 | 0 | Deve | 1.11 | 42.8 | 88.2 | 0 | 0 | 0 |
| Jan | 1 | Mid | 1.12 | 39.2 | 70.4 | 0 | 0 | 0 | Mid | 1.12 | 39.1 | 70.4 | 0 | 0 | 0 |
| 2 | Mid | 1.12 | 39.1 | 54 | 0 | 0 | 0 | Mid | 1.12 | 39.1 | 54 | 0 | 0 | 0 |
| 3 | Mid | 1.12 | 43.5 | 52.6 | 0 | 0 | 0 | Mid | 1.12 | 43.5 | 52.6 | 0 | 0 | 0 |
| Feb | 1 | Late | 1.12 | 39.9 | 47.1 | 0 | 0 | 0 | Mid | 1.12 | 40 | 47.1 | 0 | 0 | 0 |
| 2 | Late | 1.08 | 39.1 | 41.2 | 0 | 0 | 0 | Late | 1.12 | 40.4 | 41.2 | 0 | 0 | 0 |
| 3 | Late | 1.04 | 30.5 | 61.1 | 0 | 0 | 0 | Late | 1.09 | 32 | 61.1 | 0 | 0 | 0 |
| Mar | 1 | Late | 1 | 37.1 | 92.9 | 0 | 0 | 0 | Late | 1.05 | 39 | 92.9 | 0 | 0 | 0 |
| 2 |  | | | | | | | Late | 1 | 37.8 | 114.4 | 0 | 0 | 0 |
| Rice Plant Water Requirement MT II (Group 1) | | | | | | | | | **Rice Plant Water Requirement MT II (Group 2)** | | | | | | |
| Feb | 1 | Nurs | 1.2 | 0.9 | 9.4 | 0.9 | 0.09 | 0.12 |  | | | | | | |
| 2 | Nurs/LPr | 1.17 | 11.1 | 41.2 | 24.6 | 2.46 | 3.16 | Nurs | 1.2 | 0.9 | 8.2 | 0.9 | 0.09 | 0.12 |
| 3 | Nurs/LPr | 1.06 | 31.2 | 61.1 | 0 | 0 | 0 | Nurs | 1.2 | 3.5 | 61.1 | 0 | 0 | 0 |
| Mar | 1 | Nurs/LPr | 1.06 | 39.7 | 92.9 | 74 | 7.4 | 9.50 | Nurs/LPr | 1.06 | 39.7 | 92.9 | 25.6 | 2.56 | 3.29 |
| 2 | Init | 1.1 | 41.7 | 114.4 | 0 | 0 | 0 | Nurs/LPr | 1.06 | 40.4 | 114.4 | 70.1 | 7.01 | 9.00 |
| 3 | Deve | 1.1 | 45.7 | 95.7 | 0 | 0 | 0 | Init | 1.1 | 45.7 | 95.7 | 0 | 0 | 0 |
| Apr | 1 | Deve | 1.11 | 41.6 | 72.4 | 0 | 0 | 0 | Deve | 1.1 | 41.3 | 72.4 | 0 | 0 | 0 |
| 2 | Deve | 1.12 | 41.9 | 58.1 | 0 | 0 | 0 | Deve | 1.11 | 41.4 | 58.1 | 0 | 0 | 0 |
| 3 | Mid | 1.13 | 42 | 44 | 0 | 0 | 0 | Deve | 1.12 | 41.5 | 44 | 0 | 0 | 0 |
| May | 1 | Mid | 1.14 | 41.7 | 25.2 | 16.5 | 1.65 | 2.12 | Mid | 1.13 | 41.6 | 25.2 | 16.3 | 1.63 | 2.09 |
| 2 | Mid | 1.14 | 41.4 | 8.8 | 32.5 | 3.25 | 4.17 | Mid | 1.14 | 41.3 | 8.8 | 32.5 | 3.25 | 4.17 |
| 3 | Mid | 1.14 | 43.9 | 13.5 | 30.4 | 3.04 | 3.90 | Mid | 1.14 | 43.9 | 13.5 | 30.4 | 3.04 | 3.90 |
| Jun | 1 | Late | 1.14 | 38.4 | 23 | 15.3 | 1.53 | 1.96 | Mid | 1.14 | 38.4 | 23 | 15.4 | 1.54 | 1.98 |
| 2 | Late | 1.1 | 35.7 | 26.6 | 9.1 | 0.91 | 1.17 | Late | 1.13 | 36.9 | 26.6 | 10.3 | 1.03 | 1.32 |
| 3 | Late | 1.05 | 34.7 | 18.6 | 16.1 | 1.61 | 2.07 | Late | 1.1 | 36.4 | 18.6 | 17.8 | 1.78 | 2.29 |
| Jul | 1 | Late | 1.01 | 27 | 5.6 | 20.1 | 2.01 | 2.58 | Late | 1.05 | 35.3 | 7 | 28.4 | 2.84 | 3.65 |
| 2 |  | | | | | | | Late | 1.01 | 27.5 | 0 | 27.5 | 2.75 | 3.53 |

**Table S3. Recapitulation table for irrigation water requirements for sugar cane plants**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Sugarcane Plant Water Requirement MT I (Group 1) | | | | | | | | | Sugarcane Plant Water Requirement MT I (Group 2) | | | | | | |
| Month | **Decade** | **Stage** | **Kc** | **ETc** | **Eff rain** | **Irr Req** | | **DR** | **Stage** | **Kc** | **ETc** | **Eff rain** | **Irr Req** | | **DR** |
| **coeff** | **mm/dec** | **mm/dec** | **mm/dec** | **mm/day** | **L/s/ha** | **coeff** | **mm/dec** | **mm/dec** | **mm/dec** | **mm/day** | **L/s/ha** |
|
| Nov | 2 | Init | 0.4 | 15.2 | 59.8 | 0 | 0 | 0 |  | | | | | | |
| 3 | Init | 0.4 | 14.8 | 55.8 | 0 | 0 | 0 | Init | 0.4 | 14.8 | 55.8 | 0 | 0 | 0 |
| Dec | 1 | Init | 0.4 | 14.4 | 50.1 | 0 | 0 | 0 | Init | 0.4 | 14.4 | 50.1 | 0 | 0 | 0 |
| 2 | Deve | 0.47 | 16.5 | 48.9 | 0 | 0 | 0 | Init | 0.4 | 14 | 48.9 | 0 | 0 | 0 |
| 3 | Deve | 0.6 | 23.2 | 43.8 | 0 | 0 | 0 | Deve | 0.48 | 18.3 | 43.8 | 0 | 0 | 0 |
| Jan | 1 | Deve | 0.73 | 25.7 | 37.4 | 0 | 0 | 0 | Deve | 0.61 | 21.3 | 37.4 | 0 | 0 | 0 |
| 2 | Deve | 0.86 | 30 | 32.2 | 0 | 0 | 0 | Deve | 0.74 | 25.7 | 32.2 | 0 | 0 | 0 |
| 3 | Deve | 0.99 | 38.6 | 31.3 | 2.4 | 0.24 | 0.31 | Deve | 0.87 | 33.7 | 31.3 | 0 | 0 | 0 |
| Feb | 1 | Mid | 1.12 | 40 | 28.8 | 6.6 | 0.66 | 0.85 | Deve | 1 | 35.7 | 28.8 | 2.3 | 0.23 | 0.30 |
| 2 | Mid | 1.16 | 41.7 | 26.4 | 10.7 | 1.07 | 1.37 | Mid | 1.13 | 40.5 | 26.4 | 9.6 | 0.96 | 1.23 |
| 3 | Mid | 1.16 | 34 | 33.4 | 0 | 0 | 0 | Mid | 1.16 | 34 | 33.4 | 0 | 0 | 0 |
| Mar | 1 | Mid | 1.16 | 43.2 | 44.3 | 0 | 0 | 0 | Mid | 1.16 | 43.3 | 44.3 | 0 | 0 | 0 |
| 2 | Mid | 1.16 | 43.9 | 51.7 | 0 | 0 | 0 | Mid | 1.16 | 44 | 51.7 | 0 | 0 | 0 |
| 3 | Mid | 1.16 | 48.1 | 45.5 | 0 | 0 | 0 | Mid | 1.16 | 48.2 | 45.5 | 0 | 0 | 0 |
| Apr | 1 | Mid | 1.16 | 43.5 | 38.7 | 0.3 | 0.03 | 0.04 | Mid | 1.16 | 43.6 | 38.7 | 0.4 | 0.04 | 0.05 |
| 2 | Mid | 1.16 | 43.3 | 34.4 | 3.6 | 0.36 | 0.46 | Mid | 1.16 | 43.4 | 34.4 | 3.7 | 0.37 | 0.47 |
| 3 | Mid | 1.16 | 42.9 | 26.5 | 12.2 | 1.22 | 1.57 | Mid | 1.16 | 43 | 26.5 | 12.3 | 1.23 | 1.58 |
| May | 1 | Mid | 1.16 | 42.5 | 15.7 | 24.3 | 2.43 | 3.12 | Mid | 1.16 | 42.6 | 15.7 | 24.4 | 2.44 | 3.13 |
| 2 | Mid | 1.16 | 42.1 | 6.9 | 33.8 | 3.38 | 4.34 | Mid | 1.16 | 42.2 | 6.9 | 33.9 | 3.39 | 4.35 |
| 3 | Mid | 1.16 | 44.7 | 9.6 | 33.2 | 3.32 | 4.26 | Mid | 1.16 | 44.8 | 9.6 | 33.3 | 3.33 | 4.27 |
| Jun | 1 | Mid | 1.16 | 39.1 | 15.2 | 21.2 | 2.12 | 2.72 | Mid | 1.16 | 39.2 | 15.2 | 21.3 | 2.13 | 2.73 |
| 2 | Mid | 1.16 | 37.6 | 17.4 | 17.1 | 1.71 | 2.20 | Mid | 1.16 | 37.7 | 17.4 | 17.1 | 1.71 | 2.20 |
| 3 | Mid | 1.16 | 38.3 | 12.2 | 23.9 | 2.39 | 3.07 | Mid | 1.16 | 38.4 | 12.2 | 23.9 | 2.39 | 3.07 |
| Jul | 1 | Mid | 1.16 | 38.9 | 4.9 | 33 | 3.3 | 4.24 | Mid | 1.16 | 39 | 4.9 | 33.1 | 3.31 | 4.25 |
| 2 | Mid | 1.16 | 39.5 | 0 | 39.5 | 3.95 | 5.07 | Mid | 1.16 | 39.6 | 0 | 39.6 | 3.96 | 5.08 |
| 3 | Mid | 1.16 | 45.4 | 0.4 | 45 | 4.5 | 5.78 | Mid | 1.16 | 45.5 | 0.4 | 45.1 | 4.51 | 5.79 |
| Aug | 1 | Late | 1.16 | 42.9 | 0.4 | 42.4 | 4.24 | 5.44 | Mid | 1.16 | 43.1 | 0.4 | 42.6 | 4.26 | 5.47 |
| 2 | Late | 1.12 | 43.1 | 0 | 43.1 | 4.31 | 5.53 | Late | 1.16 | 44.7 | 0 | 44.7 | 4.47 | 5.74 |
| 3 | Late | 1.06 | 47 | 2.9 | 43.6 | 4.36 | 5.60 | Late | 1.12 | 49.3 | 2.9 | 45.9 | 4.59 | 5.89 |
| Sep | 1 | Late | 1.01 | 42.2 | 10.3 | 30.1 | 3.01 | 3.86 | Late | 1.06 | 44.4 | 10.3 | 32.2 | 3.22 | 4.13 |
| 2 | Late | 0.96 | 41.7 | 14.9 | 24 | 2.4 | 3.08 | Late | 1.01 | 43.9 | 14.9 | 26.2 | 2.62 | 3.36 |
| 3 | Late | 0.91 | 39.7 | 11.8 | 25.8 | 2.58 | 3.31 | Late | 0.96 | 41.9 | 11.8 | 27.9 | 2.79 | 3.58 |
| Oct | 1 | Late | 0.86 | 37.8 | 3.2 | 33.5 | 3.35 | 4.30 | Late | 0.91 | 39.9 | 3.2 | 35.7 | 3.57 | 4.58 |
| 2 | Late | 0.81 | 35.8 | 0 | 35.8 | 3.58 | 4.60 | Late | 0.86 | 37.9 | 0 | 37.9 | 3.79 | 4.87 |
| 3 | Late | 0.76 | 35.1 | 13.6 | 19.3 | 1.93 | 2.48 | Late | 0.81 | 37.3 | 13.6 | 21.5 | 2.15 | 2.76 |
| Nov | 1 | Late | 0.71 | 28.3 | 41.7 | 0 | 0 | 0 | Late | 0.75 | 30.2 | 41.7 | 0 | 0 | 0 |
| 2 |  | | | | | | | Late | 0.7 | 26.7 | 59.8 | 0 | 0 | 0 |

**Table S4. Recapitulation table for irrigation water requirement for secondary crops**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Water Requirement For Secondary Crops MT I (Group 1) | | | | | | | | | Water Requirement For Secondary Crops MT I (Group 2) | | | | | | |
| Month | **Decade** | **Stage** | **Kc** | **ETc** | **Eff rain** | **Irr Req** | | **DR** | **Stage** | **Kc** | **ETc** | **Eff rain** | **Irr Req** | | **DR** |
| **coeff** | **mm/dec** | **mm/dec** | **mm/dec** | **mm/day** | **L/s/ha** | **coeff** | **mm/dec** | **mm/dec** | **mm/dec** | **mm/day** | **L/s/ha** |
|
| Nov | 2 | Init | 0.3 | 11.4 | 59.8 | 0 | 0 | 0 |  | | | | | | |
| 3 | Init | 0.3 | 11.1 | 55.8 | 0 | 0 | 0 | Init | 0.3 | 11.1 | 55.8 | 0 | 0 | 0 |
| Dec | 1 | Deve | 0.43 | 15.4 | 50.1 | 0 | 0 | 0 | Init | 0.3 | 10.8 | 50.1 | 0 | 0 | 0 |
| 2 | Deve | 0.66 | 23 | 48.9 | 0 | 0 | 0 | Deve | 0.43 | 14.9 | 48.9 | 0 | 0 | 0 |
| 3 | Deve | 0.9 | 34.5 | 43.8 | 0 | 0 | 0 | Deve | 0.67 | 25.7 | 43.8 | 0 | 0 | 0 |
| Jan | 1 | Mid | 1.09 | 38.1 | 37.4 | 0.7 | 0.07 | 0.09 | Deve | 0.91 | 31.7 | 37.4 | 0 | 0 | 0 |
| 2 | Mid | 1.1 | 38.5 | 32.2 | 6.3 | 0.63 | 0.81 | Mid | 1.09 | 38 | 32.2 | 5.8 | 0.58 | 0.74 |
| 3 | Mid | 1.1 | 42.8 | 31.3 | 11.5 | 1.15 | 1.48 | Mid | 1.1 | 42.8 | 31.3 | 11.5 | 1.15 | 1.48 |
| Feb | 1 | Mid | 1.1 | 39.3 | 28.8 | 10.5 | 1.05 | 1.35 | Mid | 1.1 | 39.4 | 28.8 | 10.5 | 1.05 | 1.35 |
| 2 | Late | 1.03 | 37.2 | 26.4 | 10.8 | 1.08 | 1.39 | Mid | 1.1 | 39.8 | 26.4 | 13.3 | 1.33 | 1.71 |
| 3 | Late | 0.81 | 23.9 | 33.4 | 0 | 0 | 0 | Late | 1.06 | 31 | 33.4 | 0 | 0 | 0 |
| Mar | 1 | Late | 0.59 | 21.9 | 44.3 | 0 | 0 | 0 | Late | 0.84 | 31.3 | 44.3 | 0 | 0 | 0 |
| 2 | Late | 0.4 | 7.6 | 25.8 | 0 | 0 | 0 | Late | 0.59 | 22.3 | 51.7 | 0 | 0 | 0 |
| 3 |  | | | | | | | Late | 0.4 | 7.6 | 20.7 | 0 | 0 | 0 |
| Water Requirement For Secondary Crops MT II (Group 1) | | | | | | | | | **Water Requirement For Secondary Crops MT II (Group 2)** | | | | | | |
| Mar | 2 | Init | 0.3 | 11.4 | 51.7 | 0 | 0 | 0 |  | | | | | | |
| 3 | Deve | 0.3 | 12.5 | 45.5 | 0 | 0 | 0 | Init | 0.3 | 12.5 | 45.5 | 0 | 0 | 0 |
| Apr | 1 | Deve | 0.45 | 17 | 38.7 | 0 | 0 | 0 | Deve | 0.3 | 11.4 | 38.7 | 0 | 0 | 0 |
| 2 | Deve | 0.69 | 25.7 | 34.4 | 0 | 0 | 0 | Deve | 0.45 | 16.9 | 34.4 | 0 | 0 | 0 |
| 3 | Deve | 0.92 | 34.2 | 26.5 | 7.7 | 0.77 | 0.99 | Deve | 0.69 | 25.5 | 26.5 | 0 | 0 | 0 |
| May | 1 | Mid | 1.11 | 40.7 | 15.7 | 25 | 2.5 | 3.21 | Deve | 0.92 | 33.8 | 15.7 | 18.2 | 1.82 | 2.34 |
| 2 | Mid | 1.12 | 40.8 | 6.9 | 33.9 | 3.39 | 4.35 | Mid | 1.11 | 40.3 | 6.9 | 33.4 | 3.34 | 4.29 |
| 3 | Mid | 1.12 | 43.3 | 9.6 | 33.7 | 3.37 | 4.33 | Mid | 1.12 | 43.3 | 9.6 | 33.7 | 3.37 | 4.33 |
| Jun | 1 | Mid | 1.12 | 37.9 | 15.2 | 22.7 | 2.27 | 2.91 | Mid | 1.12 | 37.9 | 15.2 | 22.7 | 2.27 | 2.91 |
| 2 | Late | 1.05 | 34.1 | 17.4 | 16.7 | 1.67 | 2.14 | Mid | 1.12 | 36.4 | 17.4 | 19 | 1.9 | 2.44 |
| 3 | Late | 0.8 | 26.4 | 12.2 | 14.2 | 1.42 | 1.82 | Late | 1.05 | 34.7 | 12.2 | 22.5 | 2.25 | 2.89 |
| Jul | 1 | Late | 0.54 | 18.2 | 4.9 | 13.3 | 1.33 | 1.71 | Late | 0.8 | 26.9 | 4.9 | 21.9 | 2.19 | 2.81 |
| 2 | Late | 0.38 | 3.8 | 0 | 3.8 | 0.38 | 0.49 | Late | 0.54 | 18.5 | 0 | 18.5 | 1.85 | 2.37 |
| 3 |  | | | | | | | Late | 0.38 | 4 | 0.1 | 3.8 | 0.38 | 0.49 |
| Water Requirement For Secondary Crops MT III (Group 1) | | | | | | | | | **Water Requirement For Secondary Crops MT III (Group 2)** | | | | | | |
| Jul | 2 | Init | 0.3 | 10.2 | 0 | 10.2 | 1.02 | 1.31 |  |  |  |  |  |  |  |
| 3 | Deve | 0.3 | 11.8 | 0.4 | 11.5 | 1.15 | 1.48 | Init | 0.3 | 11.8 | 0.4 | 11.4 | 1.14 | 1.46 |
| Aug | 1 | Deve | 0.46 | 17 | 0.4 | 16.6 | 1.66 | 2.13 | Deve | 0.3 | 11.2 | 0.4 | 10.8 | 1.08 | 1.39 |
| 2 | Deve | 0.7 | 27 | 0 | 27 | 2.7 | 3.47 | Deve | 0.46 | 17.6 | 0 | 17.6 | 1.76 | 2.26 |
| 3 | Deve | 0.95 | 42.1 | 2.9 | 39.2 | 3.92 | 5.03 | Deve | 0.71 | 31.4 | 2.9 | 28.5 | 2.85 | 3.66 |
| Sep | 1 | Mid | 1.14 | 47.6 | 10.3 | 37.3 | 3.73 | 4.79 | Deve | 0.96 | 40.2 | 10.3 | 29.9 | 2.99 | 3.84 |
| 2 | Mid | 1.15 | 49.7 | 14.9 | 34.8 | 3.48 | 4.47 | Mid | 1.14 | 49.3 | 14.9 | 34.4 | 3.44 | 4.42 |
| 3 | Mid | 1.15 | 50 | 11.8 | 38.2 | 3.82 | 4.90 | Mid | 1.14 | 49.9 | 11.8 | 38.1 | 3.81 | 4.89 |
| Oct | 1 | Mid | 1.15 | 50.3 | 3.2 | 47.1 | 4.71 | 6.05 | Mid | 1.14 | 50.2 | 3.2 | 47 | 4.7 | 6.03 |
| 2 | Late | 1.07 | 47.3 | 0 | 47.3 | 4.73 | 6.07 | Mid | 1.14 | 50.5 | 0 | 50.5 | 5.05 | 6.48 |
| 3 | Late | 0.8 | 37.1 | 13.6 | 23.5 | 2.35 | 3.02 | Late | 1.06 | 48.9 | 13.6 | 35.3 | 3.53 | 4.53 |
| Nov | 1 | Late | 0.52 | 20.9 | 41.7 | 0 | 0 | 0 | Late | 0.79 | 31.5 | 41.7 | 0 | 0 | 0 |
| 2 | Late | 0.36 | 2.8 | 12 | 2.8 | 0.28 | 0.36 | Late | 0.52 | 19.8 | 59.8 | 0 | 0 | 0 |
| 3 |  | | | | | | | Late | 0.36 | 2.7 | 11.2 | 2.7 | 0.27 | 0.35 |

**Table S5. Calculation Results of Total Irrigation Water Requirement for Garum and Jatisari irrigation area**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Month | Period | Total Irrigation Water Requirement of Garum (L/s) | | Total (L/s) | Total Irrigation Water Requirement of Jatisari (L/s) | | | Total (L/s) |
|
| **MT I** | **MT II** | **MT I** | **MT II** | **MT III** |
| Oct | 2 | 142.44 |  | 142.44 | 101.71 |  | 25.11 | 126.82 |
| 3 | 121.32 |  | 121.32 | 63.17 |  | 15.10 | 78.27 |
| Nov | 1 | 100.61 |  | 100.61 | 21.94 |  | 0.00 | 21.94 |
| 2 | 91.20 |  | 91.20 | 30.47 |  | 0.72 | 31.19 |
| 3 | 0.00 |  | 0 | 0.00 |  | 0.69 | 0.69 |
| Dec | 1 | 0.00 |  | 0 | 0.00 |  |  | 0.00 |
| 2 | 0.00 |  | 0 | 0.00 |  |  | 0.00 |
| 3 | 0.00 |  | 0 | 0.00 |  |  | 0.00 |
| Jan | 1 | 1.71 |  | 1.71 | 0.27 |  |  | 0.27 |
| 2 | 37.70 |  | 37.70 | 5.40 |  |  | 5.40 |
| 3 | 75.73 |  | 75.73 | 11.57 |  |  | 11.57 |
| Feb | 1 | 80.68 | 0.69 | 81.38 | 17.84 | 0.12 |  | 17.96 |
| 2 | 114.85 | 19.99 | 134.84 | 37.43 | 3.62 |  | 41.05 |
| 3 | 0 | 0 | 0 | 0.00 | 0.00 |  | 0.00 |
| Mar | 1 | 0 | 86.57 | 86.57 | 0.00 | 22.64 |  | 22.64 |
| 2 | 0 | 80.99 | 80.99 | 0.00 | 36.00 |  | 36.00 |
| 3 | 0 | 0 | 0 | 0.00 | 0.00 |  | 0.00 |
| Apr | 1 | 1.35 | 0 | 1.35 | 1.03 | 0.00 |  | 1.03 |
| 2 | 13.63 | 0 | 13.63 | 9.92 | 0.00 |  | 9.92 |
| 3 | 45.65 | 19.77 | 65.42 | 33.11 | 2.97 |  | 36.07 |
| May | 1 | 90.70 | 172.83 | 263.52 | 65.73 | 29.46 |  | 95.19 |
| 2 | 126.06 | 291.11 | 417.17 | 91.34 | 51.07 |  | 142.40 |
| 3 | 123.83 | 287.82 | 411.65 | 89.72 | 49.80 |  | 139.52 |
| Jun | 1 | 79.15 | 184.02 | 263.18 | 57.37 | 30.27 |  | 87.64 |
| 2 | 63.66 | 142.28 | 205.94 | 46.10 | 22.64 |  | 68.74 |
| 3 | 88.98 | 164.74 | 253.72 | 64.43 | 28.23 |  | 92.66 |
| Jul | 1 | 123.08 | 175.22 | 298.30 | 89.18 | 33.53 |  | 122.71 |
| 2 | 147.28 | 119.90 | 267.18 | 106.70 | 25.08 | 2.62 | 134.41 |
| 3 | 167.76 | 16.10 | 183.86 | 121.53 | 1.95 | 5.88 | 129.36 |
| Aug | 1 | 158.31 |  | 158.31 | 114.74 |  | 7.03 | 121.77 |
| 2 | 164.15 |  | 164.15 | 119.68 |  | 11.45 | 131.13 |
| 3 | 167.63 |  | 167.63 | 122.56 |  | 17.38 | 139.94 |
| Sep | 1 | 116.91 |  | 116.91 | 85.73 |  | 17.25 | 102.98 |
| 2 | 94.43 |  | 94.43 | 69.50 |  | 17.77 | 87.27 |
| 3 | 100.90 |  | 100.90 | 74.14 |  | 19.59 | 93.72 |
| Oct | 1 | 129.80 |  | 129.80 | 95.11 |  | 24.16 | 119.27 |

**Table S6. Results of Irrigation Water Balance Calculations in Garum and Jatisari irrigation area**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Month | Period | Total Irrigation Water Requirement (L/s) | Debit Intake (L/s) | Difference (L/s) | Water Balance |
|
| Oct | 2 | 269.26 | 50 | -219.26 | Deficit |
| 3 | 199.59 | 51.4 | -148.19 | Deficit |
| Nov | 1 | 122.55 | 56.2 | -66.35 | Deficit |
| 2 | 122.38 | 57 | -65.38 | Deficit |
| 3 | 0.69 | 57 | 56.31 | Surplus |
| Dec | 1 | 0.00 | 57 | 57.00 | Surplus |
| 2 | 0.00 | 57 | 57.00 | Surplus |
| 3 | 0.00 | 57 | 57.00 | Surplus |
| Jan | 1 | 1.98 | 57 | 55.02 | Surplus |
| 2 | 43.11 | 57 | 13.89 | Surplus |
| 3 | 87.29 | 57 | -30.29 | Deficit |
| Feb | 1 | 99.33 | 57 | -42.33 | Deficit |
| 2 | 175.90 | 50 | -125.90 | Deficit |
| 3 | 0.00 | 50 | 50.00 | Surplus |
| Mar | 1 | 109.22 | 43.4 | -65.82 | Deficit |
| 2 | 116.99 | 43 | -73.99 | Deficit |
| 3 | 0.00 | 43 | 43.00 | Surplus |
| Apr | 1 | 2.37 | 43 | 40.63 | Surplus |
| 2 | 23.56 | 43 | 19.44 | Surplus |
| 3 | 101.49 | 43 | -58.49 | Deficit |
| May | 1 | 358.71 | 43 | -315.71 | Deficit |
| 2 | 559.58 | 43 | -516.58 | Deficit |
| 3 | 551.17 | 43 | -508.17 | Deficit |
| Jun | 1 | 350.82 | 37 | -313.82 | Deficit |
| 2 | 274.68 | 38.2 | -236.48 | Deficit |
| 3 | 346.37 | 38.2 | -308.17 | Deficit |
| Jul | 1 | 421.01 | 37 | -384.01 | Deficit |
| 2 | 401.59 | 32.2 | -369.39 | Deficit |
| 3 | 313.22 | 32.2 | -281.02 | Deficit |
| Aug | 1 | 280.08 | 32.2 | -247.88 | Deficit |
| 2 | 295.28 | 32.2 | -263.08 | Deficit |
| 3 | 307.57 | 32.2 | -275.37 | Deficit |
| Sep | 1 | 219.89 | 38.2 | -181.69 | Deficit |
| 2 | 181.70 | 43 | -138.70 | Deficit |
| 3 | 194.63 | 55.6 | -139.03 | Deficit |
| Oct | 1 | 249.07 | 50 | -199.07 | Deficit |

**Table S7. Results of Irrigation Water Balance Calculations in Garum and Jatisari rrigation area**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Month | Period | Garum Irrigation Area | | | | Jatisari Irrigation Area | | | |
| **Total Irrigation Water Requirement (L/s)** | **Debit Intake (Lt/dt)** | **Difference (L/s)** | **Water Balance** | **Total Irrigation Water Requirement (L/s)** | **Debit Intake (Lt/dt)** | **Difference (L/s)** | **Water Balance** |
| Oct | 2 | 142.44 | 50 | -92.44 | Deficit | 126.82 | 50 | -76.82 | Deficit |
| 3 | 121.32 | 51.4 | -69.92 | Deficit | 78.27 | 51.4 | -26.87 | Deficit |
| Nov | 1 | 100.61 | 56.2 | -44.41 | Deficit | 21.94 | 56.2 | 34.26 | Surplus |
| 2 | 91.20 | 57 | -34.20 | Deficit | 31.19 | 57 | 25.81 | Surplus |
| 3 | 0.00 | 57 | 57.00 | Surplus | 0.69 | 57 | 56.31 | Surplus |
| Dec | 1 | 0.00 | 57 | 57.00 | Surplus | 0.00 | 57 | 57.00 | Surplus |
| 2 | 0.00 | 57 | 57.00 | Surplus | 0.00 | 57 | 57.00 | Surplus |
| 3 | 0.00 | 57 | 57.00 | Surplus | 0.00 | 57 | 57.00 | Surplus |
| Jan | 1 | 1.71 | 57 | 55.29 | Surplus | 0.27 | 57 | 56.73 | Surplus |
| 2 | 37.70 | 57 | 19.30 | Surplus | 5.40 | 57 | 51.60 | Surplus |
| 3 | 75.73 | 57 | -18.73 | Deficit | 11.57 | 57 | 45.43 | Surplus |
| Feb | 1 | 81.38 | 57 | -24.38 | Deficit | 17.96 | 57 | 39.04 | Surplus |
| 2 | 134.84 | 50 | -84.84 | Deficit | 41.05 | 50 | 8.95 | Surplus |
| 3 | 0.00 | 50 | 50.00 | Surplus | 0.00 | 50 | 50.00 | Surplus |
| Mar | 1 | 86.57 | 43.4 | -43.17 | Deficit | 22.64 | 43.4 | 20.76 | Surplus |
| 2 | 80.99 | 43 | -37.99 | Deficit | 36.00 | 43 | 7.00 | Surplus |
| 3 | 0.00 | 43 | 43.00 | Surplus | 0.00 | 43 | 43.00 | Surplus |
| Apr | 1 | 1.35 | 43 | 41.65 | Surplus | 1.03 | 43 | 41.97 | Surplus |
| 2 | 13.63 | 43 | 29.37 | Surplus | 9.92 | 43 | 33.08 | Surplus |
| 3 | 65.42 | 43 | -22.42 | Deficit | 36.07 | 43 | 6.93 | Surplus |
| May | 1 | 263.52 | 43 | -220.52 | Deficit | 95.19 | 43 | -52.19 | Deficit |
| 2 | 417.17 | 43 | -374.17 | Deficit | 142.40 | 43 | -99.40 | Deficit |
| 3 | 411.65 | 43 | -368.65 | Deficit | 139.52 | 43 | -96.52 | Deficit |
| Jun | 1 | 263.18 | 37 | -226.18 | Deficit | 87.64 | 37 | -50.64 | Deficit |
| 2 | 205.94 | 38.2 | -167.74 | Deficit | 68.74 | 38.2 | -30.54 | Deficit |
| 3 | 253.72 | 38.2 | -215.52 | Deficit | 92.66 | 38.2 | -54.46 | Deficit |
| Jul | 1 | 298.30 | 37 | -261.30 | Deficit | 122.71 | 37 | -85.71 | Deficit |
| 2 | 267.18 | 32.2 | -234.98 | Deficit | 134.41 | 32.2 | -102.21 | Deficit |
| 3 | 183.86 | 32.2 | -151.66 | Deficit | 129.36 | 32.2 | -97.16 | Deficit |
| Aug | 1 | 158.31 | 32.2 | -126.11 | Deficit | 121.77 | 32.2 | -89.57 | Deficit |
| 2 | 164.15 | 32.2 | -131.95 | Deficit | 131.13 | 32.2 | -98.93 | Deficit |
| 3 | 167.63 | 32.2 | -135.43 | Deficit | 139.94 | 32.2 | -107.74 | Deficit |
| Sep | 1 | 116.91 | 38.2 | -78.71 | Deficit | 102.98 | 38.2 | -64.78 | Deficit |
| 2 | 94.43 | 43 | -51.43 | Deficit | 87.27 | 43 | -44.27 | Deficit |
| 3 | 100.90 | 55.6 | -45.30 | Deficit | 93.72 | 55.6 | -38.12 | Deficit |
| Oct | 1 | 129.80 | 50 | -79.80 | Deficit | 119.27 | 50 | -69.27 | Deficit |