

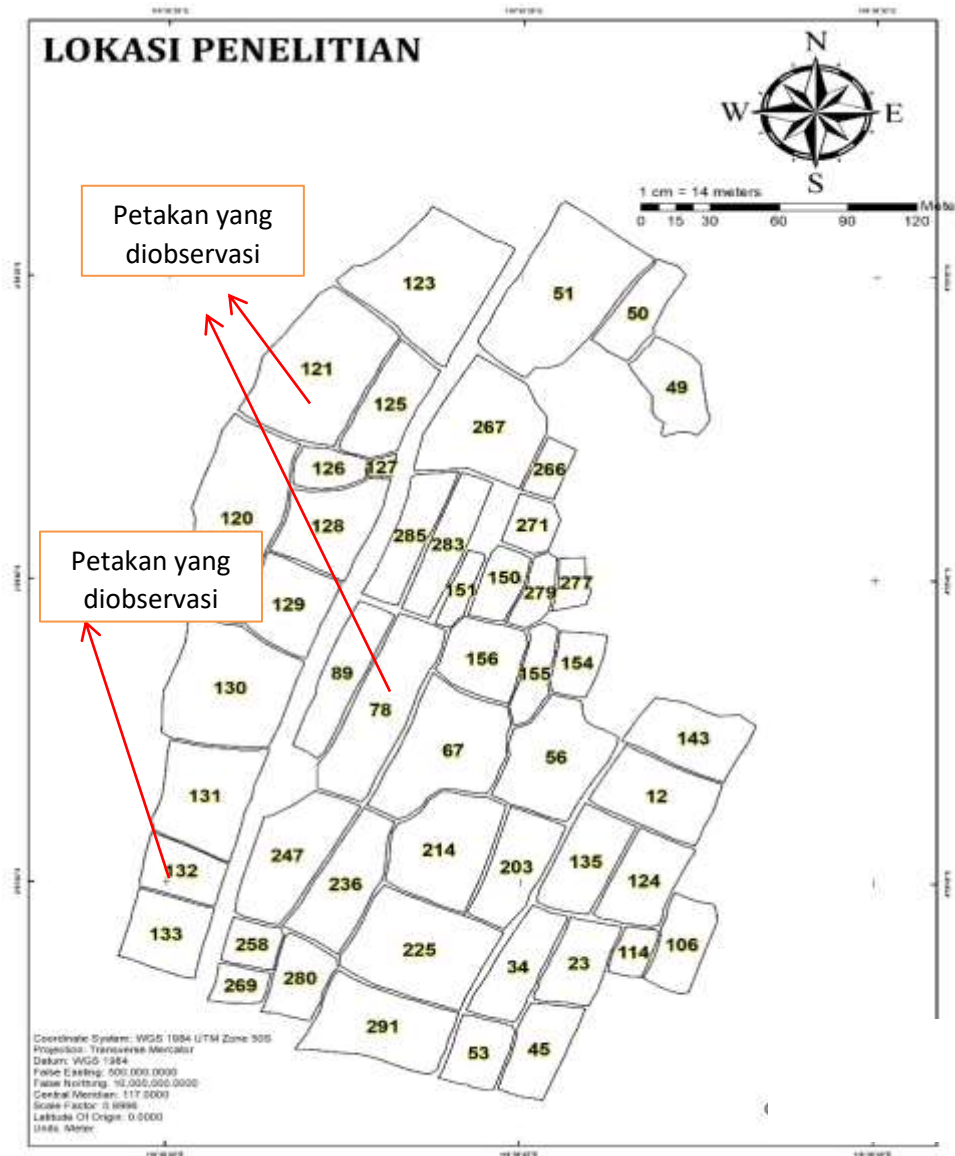
DAFTAR PUSTAKA

- Al-Gaadi KA., Virupakshagouda P., ElKamil T., Rangaswamy M., and Samy M. 2014. *In-Season Assessment Of Wheat Crop Health Using Vegetation Indices Based On Ground Measured Hyper Spectral Data*. King Saud University: Saudi Arabia.
- Amliana DR., Yudo P. dan Abdi S. 2016. *Analisis Perbandingan Nilai Ndvi Landsat 7 Dan Landsat 8 Pada Kelas Tutupan Lahan*. Universitas Diponegoro: Semarang.
- Arnanto, A. 2013. *Pemanfaatan Transformasi Normalized Difference Vegetation Index (Ndvi) Citra Landsat Tm Untuk Zonasi Vegetasi Di Lereng Merapi Bagian Selatan*. Sekolah Tinggi Pertanahan Nasional: Yogyakarta.
- Asdak C. 2014. *Hidrologi dan Pengelolaan Daerah Aliran Sungai*. Yogyakarta: Gadjah Mada University Press.
- Astria, E., Useng, D., & Prawitosari, T. (2017). Analisis Jenis dan Tingkat Serangan Hama dan Penyakit Pada Tanaman Padi Menggunakan Alat Spektrometer. *Jurnal Agritechno*, 10(2), 71 - 88.
- Bouman, B.A.M., Van Laar., H.H. 2004. *Description and Evaluation of The Rice Growth Model ORYZA2000 Under Nitrogen-Limited Conditions*. Wageningen University: Netherlands.
- Darmawan, A. 2012. *Pembangunan Model Hyperspectral Untuk Estimasi Produktivitas Vegetasi Padi Berdasarkan Derrivative Linier*. Institut Teknologi Sepuluh Nopember: Surabaya.
- Marlina., Setyono. dan Y Mulyaningsih. 2017. *Pengaruh Umur Bibit Dan Jumlah Bibit Terhadap Pertumbuhan Dan Hasil Panen Padi Sawah (Oryza Sativa) Varietas Ciherang*. Universitas Djuanda Bogor: Bogor.
- Ma'sum FQ., Budiastuti K. and Erlina A. 2016. *Pertumbuhan dan Hasil Padi Sawah (Oryza sativa L.) pada beberapa Takaran Kompos Jerami dan Zeolit*. Universitas Gadjah Mada: Yogyakarta.
- Misran. 2014. *Efisiensi Penggunaan Jumlah Bibit Terhadap Pertumbuhan dan Produksi Padi Sawah*. Balai Pengkajian Teknologi Pertanian (BPTP): Padang.
- Noer, M. 2008. *Estimasi Produksi Tanaman Padi Sawah di Kabupaten Bekasi, Karawang, dan Subang*. Universitas Indonesia: Jakarta.
- Putra A., Try AT., Aulia RF., Semeidi H. dan Semeidi SP. 2017. Pendekatan Metode *Normalized Difference Vegetation Index (Ndvi)* Dan Lyzenga Untuk Pemetaan Sebaran Ekosistem Perairan Di Kawasan Pesisir Teluk Benoa-Bali. Universitas Negeri Padang: Padang.

- Rakhmawati, M. 2012. *Pemanfaatan Citra Landsat untuk Estimasi Biomassa Atas Permukaan dari Berbagai Penutupan Lahan dengan Pendekatan Indeks Vegetasi* (Studi Kasus Kabupaten Mamuju Utara, Sulawesi Barat). Institut Pertanian Bogor: Bogor.
- Rumahlatu, NC. 2017. *Pendugaan Biomassa dan Produktivitas Tanaman Padi Berdasarkan Reflektansi dan Indeks Vegetasi*. Skripsi. Universitas Hasanuddin Makassar: Makassar.
- Sallaja, B. SR. Voleti, D. Subrahmanyam, MS. Nathawat, and NH. Rao. *Validation of Oryza2000 Model Under Combined Nitrogen and Water Limited Situations*. *Indian Journal Plant Physiol.* DOI. 10.1007/s40502-013-0001-7.
- Sartika, E. 2022. *Analisis Perkembangan Biomassa Tanaman Padi Varietas CL220 Dan MR219 Menggunakan Crop Model Oryza v3 Di Kabupaten Maros*. Skripsi. Universitas Hasanuddin Makassar: Makassar.
- Sudiana D. dan Elfa D. 2008. *Analisis Indeks Vegetasi menggunakan Data Satelit NOAA/AVHRR dan TERRA/AQUA-MODIS*. Universitas Indonesia: Jakarta.
- Suwarsono., Muchlisin, A., Hidayat, Sayidah, S., Nanik, SH., Heri, S., dan Kuncoro, TS. 2011. *Pengembangan Metode Penentuan Indeks Luas Daun pada Penutup Lahan Hutan dari Data Satelit Penginderaan Jauh SPOT-2*. Peneliti Pusat Teknologi dan Data Penginderaan Jauh, LAPAN: Jakarta.
- Vitasari, W., Useng, D., & Achmad, M. 2017. *Pendugaan Produksi Dan Indeks Vegetasi Tanaman Padi Menggunakan Data Citra Platform Unmanned Aerial Vehicle (UAV) Dan Data Citra Satelit Landsat 8*. *Jurnal AgriTechno Vol. 10, No. 2*.
- Yuliani, S. S., Useng, D., & Achmad, M. 2017. *Analisis Kandungan Nitrogen Tanah Sawah Menggunakan Spektrometer*. *Jurnal Agritechno, 10(2)*, 188 - 202.
- Useng, D. 2014. *Coupling Remote Sensing and Crop Model for Growth and Yield Monitoring*. LAMBERT Academic Publishing. Saarbrücken.

LAMPIRAN

Lampiran 1 Peta dasar Petakan Sawah



Lampiran 2 Tabel Nilai Tinggi Tanaman

Tabel Tinggi Tanaman Padi Varietas Inpari 4

Tanggal	HST	Tinggi Tanaman (cm)
26/01/2020	16	35,33
8/2/2020	28	56,67
24/02/2020	44	78,33
8/3/2020	59	87,97
16/03/2020	67	98,67
22/03/2020	74	103,00
30/03/2020	82	110,67

Tabel Tinggi Tanaman Padi Varietas CL220

Tanggal	HST	Tinggi Tanaman (Cm)
26/01/2020	16	38,67
8/2/2020	29	70,67
24/02/2020	45	83,63
05/03/2020	55	97,33
08/03/2020	58	100,00
22/03/2020	72	118,00
28/03/2020	78	120,00

Tabel Tinggi Tanaman Padi Varietas MR219

Tanggal	HST	Tinggi Tanaman (Cm)
26/01/2020	23	39,67
8/2/2020	36	53,00
24/02/2020	52	74,42
08/03/2020	65	82,33
16/03/2020	73	82,67
22/03/2020	79	90,33
03/04/2020	91	94,00

Lampiran 3 Tabel Nilai Biomassa Kering

Tabel Biomassa Kering Padi Varietas Inpari 4

Tanggal	HST	Biomassa Kering (Kg/Ha)			
		Batang	Daun	Malai	Utuh
26/01/2020	16	1010,17	841,60	0	2906,44
8/2/2020	28	2516,56	1097,64	0	5955,13
24/02/2020	44	4030,89	2044,57	0	9039,86
8/3/2020	59	4519,93	3984,75	2057,00	15397,40
16/03/2020	67	5779,58	6120,06	4158,00	23192,43
22/03/2020	74	4759,33	5002,71	7445,63	26086,19
30/03/2020	82	4437,28	3272,04	8213,33	29679,53

Tabel Biomassa Kering Padi Varietas CL220

Tanggal	HST	Biomassa Kering (Kg/Ha)			
		Batang	Daun	Malai	Utuh
26/01/2020	16	963,44	465,69	0	1701,41
8/2/2020	29	2397,33	1036,75	0	4513,42
24/02/2020	45	3836,70	1891,11	0	7209,71
05/03/2020	55	4338,40	3318,94	0	9851,67
08/03/2020	58	5623,10	5013,22	3746,8	17866,02
22/03/2020	72	5336,00	3681,07	5866,70	18891,95
28/03/2020	78	5189,07	2745,25	6770,53	18762,59

Tabel Biomassa Kering Padi Varietas MR219

Tanggal	HST	Biomassa Kering (Kg/Ha)			
		Batang	Daun	Malai	Utuh
26/01/2020	23	856,18	360,98	0	1446,49
8/2/2020	36	1203,02	903,31	0	3111,85
24/02/2020	52	3564,09	1245,57	0	6103,88
08/03/2020	65	4118,40	2210,51	0	8350,51
16/03/2020	73	5200,00	3439,89	933,33	12322,03
22/03/2020	79	4503,82	3269,04	2880,00	13910,96
03/04/2020	91	4034,13	2582,57	4298,67	14599,81

Lampiran 4 Tabel Nilai LAI

Tabel Biomassa Kering Padi Varietas Inpari 4

Tanggal	HST	LAI
26/01/2020	16	0,6
8/2/2020	28	1,2
24/02/2020	44	2,3
8/3/2020	59	3,5
16/03/2020	67	5,1
22/03/2020	74	3,1
30/03/2020	82	1,8

Tabel Tinggi Tanaman Padi Varietas CL220


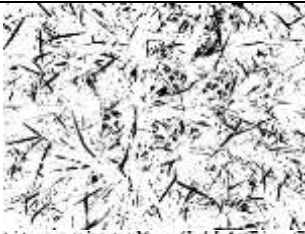

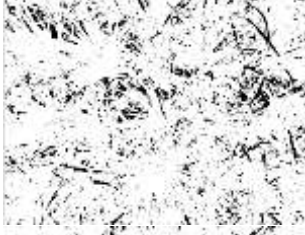

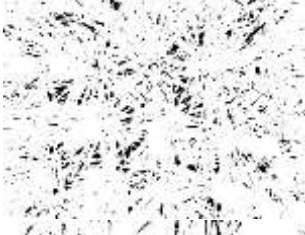





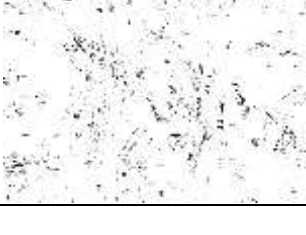
Tanggal	HST	LAI
26/01/2020	16	0,3
8/2/2020	29	1,6
24/02/2020	45	2,6
05/03/2020	55	2,3
08/03/2020	58	7,3
22/03/2020	72	3,7
28/03/2020	78	2,5

Tabel Tinggi Tanaman Padi Varietas MR219


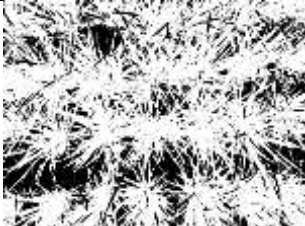

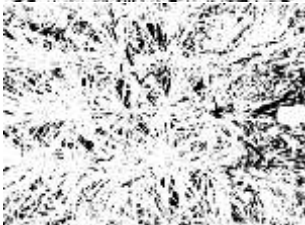

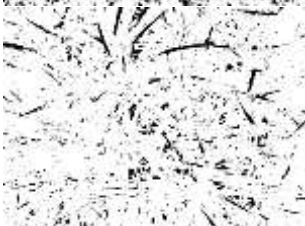



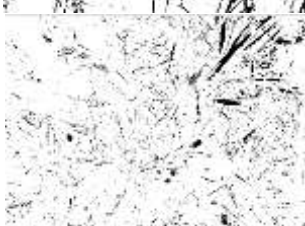

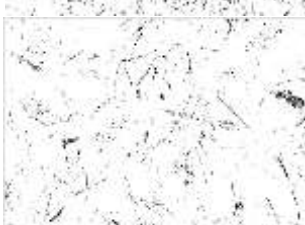
Tanggal	HST	LAI
26/01/2020	23	0,5
8/2/2020	36	1,5
24/02/2020	52	2,0
08/03/2020	65	3,7
16/03/2020	73	6,4
22/03/2020	79	4,9
03/04/2020	91	5,0

Lampiran 5 Tabel Nilai *Ground Cover* (%)


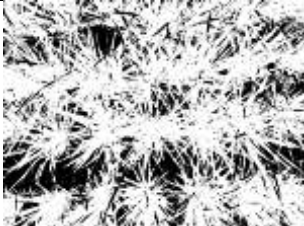

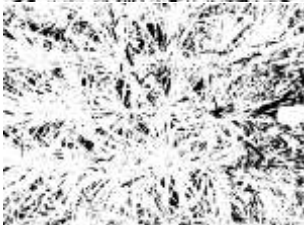





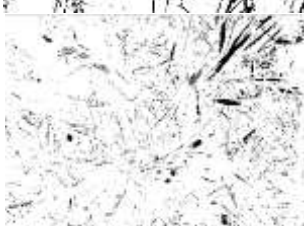

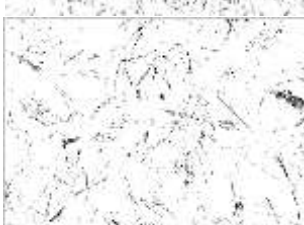
Tabel Biomassa Kering Padi Varietas Inpari 4

Umur Tanaman (HST)	<i>Original Image</i>	<i>Classified Image</i>	Persentase
35			74,67%
46			76,79%
59			86,69%
67			87,35%
75			93,27%
81			98,89%

Tabel Tinggi Tanaman Padi Varietas CL220

Umur Tanaman (HST)	<i>Original Image</i>	<i>Classified Image</i>	Persentase
35			71,39%
46			81,14%
59			90,83%
67			91,20%
75			92,30%
81			95,41%

Tabel Tinggi Tanaman Padi Varietas MR219

Umur Tanaman (HST)	<i>Original Image</i>	<i>Classified Image</i>	Persentase
35			72,76
46			83,17
59			89,34
67			92,05
75			93,15
81			94,91

Lampiran 6 Tabel Nilai Reflektansi

PETAK	HST	REFLEKTANSI	
		NIR (800)	RED (670)
132 (Inpari 4)	16	47,53	76,9
	28	38,32	76,45
	44	32,43	73,66
	59	17,56	79,83
	74	10,23	85,24
	82	25,21	109,39
	16	43,69	79,58
89 (CL220)	29	13,02	88,78
	45	13,82	141,6
	58	28,67	166,41
	72	11,84	157,05
	78	16,37	100
	23	8,11	15,81
	36	26,11	104
125 (MR219)	52	10,71	52,01
	65	14,89	90,12
	73	10,34	100,99
	79	12,23	120,56

Lampiran 7 Tabel Nilai Indeks Vegetasi dengan Biomassa

Tabel *Normalized Difference Vegetasi Index* (NDVI) dengan Biomassa

PETAK	NDVI	Berat Total
	0,236036	1963,73
	0,33223	8618,89
132	0,388632	16130,58
(Inpari 4)	0,639388	27745
	0,785692	29545
	0,625409	34838,58
	0,29115	1701,414
	0,706069	4613,417
89	0,718656	7209,705
(CL220)	0,744204	9851,67
	0,822159	17866,02
	0,85979	18891,95
	0,321906	1446,489
	0,598647	3111,848
125	0,658482	6103,878
(MR219)	0,716408	8350,51
	0,814246	12322,03
	0,815799	13910,96

Tabel *Simple Ratio* (SR) dengan Biomassa

PETAK	SR	Berat Total
	1,617926	1963,73
	1,995042	8618,89
132	2,271354	16130,58
(Inpari 4)	4,546128	27745
	8,332356	29545
	4,339151	34838,58
	1,821469	1701,414
	5,804325	4613,417
89	6,108735	7209,705
(CL220)	6,81874	9851,67
	10,24602	17866,02
	13,26436	18891,95
	1,949445	1446,489
	3,983148	3111,848
125	4,856209	6103,878
(MR219)	6,052384	8350,51
	9,766925	12322,03
	9,857727	13910,96

Tabel *Renormalized Diffrence Vegetation Index (RDVI)* dengan Biomassa

PETAK	RDVI	Berat Total
	72,63906	1963,73
	72,87306	8618,89
132	70,51146	16130,58
(Inpari 4)	78,05063	27745
	84,19301	29545
	107,217	34838,58
	3,232546	1701,414
	9,861744	4613,417
89	7,752497	7209,705
(CL220)	7,508723	9851,67
	10,24966	17866,02
	11,17364	18891,95
	1,574382	1446,489
	6,828517	3111,848
125	5,214913	6103,878
(MR219)	7,341347	8350,51
	8,591356	12322,03
	9,400827	13910,96

Lampiran 8 Tabel Nilai Indeks Vegetasi dengan LAI

Tabel *Normalized Difference Vegetasi Index* (NDVI) dengan LAI

PETAK	NDVI	LAI
	0,236036	0,6
	0,33223	1,2
132	0,388632	2,3
(Inpari 4)	0,639388	3,5
	0,785692	5,1
	0,625409	3,1
	0,29115	0,3
	0,706069	1,6
89	0,718656	2,6
(CL220)	0,744204	2,3
	0,822159	5,3
	0,85979	3,7
	0,321906	0,5
	0,598647	1,5
125	0,658482	2,0
(MR219)	0,716408	3,7
	0,814246	6,4
	0,815799	4,9

Tabel *Simple Ratio* (SR) dengan LAI

PETAK	SR	LAI
	1,617926	0,6
	1,995042	1,2
132	2,271354	2,3
(Inpari 4)	4,546128	3,5
	8,332356	5,1
	4,339151	3,1
	1,821469	0,3
	5,804325	1,6
89	6,108735	2,6
(CL220)	6,81874	2,3
	10,24602	5,3
	13,26436	3,7
	1,949445	0,5
	3,983148	1,5
125	4,856209	2,0
(MR219)	6,052384	3,7
	9,766925	6,4
	9,857727	4,9

Tabel *Renormalized Diffrence Vegetation Index (RDVI)* dengan LAI

PETAK	RDVI	LAI
	72,63906	0,6
	72,87306	1,2
132	70,51146	2,3
(Inpari 4)	78,05063	3,5
	84,19301	5,1
	107,217	3,1
	3,232546	0,3
	9,861744	1,6
89	7,752497	2,6
(CL220)	7,508723	2,3
	10,24966	5,3
	11,17364	3,7
	1,574382	0,5
	6,828517	1,5
125	5,214913	2,0
(MR219)	7,341347	3,7
	8,591356	6,4
	9,400827	4,9

Lampiran 9 Tabel Nilai Indeks Vegetasi dengan GC

Tabel *Normalized Difference Vegetasi Index* (NDVI) dengan GC

PETAK	NDVI	GC
	0,236036	74,67
	0,33223	76,79
132	0,388632	86,69
(Inpari 4)	0,639388	87,35
	0,785692	93,27
	0,625409	98,89
	0,29115	71,39
	0,706069	81,14
89	0,718656	90,83
(CL220)	0,744204	91,2
	0,822159	92,3
	0,85979	95,41
	0,321906	72,76
	0,598647	83,17
125	0,658482	89,34
(MR219)	0,716408	92,05
	0,814246	93,15
	0,815799	94,91

Tabel *Simple Ratio* (SR) dengan GC

PETAK	SR	GC
	1,617926	74,67
	1,995042	76,79
132	2,271354	86,69
(Inpari 4)	4,546128	87,35
	8,332356	93,27
	4,339151	98,89
	1,821469	71,39
	5,804325	81,14
89	6,108735	90,83
(CL220)	6,81874	91,2
	10,24602	92,3
	13,26436	95,41
	1,949445	72,76
	3,983148	83,17
125	4,856209	89,34
(MR219)	6,052384	92,05
	9,766925	93,15
	9,857727	94,91

Tabel *Renormalized Diffrence Vegetation Index (RDVI)* dengan GC

PETAK	RDVI	GC
	72,63906	74,67
	72,87306	76,79
132	70,51146	86,69
(Inpari 4)	78,05063	87,35
	84,19301	93,27
	107,217	98,89
	3,232546	71,39
	9,861744	81,14
89	7,752497	90,83
(CL220)	7,508723	91,2
	10,24966	92,3
	11,17364	95,41
	1,574382	72,76
	6,828517	83,17
125	5,214913	89,34
(MR219)	7,341347	92,05
	8,591356	93,15
	9,400827	94,91

Lampiran 10 Bahasa Program Model Orya2000

1. CONTROL.DAT

```
*strun=1
*endrun=2
*-----*
*           CONTROL.DAT           *
* Run control file for ORYZA2000 model (version 4.0) *
* Date: November 2000 *
* *
* The input files (except FILEIR) may may used in reruns. *
*-----*
FILEON = 'RES.DAT'           ! Output file
FILEOL = 'MODEL.LOG'        ! Log file
FILEIT = 'C:\COURSE\MR219\MANAGE.TST' ! Experimental data
FILEI1 = 'C:\COURSE\MR219\IR72.D92'  ! Crop data
FILEIR = 'C:\COURSE\MR219\RERUNS.DAT' ! Rerun file
* FILEI2 = 'C:\COURSE\MR219\PADDY.DAT' ! Soil data
*-----*
* Set output/print options *
*-----*
PRDEL = 1.  ! Output time step (day)
IPFORM = 5  ! Code for output table format:
            ! 4 = spaces between columns
            ! 5 = TAB's between columns (spreadsheet output)
            ! 6 = two column output
COPINF = 'N' ! Switch variable whether to copy the input files
            ! to the output file ('N' = do not copy,
            ! 'Y' = copy)
DELTMP = 'N' ! Switch variable what should be done with the
            ! temporary output file ('N' = do not delete,
            ! 'Y' = delete)
IFLAG = 1100 ! Indicates where weather error and warnings
            ! go (1101 means errors and warnings to log
            ! file, errors to screen, see FSE manual)
*PRSEL =
'TIME','DOY','DVS','CROPSTA','WAGT','WSO','WST','WLVG','WLVD','LAI'
! The string array PRSEL contains the output variables for which
! formatted tables have to be made. One or more times there is a
! series of variable names terminated by the word <TABLE>.
! The translator writes the variables in each PRINT statement to
! a separate table
*IOBSD = 2020,161
! List of observation data for which output is
! required. The list should consist of pairs
! <year>,<day> combination
```

2. EXPERIMEN.DAT

```
*-----*
* EXPERIMENTAL DATA FILE *
*
* File name      : MANAGE.TST *
* Crop          : Oryza sativa cv. MR219 *
* Year/Season   : 2020, rainy season *
* Experimental site : Bantimurung, -4.99 S, 119.60 E, 13 m *
* Treatment     : puddled, transplanted and fully irrigated, *
* Fertilizer    : 9 sak/Ha *
* Researchers   : Daniel Useng/Suhardi/Amaliah Kamila *
*
*-----*
*-----*
* 1. Selection of modes of running *
*-----*
*-- RICETYPE is to select lowland rice or aerobic/upland rice
RICETYPE = 'LOWLAND' ! Lowland rice
*RICETYPE = 'AEROBIC' ! Upland or aerobic rice

*-- RUNMODE: mode of running ORYZA
RUNMODE = 'EXPERIMENT' ! ORYZA simulates particular experiment
*RUNMODE = 'EXPLORATION' ! ORYZA used for exploration

*-- PRODENV = Production situation setting
PRODENV = 'POTENTIAL' ! Potential production
*PRODENV = 'WATER BALANCE' ! Production may be water-limited

*-- WATBAL is choice of water balance
* needs only be given when PRODENV = 'WATER BALANCE'
WATBAL = 'PADDY' ! PADDY water balance (for lowland soils)
*WATBAL = 'SAHEL' ! SAHEL water balance (for freely draining upland soils)
*WATBAL = 'SAWAH' ! SAWAH water balance (for lowland or upland soils)

*-- NITROENV = Nitrogen production situation setting
NITROENV = 'POTENTIAL' ! Potential production
*NITROENV = 'NITROGEN BALANCE' ! Production may be nitrogen-limited

*-- ETMOD is method for evapotranspiration calculation:
ETMOD = 'PENMAN' ! Penman-based (Van Kraalingen & Stol,1996)
*ETMOD = 'PRIESTLEY TAYLOR' ! Priestley-Taylor (")
*ETMOD = 'MAKKINK' ! Makkink (Van Kraalingen & Stol, 1996)

*-----*
* 2. Timer data for simulation *
*-----*
IYEAR = 2020 ! Start year of simulation (year)
STTIME = 1. ! Start time (day number)
```

```

FINTIM = 1000.      ! Finish time (days after start)
DELT  = 1.          ! Time step (day)

*-----*
* 2. Weather station and climatic data for simulation      *
*-----*
WTRDIR = 'C:\COURSE\WEATHER\' ! Directory of weather data
CNTR  = 'MAROS'      ! Country code
ISTN  = 1           ! Station code

ANGA = 0.29         ! Angstrom A parameter
ANGB = 0.45         ! Angstrom B parameter

TMCTB = 0., 0.,    ! Table for temperature increase
        366., 0.    ! Climatic Change studies

FAOF  = 1.          ! Multipl. factor for pot. evapotranspiration (FAO)
        ! Value Murty & Tuong

TMPSB = 0.          ! Temperature increase in seed-bed due to cover:
        ! Zero when no cover over seed-bed; 9.5 with seed-bed

*-----*
* 3. Establishment data                                     *
*-----*
*-- ESTAB is method of establishment: 'TRANSPLANT' or 'DIRECT-SEED'
ESTAB='TRANSPLANT'
*ESTAB='DIRECT-SEED'

* Transplanting date Jan 8 (8), 2020; sowing date December 14;
EMD  = 1           ! Day of emergence (either direct, or in seed-bed)
EMYR = 2020        ! Year of emergence
SBDUR = 25         ! Seed-bed duration (days between emerging and transplanting)

*-----*
* 4. Management parameters                                 *
*-----*
NPLH  = 36.0       ! Number of plants per hill
NH    = 16.0       ! Number of hills/m2 (13 x 27 cm)
NPLSB = 1000.      ! Number of plants in seed-bed (???)
NPLDS = 165.       ! Number of plants/m2 direct-seeded

*-- Initial data at emergence, for either direct-seeding or seed-bed
* Standard data used.
LAPE  = 0.0001     ! Initial leaf area per plant
DVSI  = 0.0        ! Initial development stage
WLVGI = 0.0        ! Initial leaf weight
WSTI  = 0.0        ! Initial stem weight

```

WRTI = 0.0 ! Initial root weight
WSOI = 0.0 ! Initial weight storage organs
ZRTI = 0.0001 ! Initial root depth (m)

*-- Re-initialization at transplanting (standard data used)

ZRTTR = 0.05 ! Root depth at transplanting (m)

* 5. Irrigation switch:

* Need only to be filled-in when PRODENV = 'WATER BALANCE'

** Select from the following options:

SWITIR = 0 ! No irrigation; rainfed

*SWITIR = 1 ! Irrigation supplied as input data

*SWITIR = 2 ! Irrigation at minimum standing soil water depth

*SWITIR = 3 ! Irrigation at minimum soil water potential

*SWITIR = 4 ! Irrigation at minimum soil water content

*SWITIR = 5 ! Irrigation at X days after disapp. standing water

** If SWITIR = 1, supply irrigation table, amount of irrigation

** (y in mm) for a given calendar * day (x), used if

*RIRIT = 0., 20., 366., 20.

** If SWITIR = 2-5, supply amount of irrigation IRRI (mm)

*IRRI = 75. ! Irrigation gift (mm)

** If SWITIR = 2, supply minimum standing water depth WL0MIN (mm)

** below which irrigation water is applied

*WL0MIN = 10. ! Minimum standing water depth (mm)

** If SWITIR = 3-4, supply minimum soil water potential KPAMIN (KPa)

** (for SWITIR=3) or minimum soil water content WCMIN (-) (SWITIR=4)

** below which irrigation water is applied, and the soil layer to

** which this potential applies SLMIN (-)

*KPAMIN = 100. ! Minimum soil water potential (Kpa)

*WCMIN = 0.30 ! Minimum soil water content (-)

*SLMIN = 3 ! Soil layer for which KPAMIN or WCMIN applies (-)

** If SWITIR = 5, supply number of days after disappearance of

** standing water (WLODAY) at which irrigation water is applied

*WLODAY = 3 ! number of days after disappearance of (-) INTEGER!!

* 6. Nitrogen parameters

*

* Table of recovery fraction of Nitrogen in the soil (-) second column

* versus development stage (DVS) (first column) STANDARD VALUE

RECINIT =

0.0, 0.30,
0.2, 0.35,
0.4, 0.50,
0.8, 0.75,
1.0, 0.75,
2.5, 0.75

* NO DATA ON SOILSP: THIS 0.8 IS FOR IRRI CONDITIONS IN THE DS.....
SOILSP = 0.8 ! Indigenous soil N-supply rate (kg N/ha/d)

* Table of fertilizer rate (kg N/ha) (second column) versus days after sowing
* in the seed-bed (!) (first column)

FERTIL =

0., 0.,
25., 0.,
26., 60.,
27., 0.,
32., 0.,
33., 90.,
34., 0.,
86., 0.,
87., 38.,
88., 0.,
366., 0.

* 7. Measured data for model calibration and comparison *

* And option to force measured LAI during simulation *

* (instead of using simulated values) *

* Observed phenology: only required if program DRATES is run!!

IDOYTR = 2 ! Day of transplanting (give 0 if direct-seeded)

IYRTR = 2020 ! Year of transplanting (give 0 if direct-seeded)

IDOYPI = 62 ! Day of panicle initiation (estimated as same day as jointing)

IYRPI = 2020 ! Year of panicle initiation

IDOYFL = 75 ! Day of flowering

IYRFL = 2020 ! Year of flowering

IDOYM = 86 ! Day of maturity (estimated as 7 d before harvest)

IYRM = 2020 ! Year of maturity

*Leaf Area Index (m² leaf / m² ground):

LAI_OBS =

2020.0, 26.0, 0.5,

2020.0, 39.0, 1.5,

2020.0, 55.0, 2.0,

2020.0, 67.0, 3.7,

2020.0, 75.0, 6.4,

2020.0, 81.0, 4.9,

2020.0, 94.0, 5.0

*-- Parameter to set forcing of observed LAI during simulation

LAI_FRC = 0 ! No forcing

*LAI_FRC = 2 ! Forcing

*Green leaf dry wt (kg/ha)

WLVG_OBS =

2020.0, 26.0, 360.98,

2020.0, 39.0, 903.31,

2020.0, 55.0, 1245.57,

2020.0, 67.0, 2210.51,

2020.0, 75.0, 3439.89,

2020.0, 81.0, 3269.04,

2020.0, 94.0, 2582.57

*Dead leaf dry wt (kg/ha)

WLVD_OBS =

2020.0, 26.0, 0.0,

2020.0, 39.0, 0.0,

2020.0, 55.0, 0.0,

2020.0, 67.0, 108.0,

2020.0, 75.0, 169.60,

2020.0, 81.0, 299.52,

2020.0, 94.0, 421.87

*Stem dry wt (kg/ha)

WST_OBS =

2020.0, 26.0, 856.18,

2020.0, 39.0, 1203.02,

2020.0, 55.0, 3564.09,

2020.0, 67.0, 4118.40,

2020.0, 75.0, 5200.00,

2020.0, 81.0, 4503.82,

2020.0, 94.0, 4034.13

*Panicle dry wt (kg/ha)

WSO_OBS =

2020.0, 26.0, 0.0,

2020.0, 39.0, 0.0,

2020.0, 55.0, 0.0,

2020.0, 67.0, 0.0,

2020.0, 75.0, 933.33,

2020.0, 81.0, 2880.00,

2020.0, 94.0, 4298.67

*total dry wt (kg/ha)

WAGT_OBS =

2020.0, 26.0, 1446.49,
2020.0, 39.0, 3111.85,
2020.0, 55.0, 6103.88,
2020.0, 67.0, 8350.51,
2020.0, 75.0, 12322.03,
2020.0, 81.0, 15060.47,
2020.0, 94.0, 16848.34

*Leaf N (g N/g leaf):
*FNLV_OBS =

*Leaf N (g N/m² leaf):
*NFLV_OBS =

*-- Parameter to set forcing of observed NFLV values during simulation

*NFLV_FRC = 0 ! No forcing

*NFLV_FRC = 2 ! Forcing

3. CROP.DAT

* Crop data file for ORYZA2000 rice growth model *

* File name : MR219.D92 *

* Crop : Oryza sativa cv. MR219 *

* Experiment : Bantimurung, Maros *

* Information : Daniel Useng/Suhardi/Amaliah Kamila *

* 1. Phenological development parameters

TBD = 8. ! Base temperature for development (oC)

TBLV = 8. ! Base temperature for juvenile leaf area growth (oC)

TMD = 42. ! Maximum temperature for development (oC)

TOD = 30. ! Optimum temperature for development (oC)

DVRJ = .001939 ! Development rate in juvenile phase (oCd-1)

DVRI = .000658 ! Development rate in photoperiod-sensitive phase (oCd-1)

DVRP = .000586 ! Development rate in panicle development (oCd-1)

DVRR = .000984 ! Development rate in reproductive phase (oCd-1)

MOPP = 11.50 ! Maximum optimum photoperiod (h)

PPSE = 0.0 ! Photoperiod sensitivity (h-1)

SHCKD = 0.4 ! Relation between seedling age and delay in phenological
! development (oCd oCd-1)

* 2. Leaf and stem growth parameters

RGRLMX = 0.0085 ! Maximum relative growth rate of leaf area (oCd-1)

RGRLMN = 0.0040 ! Minimum relative growth rate of leaf area (oCd-1)

SHCKL = 0.25 ! Relation between seedling age and delay in leaf area
! development (oCd oCd-1)

* Switch to use SLA as table (give values below) or as fixed function

SWISLA = 'FUNCTION' ! Give function parameters ASLA, BSLA, CSLA, DSLA, SLAMAX

*SWISLA = 'TABLE' ! Give SLA as a function of DVS in the table SLATB

* If SWISLA='FUNCTION', supply SLA function parameters:

* $SLA = ASLA + BSLA * \exp(CSLA * (DVS - DSLA))$, and SLAMAX

ASLA = 0.0024 ! (-)

BSLA = 0.0025 ! (-)

CSLA = -4.5 ! (-)

DSLA = 0.14 ! (-)

SLAMAX = 0.0045 ! maximum value of SLA (ha/kg)

* If SWISLA='TABLE', supply table of specific leaf area (ha kg⁻¹; Y value)

* as a function of development stage (-; X value):

SLATB = 0.00, 0.0045,

0.16, 0.0045,

0.33, 0.0033,

0.65, 0.0028,

0.79, 0.0024,

2.10, 0.0023,

2.50, 0.0023

* Table of specific green stem area (ha kg⁻¹; Y value) as a function of

* development stage (-; X value):

SSGATB = 0.0, 0.0003,

0.9, 0.0003,

2.1, 0.0000,

2.5, 0.0000

* 3. Photosynthesis parameters

FRPAR = 0.5 ! fraction of sunlight energy that is

! photosynthetically active (-)

SCP = 0.2 ! Scattering coefficient of leaves for PAR (-)

CO2REF = 340. ! Reference level of atmospheric CO2 (ppm)

CO2 = 340. ! Ambient CO2 concentration (ppm)

* Table of light extinction coefficient for leaves (-; Y-value) as a function

* of development stage (-; X value):

KDFTB = 0.00, 0.4,

0.65, 0.4,

1.00, 0.6,

2.50, 0.6

* Table of extinction coefficient of N profile in the canopy (-; Y-value)

* as a function of development stage (-; X value):

KNFTB = 0.0, 0.4,

2.5, 0.4

* Table of light use efficiency (-; Y-value) as a function of
* temperature (oC; X value):

EFFTB = 0.,0.54,
10.,0.54,
40.,0.36

* Table of effect of temperature on AMAX (-; Y-value) as a function of
* temperature (oC; X value):

REDFTT = -10., 0.,
10., 0.,
20., 1.,
37., 1.,
43., 0.

* Table of N fraction in leaves on leaf area basis (g N m⁻² leaf; Y-value)
* as a function of development stage (-; X value):

NFLVTB = 0.00, 0.54,
0.16, 0.54,
0.33, 1.53,
0.65, 1.22,
0.79, 1.56,
1.00, 1.29,
1.46, 1.37,
2.02, 0.83,
2.50, 0.83

* 4. Maintenance parameters

* Maintenance respiration coefficient (kg CH₂O kg⁻¹ DM d⁻¹) of:

MAINLV = 0.02 ! Leaves
MAINST = 0.015 ! Stems
MAINSO = 0.003 ! Storage organs (panicles)
MAINRT = 0.01 ! Roots

TREF = 25. ! Reference temperature (oC)

Q10 = 2. ! Factor accounting for increase in maintenance
! respiration with a 10 oC rise in temperature (-)

* 5. Growth respiration parameters

* Carbohydrate requirement for dry matter production (kg CH₂O kg⁻¹ DM leaf) of:

CRGLV = 1.326 ! Leaves
CRGST = 1.326 ! Stems
CRGSO = 1.462 ! Storage organs (panicles)
CRGRT = 1.326 ! Roots
CRGSTR = 1.11 ! Stem reserves

LRSTR = 0.947 ! Fraction of allocated stem reserves that is
! available for growth (-)

* 6. Growth parameters

FSTR = 0.20 ! Fraction of carbohydrates allocated to stems that
! is stored as reserves (-)

TCLSTR = 10. ! Time coefficient for loss of stem reserves (1 d-1)

SPGF = 64900. ! Spikelet growth factor (no kg-1)

WGRMX = 0.0000249 ! Maximum individual grain weight (kg grain-1)

* Partitioning tables

* Table of fraction total dry matter partitioned to the shoot (-; Y-value)

* as a function of development stage (-; X value):

FSHTB = 0.00, 0.50,
0.43, 0.75,
1.00, 1.00,
2.50, 1.00

* Table of fraction shoot dry matter partitioned to the leaves (-; Y-value)

* as a function of development stage (-; X value):

FLVTB = 0.000, 0.60,
0.500, 0.60,
0.750, 0.30,
1.000, 0.00,
1.200, 0.00,
2.5 , 0.

* Table of fraction shoot dry matter partitioned to the stems (-; Y-value)

* as a function of development stage (-; X value):

FSTTB = 0.000, 0.40,
0.500, 0.40,
0.750, 0.70,
1.000, 0.40,
1.200, 0.00,
2.5 , 0.

* Table of fraction shoot dry matter partitioned to the panicles (-; Y-value)

* as a function of development stage (-; X value):

FSOTB = 0.000, 0.000,
0.500, 0.000,
0.750, 0.000,
1.000, 0.600,
1.200, 1.000,
2.5 , 1.

* Table of leaf death coefficient (d-1; Y-value) as a function of development

* stage (-; X value):

DRLVT = 0.00, 0.000,
0.60, 0.000,
1.00, 0.015,
1.60, 0.025,

2.10, 0.050,
2.50, 0.050

* 7. Carbon balance parameters

* Mass fraction carbon (kg C kg⁻¹ DM) in the:

FCLV = 0.419 ! Leaves

FCST = 0.431 ! Stems

FCSO = 0.487 ! Storage organs (panicles)

FCRT = 0.431 ! Roots

FCSTR = 0.444 ! Stem reserves

* 8. Root parameters

GZRT = 0.01 ! Growth rate of roots (m d⁻¹)

ZRTMCW = 0.25 ! Maximum depth of roots if no drought stress (m)

ZRTMCD = 0.40 ! Maximum depth of roots if drought (m)

* 9. Drought stress parameters

* Upper and lower limits for drought stress effects

ULLS = 74.13 ! Upper limit leaf rolling (kPa)

LLLS = 794.33 ! Lower limit leaf rolling (kPa)

ULDL = 630.95 ! Upper limit death of leaves (kPa)

LLDL = 1584.89 ! Lower limit death of leaves (kPa)

ULLE = 1.45 ! Upper limit leaf expansion (kPa)

LLLE = 1404. ! Lower limit leaf expansion (kPa)

ULRT = 74.13 ! Upper limit relative transpiration reduction (kPa)

LLRT = 1584.89 ! Lower limit relative transpiration reduction (kPa)

* Switch to use ULTR and LLTR as given above or function built in ORYZA

* for the reduction in relative transpiration:

*SWIRTR = 'DATA' ! Use data

SWIRTR = 'FUNCTION' ! Use function

*=====

* Drought stress effect parameters for aerobic rice *

* Values are for wheat, taken from SUCROS2 model *

*=====

* characteristic potential transpiration rate at a soil water

* content halfway wilting point and field capacity (mm.d⁻¹)

TRANSC = 6.

* Root activity coefficient (-)

EDPTFT = 0.,0.15, 0.15,0.6, 0.3,0.8, 0.5,1., 1.1,1.

*=====

* 10. Nitrogen parameters

NMAXUP = 8. ! Maximum daily N uptake (kg N ha⁻¹ d⁻¹)

RFNLV = 0.004 ! Residual N fraction of leaves (kg N kg-1 leaves)
FNTRT = 0.15 ! Fraction N translocation from roots, as (additional)
! fraction of total N translocation from stems and leaves (-)
RFNST = 0.0015 ! Residual N fraction of stems (kg N kg-1 stems)
TCNTRF = 10. ! Time coefficient for N translocation to grains (d)
NFLVI = 0.5 ! Initial leaf N fraction (on area basis: g N m-2 leaf)
FNLVI = 0.025 ! Initial leaf N fraction (on weight basis: kg N kg-1 leaf)

NMAXSO = 0.0175 ! Maximum N concentration in storage organs (kg N kg-1)
* Table of minimum N concentration in storage organs (kg N kg-1 DM; Y value)
* as a function of the amount of N in the crop till flowering (kg N ha-1; X value):

NMINSOT = 0., .006,
50., .0008,
150., .0125,
250., .015,
400., .017,
1000., .017

* Table of maximum leaf N fraction on weight basis (kg N kg-1 leaves; Y value)
* as a function of development stage (-; X value):

NMAXLT = 0.0, .053,
0.4, .053,
0.75, .040,
1.0, .028,
2.0, .022,
2.5, .015

* Table of minimum leaf N fraction on weight basis (kg N kg-1 leaves; Y value)
* as a function of development stage (-; X value):

NMINLT = 0.0, 0.025,
1.0, 0.012,
2.1, 0.007,
2.5, 0.007

*--- Table of effect of N stress on leaf death rate (-; Y value)

* as a function of N stress level (-; X value):

NSLLVT = 0., 1.0,
1.1, 1.0,
1.5, 1.4,
2.0, 1.5,
2.5, 1.5

4. WEATHER.LOG

* Station Name: MAROS.020
* Author: Climate Unit, Maros nil value: -99.
* Source:
* Comments: This file is extracted from CLICOM database.
* Longitude: 118 34 E Latitude: -5 39 N Altitude: 13.0 m

```

*
* Date: January-April 2020
*
* Column  Daily Value
* 1  Station number
* 2  Year
* 3  Day
* 4  irradiance      KJ m-2 d-1
* 5  min temperature  oC
* 6  max temperature  oC
* 7  vapor pressure   kPa
* 8  mean wind speed  m s-1
* 9  precipitation    mm d-1
*-----
121.25, 14.18, 21.00, 0.000, 0.000
1,2020, 1, 19440.00, 24.80, 30.60, 3.16, 2.10, 0.00
1,2020, 2, 19836.00, 24.80, 28.40, 3.10, 1.50, 13.00
1,2020, 3, 20016.00, 23.60, 26.00, 3.00, 1.50, 36.00
1,2020, 4, 19800.00, 24.40, 30.70, 3.09, 2.10, 25.00
1,2020, 5, 19800.00, 23.40, 30.80, 2.93, 2.10, 5.00
1,2020, 6, 19800.00, 23.20, 28.60, 3.00, 1.50, 50.00
1,2020, 7, 19800.00, 24.80, 28.00, 3.06, 1.50, 10.00
1,2020, 8, 19404.00, 24.40, 30.80, 3.24, 2.10, 39.00
1,2020, 9, 20052.00, 25.60, 30.10, 3.16, 1.50, 0.00
1,2020, 10, 20196.00, 24.40, 31.00, 3.06, 1.50, 4.00
1,2020, 11, 20880.00, 24.20, 30.60, 3.09, 2.60, 0.00
1,2020, 12, 20340.00, 23.20, 25.60, 2.91, 2.10, 82.00
1,2020, 13, 19692.00, 23.60, 30.80, 3.08, 2.10, 111.00
1,2020, 14, 19476.00, 24.90, 32.50, 3.03, 1.50, 0.00
1,2020, 15, 20232.00, 25.30, 31.00, 3.06, 1.50, 0.00
1,2020, 16, 20124.00, 24.80, 31.50, 3.04, 1.50, 7.00
1,2020, 17, 19944.00, 24.90, 31.60, 2.91, 2.10, 0.00
1,2020, 18, 19980.00, 25.60, 31.80, 3.14, 1.50, 0.00
1,2020, 19, 19728.00, 25.40, 32.00, 3.06, 1.50, 0.00
1,2020, 20, 20448.00, 26.00, 31.80, 3.14, 1.50, 2.00
1,2020, 21, 21528.00, 25.20, 32.30, 3.06, 1.50, 3.00
1,2020, 22, 21420.00, 25.60, 32.20, 3.07, 2.10, 0.00
1,2020, 23, 21780.00, 25.40, 31.80, 3.04, 2.10, 0.00
1,2020, 24, 20448.00, 25.00, 32.00, 3.08, 1.50, 21.00
1,2020, 25, 20664.00, 24.90, 32.40, 3.09, 2.10, 1.00
1,2020, 26, 20664.00, 25.00, 31.60, 3.16, 1.00, 0.00
1,2020, 27, 21456.00, 26.20, 32.00, 3.26, 1.50, 0.00
1,2020, 28, 21528.00, 26.00, 32.00, 3.22, 1.50, 0.00
1,2020, 29, 21492.00, 26.00, 32.00, 3.30, 2.10, 0.00
1,2020, 30, 21348.00, 26.40, 32.00, 3.18, 3.60, 0.00
1,2020, 31, 21168.00, 24.40, 30.70, 3.07, 1.50, 126.00
1,2020, 32, 21168.00, 24.20, 27.90, 2.96, 1.00, 30.00
1,2020, 33, 21348.00, 24.10, 31.60, 3.02, 1.50, 10.00

```

1,2020, 34, 22500.00, 24.60, 32.00, 3.13, 1.50, 0.00
1,2020, 35, 22356.00, 25.20, 30.80, 3.20, 1.50, 9.00
1,2020, 36, 22140.00, 25.00, 31.00, 3.15, 1.50, 0.00
1,2020, 37, 21708.00, 25.80, 31.50, 3.24, 1.60, 28.00
1,2020, 38, 21852.00, 24.40, 29.40, 3.13, 1.50, 30.00
1,2020, 39, 21636.00, 24.00, 29.80, 3.11, 1.00, 80.00
1,2020, 40, 21636.00, 24.20, 29.60, 2.94, 2.10, 0.00
1,2020, 41, 21924.00, 24.00, 29.60, 3.04, 1.50, 10.00
1,2020, 42, 22644.00, 24.80, 31.00, 3.15, 1.50, 15.00
1,2020, 43, 23544.00, 24.60, 29.50, 3.02, 1.00, 0.00
1,2020, 44, 22644.00, 24.20, 32.00, 3.08, 1.00, 0.00
1,2020, 45, 22932.00, 25.20, 31.80, 3.24, 1.50, 0.00
1,2020, 46, 23472.00, 25.00, 32.00, 3.17, 1.50, 0.00
1,2020, 47, 23544.00, 25.50, 30.80, 3.22, 2.10, 0.00
1,2020, 48, 23436.00, 24.00, 30.80, 3.05, 2.10, 39.00
1,2020, 49, 23040.00, 24.00, 28.10, 3.03, 1.50, 63.00
1,2020, 50, 23616.00, 23.80, 29.20, 2.98, 1.50, 38.00
1,2020, 51, 23580.00, 24.00, 30.40, 3.01, 1.50, 13.00
1,2020, 52, 23832.00, 24.00, 31.20, 3.11, 1.50, 34.00
1,2020, 53, 24228.00, 24.80, 29.20, 3.18, 1.00, 16.00
1,2020, 54, 24120.00, 24.40, 30.20, 3.20, 1.00, 6.00
1,2020, 55, 23868.00, 25.40, 32.20, 3.38, 1.50, 0.00
1,2020, 56, 24084.00, 25.80, 31.70, 3.34, 1.50, 0.00
1,2020, 57, 23724.00, 25.60, 31.40, 3.45, 1.50, 0.00
1,2020, 58, 24300.00, 25.30, 29.80, 3.20, 1.00, 15.00
1,2020, 59, 24336.00, 25.00, 30.60, 3.19, 1.50, 2.00
1,2020, 60, 24084.00, 25.20, 30.60, 3.26, 1.50, 16.00
1,2020, 61, 25020.00, 25.00, 30.40, 2.99, 1.50, 0.00
1,2020, 62, 24876.00, 25.40, 31.80, 2.88, 1.00, 3.00
1,2020, 63, 25056.00, 25.40, 31.20, 3.11, 2.10, 1.00
1,2020, 64, 25020.00, 25.00, 29.70, 2.96, 1.50, 36.00
1,2020, 65, 24732.00, 24.40, 29.40, 3.01, 1.50, 17.00
1,2020, 66, 24300.00, 23.80, 29.60, 2.77, 1.50, 117.00
1,2020, 67, 24228.00, 24.40, 30.50, 2.85, 1.50, 2.00
1,2020, 68, 24588.00, 24.20, 30.20, 3.00, 1.00, 9.00
1,2020, 69, 24516.00, 24.00, 31.20, 2.70, 1.50, 11.00
1,2020, 70, 24732.00, 24.60, 31.60, 2.88, 1.50, 0.00
1,2020, 71, 24588.00, 25.00, 32.50, 2.92, 1.50, 0.00
1,2020, 72, 24516.00, 25.00, 31.80, 2.93, 1.00, 0.00
1,2020, 73, 24732.00, 24.40, 32.20, 2.88, 1.50, 0.00
1,2020, 74, 25020.00, 24.60, 29.50, 3.07, 1.00, 3.00
1,2020, 75, 25848.00, 24.20, 31.20, 3.09, 1.50, 0.00
1,2020, 76, 26100.00, 25.20, 31.80, 3.18, 1.50, 0.00
1,2020, 77, 25884.00, 25.00, 32.40, 3.09, 1.50, 0.00
1,2020, 78, 25452.00, 24.00, 31.90, 2.95, 1.50, 0.00
1,2020, 79, 24156.00, 24.80, 31.60, 3.08, 1.50, 0.00
1,2020, 80, 25272.00, 24.40, 30.80, 3.04, 1.50, 2.00
1,2020, 81, 25848.00, 24.00, 30.80, 3.06, 2.10, 30.00

1,2020, 82, 25848.00, 23.80, 31.00, 3.04, 1.00, 40.00
 1,2020, 83, 26064.00, 24.60, 31.20, 2.99, 1.50, 0.00
 1,2020, 84, 26244.00, 24.40, 31.00, 3.13, 2.10, 0.00
 1,2020, 85, 26280.00, 24.80, 32.00, 2.91, 1.50, 0.00
 1,2020, 86, 26604.00, 24.80, 31.80, 3.07, 1.50, 0.00
 1,2020, 87, 26712.00, 26.20, 33.00, 3.22, 1.00, 0.00
 1,2020, 88, 26784.00, 25.30, 31.20, 3.18, 1.50, 0.00
 1,2020, 89, 26856.00, 24.60, 31.20, 3.11, 1.00, 18.00
 1,2020, 90, 25956.00, 25.40, 30.80, 3.17, 1.50, 0.00
 1,2020, 91, 26280.00, 24.00, 29.60, 3.02, 1.50, 0.00
 1,2020, 92, 26388.00, 24.90, 32.60, 3.15, 1.00, 19.00
 1,2020, 93, 26532.00, 24.20, 32.00, 3.06, 1.50, 0.00
 1,2020, 94, 27396.00, 25.00, 32.00, 3.24, 1.50, 0.00
 1,2020, 95, 26964.00, 25.00, 32.40, 3.17, 1.50, 0.00
 1,2020, 96, 27036.00, 24.60, 32.40, 3.10, 1.50, 0.00
 1,2020, 97, 26640.00, 26.00, 32.10, 3.22, 2.10, 0.00
 1,2020, 98, 26568.00, 24.40, 27.10, 3.08, 1.50, 10.00
 1,2020, 99, 27396.00, 25.00, 31.30, 3.15, 1.00, 9.00
 1,2020,100, 26604.00, 23.40, 32.40, 3.08, 1.50, 0.00
 1,2020,101, 26856.00, 24.60, 31.20, 3.11, 1.50, 0.00
 1,2020,102, 26812.00, 25.00, 31.20, 3.20, 1.50, 0.00
 1,2020,103, 26208.00, 24.80, 32.30, 3.30, 1.50, 7.00
 1,2020,104, 26208.00, 25.20, 32.30, 3.28, 1.50, 3.00
 1,2020,105, 26136.00, 24.80, 31.60, 3.34, 1.50, 0.00
 1,2020,106, 25092.00, 25.70, 31.80, 3.28, 1.00, 0.00
 1,2020,107, 24876.00, 25.90, 31.80, 3.28, 1.50, 0.00
 1,2020,108, 24876.00, 25.20, 31.80, 3.20, 1.50, 22.00
 1,2020,109, 26352.00, 25.20, 31.40, 3.15, 1.50, 3.00
 1,2020,110, 26172.00, 25.20, 31.20, 3.15, 1.50, 0.00
 1,2020,111, 26388.00, 23.80, 31.70, 3.06, 1.50, 33.00
 1,2020,112, 20158.00, 25.50, 34.10, 2.99, 1.70, 0.00
 1,2020,113, 21742.00, 23.70, 35.40, 3.14, 1.00, 0.00
 1,2020,114, 21598.00, 24.10, 33.60, 3.14, 1.70, 0.00
 1,2020,115, 24226.00, 24.10, 32.50, 2.98, 2.50, 1.40
 1,2020,116, 24298.00, 24.40, 33.00, 2.91, 2.20, 0.60
 1,2020,117, 25558.00, 24.40, 32.80, 2.98, 2.30, 0.00
 1,2020,118, 21634.00, 24.40, 33.00, 2.94, 1.30, 0.00
 1,2020,119, 21238.00, 24.90, 33.00, 2.92, 1.90, 0.00
 1,2020,120, 24478.00, 24.00, 33.00, 2.77, 1.90, 0.00
 1,2020,121, 24478.00, 24.00, 33.90, 2.94, 1.50, 0.00
 1,2020,122, 23326.00, 25.00, 33.50, 2.89, 2.10, 0.00
 1,2020,123, 25990.00, 24.30, 31.70, 2.49, 2.40, 0.00
 1,2020,124, 25666.00, 23.00, 32.50, 2.78, 2.80, 0.00
 1,2020,125, 16523.00, 23.60, 33.00, 2.77, 2.10, 0.00
 1,2020,126, 24514.00, 25.50, 33.10, 2.82, 2.40, 0.00
 1,2020,127, 23110.00, 23.60, 32.80, 2.79, 2.30, 0.00
 1,2020,128, 22894.00, 24.90, 33.00, 2.82, 1.80, 0.00
 1,2020,129, 18503.00, 23.70, 34.00, 3.04, 1.20, 0.10

1,2020,130, 23506.00, 25.00, 34.50, 3.09, 1.40, 0.00
 1,2020,131, 19078.00, 25.00, 33.10, 3.09, 1.10, 0.00
 1,2020,132, 24010.00, 24.70, 33.10, 2.91, 2.30, 0.00
 1,2020,133, 15587.00, 25.00, 32.20, 2.94, 1.60, 18.00
 1,2020,134, 25666.00, 24.80, 32.10, 3.01, 2.30, 0.00
 1,2020,135, 21058.00, 25.00, 33.50, 3.04, 1.90, 4.60
 1,2020,136, 22534.00, 25.10, 33.70, 2.97, 1.40, 0.00
 1,2020,137, 21706.00, 25.10, 34.50, 3.09, 1.20, 0.00
 1,2020,138, 16739.00, 25.20, 33.70, 3.19, 1.20, 0.00
 1,2020,139, 21418.00, 24.40, 34.00, 3.24, 1.60, 6.00
 1,2020,140, 18862.00, 24.50, 32.70, 3.11, 1.20, 0.00
 1,2020,141, 21958.00, 23.70, 34.00, 3.05, 1.50, 2.60
 1,2020,142, 16811.00, 24.60, 33.30, 3.25, 1.00, 1.40
 1,2020,143, 16163.00, 24.80, 32.70, 3.24, 1.00, 2.60
 1,2020,144, 14975.00, 23.60, 32.50, 3.01, 1.10, 3.40
 1,2020,145, 21562.00, 23.50, 34.50, 2.84, 1.10, 0.00
 1,2020,146, 17027.00, 25.10, 33.50, 3.19, 0.90, 0.00
 1,2020,147, 20482.00, 24.20, 34.20, 2.96, 1.10, 0.00
 1,2020,148, 17891.00, 24.00, 35.50, 3.18, 1.40, 41.20
 1,2020,149, 23434.00, 24.50, 33.10, 3.21, 1.50, 23.40
 1,2020,150, 17423.00, 24.50, 33.00, 3.06, 1.00, 0.40
 1,2020,151, 12779.00, 25.00, 31.90, 3.00, 1.20, 1.40
 1,2020,152, 13247.00, 24.90, 33.10, 3.28, 1.30, 0.00
 1,2020,153, 13931.00, 25.70, 32.00, 2.92, 1.20, 2.40
 1,2020,154, 15515.00, 24.60, 32.30, 3.02, 0.90, 0.00
 1,2020,155, 24154.00, 25.20, 34.20, 2.98, 1.50, 0.00
 1,2020,156, 22534.00, 24.50, 34.30, 3.18, 1.20, 0.00
 1,2020,157, 23974.00, 23.70, 35.00, 3.09, 1.40, 0.00
 1,2020,158, 20158.00, 25.50, 34.50, 3.20, 1.50, 0.00
 1,2020,159, 19798.00, 26.40, 34.60, 3.10, 1.50, 5.90
 1,2020,160, 18934.00, 24.60, 33.50, 2.84, 1.30, 0.00
 1,2020,161, 20230.00, 25.60, 34.20, 2.88, 1.60, 0.00
 1,2020,162, 18575.00, 25.00, 34.00, 2.98, 1.40, 2.50
 1,2020,163, 22498.00, 25.50, 33.50, 3.14, 2.00, 0.00
 1,2020,164, 19942.00, 25.60, 33.60, 3.07, 1.40, 0.50
 1,2020,165, 20842.00, 25.10, 34.50, 3.09, 1.40, 0.10
 1,2020,166, 21670.00, 25.50, 34.00, 3.15, 1.60, 2.90
 1,2020,167, 20302.00, 24.50, 33.80, 3.19, 1.50, 0.00
 1,2020,168, 18934.00, 25.50, 32.80, 3.01, 1.30, 0.20
 1,2020,169, 22462.00, 25.00, 34.30, 3.01, 1.20, 0.00
 1,2020,170, 18467.00, 25.10, 34.50, 3.07, 1.20, 0.20
 1,2020,171, 22606.00, 25.20, 34.60, 3.04, 1.50, 0.00
 1,2020,172, 12563.00, 25.50, 32.00, 2.99, 1.20, 31.90
 1,2020,173, 17927.00, 24.60, 33.80, 3.16, 1.00, 7.10
 1,2020,174, 18179.00, 25.00, 33.80, 3.10, 1.00, 0.00
 1,2020,175, 12923.00, 25.20, 32.60, 3.20, 1.20, 1.60
 1,2020,176, 15911.00, 23.90, 32.40, 3.12, 2.30, 0.00
 1,2020,177, 11447.00, 26.20, 30.50, 3.09, 1.80, 0.00

1,2020,178, 6371.00, 25.70, 29.00, 2.93, 2.10, 3.40
1,2020,179, 11195.00, 25.50, 31.50, 2.66, 1.70, 4.70
1,2020,180, 21562.00, 24.50, 33.40, 2.96, 1.50, 0.00
1,2020,181, 21382.00, 23.60, 34.10, 2.84, 1.70, 0.00
1,2020,182, 16811.00, 26.00, 32.20, 3.14, 1.30, 0.00
1,2020,183, 12419.00, 25.40, 30.00, 2.98, 1.20, 2.20
1,2020,184, 13535.00, 24.00, 30.00, 2.89, 1.20, 0.30
1,2020,185, 19654.00, 22.20, 33.00, 2.92, 1.40, 0.00
1,2020,186, 20626.00, 23.50, 34.10, 3.16, 1.20, 0.00
1,2020,187, 21742.00, 23.10, 33.50, 3.14, 1.20, 9.60
1,2020,188, 21418.00, 22.40, 32.90, 3.12, 1.20, 0.00
1,2020,189, 22102.00, 22.20, 33.20, 2.92, 0.90, 0.00
1,2020,190, 22786.00, 23.70, 34.60, 3.04, 1.20, 0.00
1,2020,191, 23110.00, 24.00, 33.30, 3.06, 2.10, 0.00
1,2020,192, 8387.00, 25.70, 30.20, 3.02, 1.10, 13.40
1,2020,193, 5256.00, 25.00, 29.00, 2.92, 2.40, 4.80
1,2020,194, 17279.00, 24.60, 33.00, 3.05, 1.60, 42.10
1,2020,195, 14579.00, 22.80, 31.40, 2.77, 1.10, 4.20
1,2020,196, 13031.00, 23.80, 30.10, 3.02, 1.00, 28.60
1,2020,197, 13211.00, 23.10, 30.30, 2.98, 0.80, 5.00
1,2020,198, 18647.00, 22.90, 31.80, 3.12, 1.80, 0.00
1,2020,199, 18251.00, 23.80, 32.00, 3.03, 1.00, 0.00
1,2020,200, 10619.00, 23.50, 31.20, 2.98, 1.00, 3.40
1,2020,201, 4320.00, 23.60, 27.00, 2.95, 1.10, 51.60
1,2020,202, 4032.00, 24.50, 26.60, 2.90, 1.90, 30.80
1,2020,203, 15047.00, 23.30, 30.80, 2.82, 1.30, 0.20
1,2020,204, 18611.00, 23.70, 31.20, 2.96, 1.60, 0.00
1,2020,205, 16343.00, 22.90, 32.00, 2.93, 0.80, 3.10
1,2020,206, 14651.00, 24.30, 30.70, 2.83, 1.20, 1.60
1,2020,207, 14399.00, 23.70, 31.10, 2.74, 1.20, 43.20
1,2020,208, 10943.00, 24.50, 31.00, 2.92, 0.90, 1.10
1,2020,209, 17783.00, 23.70, 31.70, 2.99, 1.10, 33.10
1,2020,210, 15443.00, 23.20, 31.10, 3.01, 1.20, 37.50
1,2020,211, 17819.00, 23.80, 31.00, 3.08, 1.30, 62.80
1,2020,212, 19870.00, 23.80, 32.00, 2.98, 1.00, 16.90
1,2020,213, 15443.00, 23.50, 30.60, 3.02, 0.80, 0.70
1,2020,214, 16991.00, 24.00, 32.20, 2.97, 1.00, 2.00
1,2020,215, 19222.00, 23.60, 32.10, 3.16, 0.90, 0.50
1,2020,216, 20986.00, 24.00, 33.50, 3.16, 1.10, 0.40
1,2020,217, 15443.00, 24.40, 32.00, 2.99, 0.80, 5.80
1,2020,218, 24982.00, 23.00, 32.60, 2.94, 1.20, 0.00
1,2020,219, 24334.00, 24.00, 33.00, 3.01, 1.20, 0.00
1,2020,220, 21778.00, 24.00, 32.50, 3.04, 1.00, 0.00
1,2020,221, 18754.00, 24.00, 33.00, 3.07, 1.10, 5.60
1,2020,222, 8963.00, 23.70, 29.50, 3.07, 1.30, 4.70
1,2020,223, 16631.00, 23.60, 30.70, 2.81, 1.00, 1.80
1,2020,224, 24118.00, 22.70, 31.00, 2.64, 1.10, 0.00
1,2020,225, 27142.00, 24.00, 32.10, 2.97, 1.30, 0.00

1,2020,226, 17207.00, 23.50, 31.10, 3.14, 0.90, 0.20
1,2020,227, 18107.00, 23.60, 31.60, 2.88, 2.00, 3.80
1,2020,228, 16415.00, 24.70, 31.10, 2.99, 2.20, 16.90
1,2020,229, 11987.00, 24.40, 30.00, 2.71, 2.20, 18.60
1,2020,230, 7883.00, 25.10, 29.50, 2.91, 2.60, 64.00
1,2020,231, 7163.00, 23.70, 28.30, 2.91, 3.10, 30.60
1,2020,232, 3816.00, 24.40, 28.40, 2.95, 1.90, 18.40
1,2020,233, 2268.00, 25.60, 28.60, 3.11, 1.90, 39.90
1,2020,234, 10871.00, 24.00, 31.50, 2.94, 1.40, 3.40
1,2020,235, 15011.00, 24.50, 30.80, 3.00, 1.10, 0.00
1,2020,236, 19078.00, 23.60, 32.90, 3.02, 1.10, 0.00
1,2020,237, 24370.00, 23.60, 32.90, 3.06, 1.20, 0.00
1,2020,238, 12275.00, 24.40, 32.50, 2.99, 1.10, 2.50
1,2020,239, 5148.00, 24.80, 30.00, 3.06, 1.80, 39.00
1,2020,240, 2412.00, 23.70, 28.10, 3.05, 2.90, 19.60
1,2020,241, 13607.00, 23.80, 30.50, 2.95, 6.60, 3.70
1,2020,242, 11519.00, 26.80, 30.20, 2.85, 6.80, 13.00
1,2020,243, 12995.00, 26.50, 30.20, 3.07, 6.00, 6.00
1,2020,244, 12743.00, 26.00, 31.50, 3.00, 2.90, 2.00
1,2020,245, 16595.00, 26.60, 33.00, 3.41, 1.90, 2.10
1,2020,246, 13499.00, 26.30, 32.20, 3.15, 1.40, 2.30
1,2020,247, 13103.00, 26.40, 31.00, 2.98, 2.40, 0.80
1,2020,248, 10511.00, 27.00, 30.00, 2.99, 2.30, 0.00
1,2020,249, 16199.00, 27.00, 32.00, 3.02, 1.80, 3.20
1,2020,250, 17207.00, 23.60, 32.50, 2.92, 1.00, 0.00
1,2020,251, 17963.00, 23.50, 31.40, 3.16, 0.80, 1.30
1,2020,252, 14939.00, 23.70, 30.50, 3.20, 0.80, 2.80
1,2020,253, 15227.00, 23.80, 31.00, 3.18, 0.90, 9.50
1,2020,254, 17423.00, 23.20, 31.00, 3.06, 1.00, 30.00
1,2020,255, 16559.00, 23.60, 31.50, 3.05, 0.90, 3.00
1,2020,256, 23254.00, 23.20, 31.90, 3.05, 1.40, 0.00
1,2020,257, 25306.00, 23.00, 31.70, 3.03, 1.00, 0.00
1,2020,258, 19906.00, 23.50, 32.50, 3.13, 1.20, 10.60
1,2020,259, 11339.00, 24.30, 30.20, 3.11, 0.90, 57.10
1,2020,260, 18647.00, 23.30, 32.00, 2.93, 1.00, 0.30
1,2020,261, 15623.00, 23.50, 31.80, 3.03, 0.80, 33.80
1,2020,262, 16811.00, 23.50, 30.60, 3.02, 1.20, 2.90
1,2020,263, 20086.00, 23.00, 31.50, 2.91, 0.90, 1.00
1,2020,264, 8387.00, 24.10, 29.60, 3.08, 3.90, 25.40
1,2020,265, 4788.00, 24.50, 28.20, 2.82, 3.30, 29.30
1,2020,266, 14687.00, 24.40, 31.50, 2.78, 1.10, 0.00
1,2020,267, 21742.00, 23.70, 31.60, 2.98, 0.80, 0.00
1,2020,268, 25306.00, 23.60, 33.10, 3.12, 1.00, 0.00
1,2020,269, 23542.00, 24.00, 32.50, 2.97, 1.30, 0.30
1,2020,270, 24838.00, 24.40, 31.20, 2.95, 1.70, 0.00
1,2020,271, 13715.00, 24.50, 30.50, 3.04, 0.90, 6.70
1,2020,272, 21994.00, 24.70, 32.70, 3.12, 0.90, 0.00
1,2020,273, 16595.00, 24.50, 32.50, 3.08, 0.80, 0.00

1,2020,274, 17423.00, 23.60, 31.50, 2.86, 1.30, 3.60
 1,2020,275, 21238.00, 24.60, 31.70, 3.16, 1.20, 1.00
 1,2020,276, 20446.00, 24.50, 31.50, 3.13, 1.50, 0.00
 1,2020,277, 21526.00, 24.30, 31.70, 2.96, 1.50, 2.30
 1,2020,278, 18754.00, 24.00, 31.50, 3.06, 0.90, 0.00
 1,2020,279, 17999.00, 24.00, 30.60, 2.98, 1.20, 0.30
 1,2020,280, 15407.00, 24.00, 30.10, 2.92, 1.40, 12.10
 1,2020,281, 17387.00, 24.50, 31.10, 2.97, 1.50, 0.20
 1,2020,282, 23362.00, 24.60, 31.00, 2.87, 1.90, 0.40
 1,2020,283, 11375.00, 24.70, 30.00, 2.95, 1.00, 0.20
 1,2020,284, 16991.00, 23.50, 30.50, 2.92, 0.90, 0.00
 1,2020,285, 20158.00, 24.30, 32.80, 3.08, 0.90, 0.00
 1,2020,286, 22138.00, 23.60, 33.40, 2.89, 1.10, 0.00
 1,2020,287, 20770.00, 24.60, 32.70, 2.96, 1.30, 0.00
 1,2020,288, 16703.00, 24.50, 32.10, 3.04, 1.30, 3.30
 1,2020,289, 17387.00, 23.40, 30.70, 2.84, 2.10, 0.60
 1,2020,290, 20158.00, 24.60, 32.10, 2.91, 1.90, 0.30
 1,2020,291, 16631.00, 24.50, 31.30, 3.01, 1.60, 1.20
 1,2020,292, 15875.00, 24.50, 31.00, 2.84, 1.40, 19.70
 1,2020,293, 15695.00, 23.10, 31.20, 2.94, 0.90, 29.60
 1,2020,294, 23290.00, 23.00, 31.50, 2.79, 1.40, 0.00
 1,2020,295, 16055.00, 24.10, 31.70, 2.79, 1.00, 0.00
 1,2020,296, 12383.00, 24.50, 30.10, 2.80, 1.10, 0.00
 1,2020,297, 9755.00, 23.90, 29.50, 2.80, 0.60, 0.50
 1,2020,298, 11231.00, 24.60, 29.50, 2.98, 1.10, 0.00
 1,2020,299, 2736.00, 24.00, 26.50, 2.38, 2.10, 74.00
 1,2020,300, 8351.00, 22.00, 28.70, 2.91, 2.30, 4.00
 1,2020,301, 11879.00, 24.40, 32.00, 2.83, 0.80, 10.90
 1,2020,302, 21634.00, 23.50, 32.00, 2.97, 1.30, 0.00
 1,2020,303, 22426.00, 24.00, 32.00, 2.99, 1.30, 0.00
 1,2020,304, 14723.00, 23.30, 31.00, 2.90, 1.10, 2.40
 1,2020,305, 16991.00, 24.00, 31.50, 3.10, 1.50, 3.20
 1,2020,306, 15803.00, 24.00, 31.00, 2.81, 1.90, 65.10
 1,2020,307, 4644.00, 23.90, 26.50, 2.81, 1.50, 15.30
 1,2020,308, 13175.00, 23.40, 29.00, 2.81, 1.50, 0.40
 1,2020,309, 15623.00, 22.60, 29.00, 2.65, 1.70, 3.50
 1,2020,310, 21922.00, 21.80, 29.70, 2.64, 1.70, 0.00
 1,2020,311, 22606.00, 21.50, 30.50, 2.45, 1.20, 0.00
 1,2020,312, 19114.00, 20.40, 29.50, 2.45, 1.50, 0.00
 1,2020,313, 17243.00, 21.20, 28.70, 2.61, 1.60, 0.00
 1,2020,314, 7019.00, 22.70, 27.50, 2.68, 2.10, 3.10
 1,2020,315, 7883.00, 23.70, 27.70, 2.52, 2.10, 50.20
 1,2020,316, 3852.00, 23.50, 26.10, 2.82, 1.30, 153.70
 1,2020,317, 6192.00, 23.40, 25.60, 2.83, 1.50, 34.80
 1,2020,318, 7703.00, 23.10, 28.60, 2.66, 1.40, 1.60
 1,2020,319, 13895.00, 23.30, 29.80, 2.78, 1.90, 9.50
 1,2020,320, 14399.00, 22.90, 28.60, 2.73, 1.60, 8.90
 1,2020,321, 14687.00, 23.60, 30.00, 2.94, 1.60, 22.50

1,2020,322, 15875.00, 23.60, 30.00, 3.00, 1.20, 0.00
 1,2020,323, 14111.00, 23.50, 29.70, 2.65, 1.30, 1.20
 1,2020,324, 20806.00, 23.40, 30.80, 2.79, 1.00, 0.00
 1,2020,325, 15047.00, 23.30, 31.50, 2.86, 1.10, 1.50
 1,2020,326, 10727.00, 24.00, 28.00, 2.79, 1.90, 0.00
 1,2020,327, 12095.00, 23.80, 28.50, 2.68, 1.80, 0.00
 1,2020,328, 18467.00, 22.10, 29.50, 2.45, 2.20, 0.00
 1,2020,329, 17207.00, 21.40, 29.00, 2.44, 1.80, 0.00
 1,2020,330, 17783.00, 22.00, 29.00, 2.41, 1.70, 0.00
 1,2020,331, 15731.00, 20.10, 28.20, 2.31, 1.90, 0.00
 1,2020,332, 20590.00, 20.00, 29.00, 2.14, 2.00, 0.00
 1,2020,333, 21346.00, 19.00, 30.10, 2.37, 0.80, 0.00
 1,2020,334, 20122.00, 19.70, 31.00, 2.51, 1.00, 0.10
 1,2020,335, 9251.00, 23.10, 28.00, 2.73, 0.90, 5.40
 1,2020,336, 12203.00, 22.80, 28.00, 2.76, 1.60, 1.30
 1,2020,337, 11483.00, 22.60, 28.50, 2.81, 1.90, 4.30
 1,2020,338, 14039.00, 23.20, 28.50, 2.60, 2.40, 5.20
 1,2020,339, 16559.00, 23.20, 29.20, 2.68, 2.50, 12.00
 1,2020,340, 17999.00, 23.50, 29.50, 2.71, 2.50, 0.10
 1,2020,341, 18719.00, 22.60, 29.90, 2.83, 2.10, 0.50
 1,2020,342, 11267.00, 22.70, 29.00, 2.82, 1.20, 0.50
 1,2020,343, 15947.00, 23.00, 30.00, 2.85, 1.70, 0.20
 1,2020,344, 14615.00, 22.40, 29.50, 2.66, 1.60, 0.90
 1,2020,345, 14399.00, 22.00, 28.70, 2.65, 1.50, 0.00
 1,2020,346, 13175.00, 23.70, 28.70, 2.69, 1.90, 0.00
 1,2020,347, 23074.00, 21.50, 30.80, 2.58, 1.80, 0.00
 1,2020,348, 23650.00, 21.00, 31.00, 2.47, 1.80, 0.00
 1,2020,349, 12815.00, 22.00, 29.00, 2.62, 1.10, 0.00
 1,2020,350, 9791.00, 24.00, 27.20, 2.66, 1.30, 1.00
 1,2020,351, 14255.00, 21.50, 28.70, 2.56, 1.30, 0.10
 1,2020,352, 11735.00, 22.50, 27.80, 2.63, 1.60, 2.20
 1,2020,353, 19690.00, 21.20, 29.50, 2.52, 2.50, 24.20
 1,2020,354, 6192.00, 23.10, 27.70, 2.71, 1.80, 14.40
 1,2020,355, 15119.00, 22.50, 28.50, 2.44, 2.30, 0.00
 1,2020,356, 11627.00, 22.50, 28.00, 2.50, 1.70, 15.00
 1,2020,357, 14255.00, 22.40, 29.50, 2.71, 1.60, 3.40
 1,2020,358, 20518.00, 21.50, 28.50, 2.49, 2.10, 0.00
 1,2020,359, 9215.00, 21.50, 27.00, 2.14, 2.10, 0.90
 1,2020,360, 19330.00, 21.20, 28.60, 2.47, 3.00, 0.40
 1,2020,361, 14759.00, 22.00, 29.00, 2.53, 2.20, 6.00
 1,2020,362, 9683.00, 22.70, 27.00, 2.72, 1.70, 0.80
 1,2020,363, 9323.00, 23.50, 28.20, 2.80, 1.20, 0.00
 1,2020,364, 17531.00, 22.90, 29.60, 2.67, 1.70, 0.40
 1,2020,365, 21994.00, 20.70, 30.00, 2.57, 2.20, 0.00
 1,2020,366, 23650.00, 20.50, 29.50, 2.51, 1.70, 0.00

Lampiran 11 Dokumentasi



Dokumentasi pengambilan data biomassa padi.



Dokumentasi *Survey* lokasi penelitian.