Oldeman Climate Zoning for the Agricultural Area

Plagiarism Scan Report

Summary	
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The climate is an air temperature average condition, precipitation, air pressure, wind direction,
humidity, and the other climate parameters in the long term (Tjasyono, 2004). In general, Indonesia has become the high-risk area □or the climate change included around South Sulawesi.
The climate change is an important issue and always keep going on in these past □ew years.
Climate change is already and is going to happen as long as the rising o□ human activity.
Climate in□ormation o□ an area is needing. In the tropical area, air temperature rarely becomes
the limit □actor in the agriculture production, but the water supply is the most deciding □actor in the
agriculture cultivation. The long and extreme dry season brings wide consequences □or the environment and human living.
Climate also a□fects the plant type in Soppeng Regency □or cultivating in an area, scheduling
and cultivation techniques that will be carried out by □armers. However, Utilization o climate
in□ormation in this area is very little □or the agricultural sector, whereas the climate will a□fect the
distribution o□ plants. This happens because o□ the lack o□ resources that can be utilized by people
to know the type o□ climate somewhere and types o□ plants suitable □or the location o□ the right

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climate. Climate classi□ication used □or agriculture is climate classi□ication according to Oldeman
climatic. Oldeman climatic classi□ication uses the element o□ rain□all as a basis □or determining the
classi□ication its climate. The main type Oldeman classi□ication is based on the number o□ consecutive wet months, namely: Zone A, Zone B, Zone C, Zone D, and E. The zone subtypes
based on the number o□ consecutive dry months, namely: Zone 1, Zone 2, Zone 3 and zone 4
(Lakitan, 1994).
Based on the description o□ the background, it is necessary to do a research on the climatic conditions currently a□fecting various aspects o□ human li□e and other living organisms
and is presented in the □orm o□ a research report entitled "Oldeman Climatic Zoning in Soppeng".
The purpose o□ this study was to determine the distribution o□ climate types with Oldeman method.
This research stage includes data collection phase in the □orm o□ Soppeng rain□all data □or the
last 30 years. Then check the □ield, observing and plotting o□ each rain□all station. Data processing
by calculating the amount o□ rain□all based □ormula Oldeman, and GIS analysis in making Oldeman climate distribution map in Soppeng According to Oldeman climate to determine the climate types is the month o□ consecutive wet
and dry consecutive month as well. To determining the Oldeman' wet months and dry months,
there are:
□ Wet month is a month o□ rain□all over 200 mm
□ Dry month is the month o□ rain□all less than 100 mm (Kartasapoetra, 2008)
Based on the classi□ication that □ocuses on the wet months, Oldeman o□fers □ive main zones o□
wet months in a row as □ollows:
1) Zone A, wet months are more than 9 times in a row
2) Zone B, wet months are 7 to 9 times in a row
3) Zone C, wet months are 5 to 6 times in a row
4) Zone D, wet months are up 3 to 4 times

5) Zone E, wet months are less than 3 times
Spatial data processing is per□ormed to determine the classi□ication o□ the type o□ climate based
on Oldeman classi□ication in the □orm o□ the area. The data in this spatial processing is rain□all □or
over the past 30 years has been known in the wet and the dry months, climate type, and data
latitude and longitude coordinates post a graduated rain□all. The method is the Interpolation. The
interpolation method is a method o□ □illing the data gaps with certain methods o□ a dataset to
generate a continuous distribution in the □orm o□ the area.
The methods in Geographic In□ormation System that is used in the processing o□ these is by
interpolation o□ Kriging. Kriging interpolation is a method o□ estimating a value o□ a point on each
grid □ocus to the value o□ a point that has real value.
Steps □or Kriging interpolation:
1. Input Oldeman climate types into excel.
2. In Excel contained Oldeman climate classi□ication mode, then input the point coordinates in
the decimal degree o□ each rain□all measuring station.
3. In ArcGIS, export the excel data in a shape□ile □ormat.
4. Analyze the type o□ climate in order to interpolate by selecting ArcToolbox.
5. Because kriging interpolation is used in Arc Toolbox, select raster and select kriging interpolation.
6. Click reclassi□y to reclassi□y raster re-class and select.
7. Due to the resulting interpolated still has no speci□ic boundaries so the next step is clipping
Area. Where the move was made to cut the interpolation o□ the administrative map o□ the region, in this case, is Soppeng area.
8. Once the results o□ the clip area appearing on the layer, then the next step is to export the
polygon as a result clip is still in the shape o□ raster area, by choosing conversion tools.
9. Showing interpolated in the □orm o□ a map layout, the distribution map o□ Oldeman climate
classi□ication in Soppeng Regency area. This research used rain□all data in rain□all measuring posts in Soppeng □or 30 years □rom 1985
to 2014. Calculation o□ rain□all as the basis □or determining the classi□ication o□ Oldeman climate In determining the wet months and dry months, according to Oldeman, is when an area has a
rain□all average monthly greater than 200 mm, the monthly rain□all in the area belonging to the wet
month. I□ an area has an average monthly rain□all is less than 100 mm then the monthly rain□all in
the area is classi□ied as dry months.
According to the table 7 Latappareng has 0 wet months and 5 months o□ dry, Leworeng have 2
months o□ wet and two dry months, Lapajung have one wet month and 3-month dry, Lalange have
one wet month and 3-month dry, Umpungeng has 5 wet months and 4 dry months, Sero

has 0 wet
months and 3 months o dry, wet Salobunne have 8 months and 2 months o dry, wet and Congko
0 months 3 months to dry.
After wet months and dry months are known, the rainfall station data are classified based on
Table of the main type of Oldeman Classification Climate and Table of The sub-type o Oldeman
Classification Climate. The following data is Based on Table 4.5 the regions with an E climate type (E2, E3) are the regions of Latappareng
station, Leworeng station, Lapajung station, Lalange station, Sero station, and Congko station and
the region of C3 climate type is the region of Umpungeng station, and the climate of B2 type is
the region of Salobunne station. After knowing the type of Oldeman climate classification, next is

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an interpolation o Oldeman climate type classi ication with the shaped element must be irst
converted into a orm o numbers.
The changes o attribute data are based on agro-climatic zones o each type o climate. Climate
types that have the most growing season will rate o at least a small number, whereas the type o
climate that has a growing season o at least will become the greatest score, and i the climate type
there is the same agro-climate zones, the greatest scoring will be given to the climate type that has
a number behind capital letter, and the ollowing results are E-climate Type with agro-climate zones with the more dry areas can only be used one time to
plant the crops planted as the 2d crop in the dry season are given 80 attribute data that is located in
the region o Latappareng station, Leworeng station, Lapajung station, Lalange station, Sero
station and Congko station. C3 climate type with Agro-climate zone that have 1 times planting o
rice and 2 times planting the crops given the 50 attribute data in Umpungeng station area, and B2
climate type with agro-climatic zones that have Rice planting or 2 times a year and crops in 1
time are given the 30 attribute data in Salobunne station area.
The distribution o Oldeman Climate types can be viewed on an Oldeman climate classi ication
map. The Interpolation used was Kriging, which were interpolated is the attribute values have been
determined based on the type o climate and the point coordinates at each observation station in
the area o research. The climate dissemination is basically aimed shows the limits o the coverage
area o climate types have been counted on each observation station. On the map o the distribution o Oldeman climate types that have been generated can show zoning criteria and type
o climate as well as the breadth o each region at each observation station. Based on the

results in
the reclassi□ication o□ distribution map o□ Oldeman climate types can be seen that the climate type
spread in Soppeng is climate B2, C3, and E. Each type o□ climate is spreading in various subdistricts in Soppeng. This climate types in its range o□ each region. For more details can be seen in
the □ollowing From the rain□all monthly data, the average during 30 years (1985-2014) used and by using GIS, it
was □ound that Soppeng has climate type mode based on the Oldeman' classi□ications are type B2,
C3, and E.

a. B2 Type

Oldeman Climate classi□ication type o□ B2 spread in Soppeng total o□ 13% o□ the entire region
o□ Soppeng or an area o□ 17590.05 hectares which include: partial region o□ Marioriawa District, the Bulue village, Laringgi village, ManorangSalo village, Tellulimpoe village, and Patampanua village as well as a relatively small area o□ Donri-donriSubdistrict in the northern
part o□ the LalabataRiaja village. This climate types according to agroclimatic zones can be planting two crops in one year with a variety o□ short li□espan and the dry season is short enough □or planting crops.

b. C3 Type

Oldeman Climate classi□ication type o□ C3 spread in Soppeng as much as 43% o□ the total area in Soppeng or an area o□ 58923.29 hectares which include: partial region District o□ Marioriawa, the AttangSalo village, Desa stones village, Bulue village on the west side, eastern Laringgi village, ManorangSalo eastern in the Eastern side, Limpomajang village, Kaca village, TelluLimpoe village on the eastern side, Panincong Village, Patampanua village
on the eastern side, most o□ Donri-donri District, there are Tottong village, the small part o□
Labokong village on the north side, Sering village, Kessing Village on the eastern side, DonriDonri village, Pesse village in thw Western side, RiajaLalabata village, Pising village on the
Eastern side, Leworeng village on the northern side, a hal□ part o□ Lalabata village, there are
Bila village on the northern side, the Mattabulu village on the eastern side, the Botto village,
and most o□ Lebbae village. Lilirilau district there are Tetewatu village and Palangisang village on the eastern side. And the most o□ Mariorawa district, there are Barae village, goarie
village, Marioriaja village, Gattareng Toa village, and Gattareng village. Agro-climatic zone o□ this type is just one time o□ planting rice and the second crops planting have to be care□ul
not to □all in the dry months.

c. E Type

E-climate type classi□ication based on Oldeman in Soppeng spread over as much as 44% o□ the entire area in Soppeng or broad o□ 59901.33 hectares that include: Most o□ Citta district,
the Kampir village, Citta village, and Tinro village. Most o□ Donri-Donri district there are Labokong village, Pisisng Village, Pesse village, kissing village danLeworeng village. Ganra district, there are Ganra village, Belo village, enrekeng village, danLompulle village.

Lalabata district, there are LalabataRilau village, Ompo village, Bila village, SaloKaraja village, Lemba village, Maccile village, Mattabulu village, Lapajung village, Umpungeng village, Liliriaja district there are Galung village, jennae village, Rompegading village, Appanang village, Pattojo village, Jampu village, Lilirilau district there are Paroto village, Ujung village, Tetewatu village, Macanre village, Pajalesang village, Masing village, Parenring village, Abbanuangnge village, Palangiseng village, Baringeng village, danKebo village, MarioriwawoLabessi district, Congko village, Mario Rilau village, Tettikenraree village, Watutoa village, Soga village, Goarie village, Watu village, Marioritengnga village, danMarioriaja village This type o regional agro-climatic zone is too dry may only be 1 times
the crops and it depends on the rain

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Summary	
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Based on the results o questioners and surveys o the requency o rice and corps planting,
there are:
a. 2 times rice planting period
2 times rice planting in some district region in Soppeng regency, there are Mariorawa district,
Lalabata district, Liliriaja district, citta district, Lilirilau district, and Donri-donri district.
b. 1 time Rice Planting Period
Rice planting season is only ound in one o the districts in the region Soppeng, it is Ganra district.
c. 2 times or rice planting and 1-time Crops-planting period
Rice planting Periods are 2 times and the crops planting period is 1 time in Mariorawa, one o
the districts in the northern Soppeng Regency.
Based on the results o interpolation using GIS with Kriging method is ound that the agroclimate zone and climate types in Soppeng divided into three zones o Agro-climatic based on
Oldeman climate classi ication, there are rice planting is twice within one year with a variety o
short li espan and the dry season short enough or planting crops (type B2), only one rice planting
and the second planting crops must be care ul not to all in the dry (type C3), this area is generally
too dry, it may only be one o the crops, and even then subject to the rain (type E). While BPS on
2014 and the results o ield survey Frequency annual planting in Soppeng can be divided into
three, that is 2 times or rice planting per year, 1-time rice planting per year and 2 times or rice
planting and 1 times or crops. Based on the data generated map compatibility between agroclimatic zones according to the requency Oldeman rice cultivation in Soppeng. The requency o the most dominanOldeman Climate classi ication type o B2 spread in Soppeng total o 13% o the entire region o Soppeng or an area o 17590.05 hectares which
include: partial region o Marioriawa District, the Bulue village, Laringgi village, ManorangSalo

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include: partial region o□ Marioriawa District, the Bulue village, Laringgi village, ManorangSalo

village, Tellulimpoe village, and Patampanua village as well as a relatively small area o DonridonriSubdistrict in the northern part o the LalabataRiaja village. This climate types according to
agro-climate zones can be planting two crops in one year with a variety o short li espan and the
dry season is short enough or planting crops.
The type o climate and agro-climatic zones in Citta Sub-district divided by 2 is E-Type with too dry areas that only allows 1-time crops and C3 type with agro-climatic zones with 1 times or
rice planting and 2 times or corps planting. However, based on the requency o planting Soppeng
in District Citta occur 2 times the cultivation o rice in a year, it indicates a mismatch between the
requency Agroclimatic Zone planting in Citta sub-district. Citta sub-district which has Size 3493.14 Ha. Sub-district Citta with agro-climatic zone 1 time or crops are not in accordance with
the requency o 2 times rice cultivation in a year has an area o 2210.68 hectares or 63% o the
total area in Citta sub-districts. Then, the Citta sub-district with agro-climatic zones or the rice
planting in 1 times and or the crops planting in 2 times are inappropriate or the requency o rice
cultivation in a year has an area o 1282.46 hectares or 37%. Overall, the Citta sub-district between
agro-climatic zones and planting occurs inexpediency. These requency caused by the irrigation
technology that provides the water supply so Crop Water Requirement (CWR) or so-called water
the plant needs are met and to do rice cultivation as much as 2 times a year.
Donri-donri sub-district which has an area o 21902.81 hectares based on the type o climate
and agro-climatic zone is divided into three, there are E-Type with areas too dry that only allows 1
time or corps planting, C3 type with agro-climatic zones with 1 time or rice planting and 2 times
or crops planting, and B2 type with agro-climatic zones are 1 times or rice planting and 2 times
or crops planting. Based on Table 4.9 Donri-Donri sub-district has corresponding regions and is
not suitable or agro-climatic zones with a requency between plantings. Donri-donri Sub-district
with the agro-climatic zone is 1 time or crops planting are not in accordance with the requency o
2 times rice cultivation in a year has an area o 4337.36 hectares or 20% o the total area o Donridonri sub-district. And the Donri-donri sub-district with agro-climatic zones have 1 time or corps
planting and 2 times or crops planting, also do not correspond to the twice paddy planting requency in a year that has broad 16831.25 or 77% o the total area o Donri-donri districts. So,
the Donri-donri sub-district amounted to 97% o its territory between agro-climatic zones and

planting occurs inexpediency. It happened because o irrigation technology that provides water
supply and helps the armers to apply the CWR way or paddy cultivation and the paddy planting
time can become twice in a year. And there are 3% o Donri-Donri sub-district with agro-climate
zone have 2 times or corps planting in a year and the crops are the same as paddy planting in
Donri-Donri, twice in a year

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The GanraSubdistrict have E climate type with the agro-climate zone. This area is too dry that
only allows 1 time □or crops planting. However, based on the □requency o□ the planting o the
Ganra area planted with 1-time paddy planting in a year. So, the Ganra district have an inexpediency between agroclimatic zone and planting □requency. It is because the irrigation
technology that provides the water supply so that CWR and □ul□ill the once a year o□ paddy planting, and in this district, the irrigation water supply is only able to help □or once a year o□
paddy planting because it is the last area □or the □low o□ water irrigation so that the water supply is
less.
SubdistrictLalabata, based on the type o□ climate and agro-climatic zones divided by 2 is Type
E with areas too dry that only allows 1-time crops and C3 climate type with agro-climatic zones
have 1 time □or rice planting and 2 times □or crops planting. However, based on the □requency o□
planting in Soppeng exactly in Lalabata, have rice cultivation occurs two times in a year, it indicates a mismatch between the □requency Agro-climate Zone planting in Lalabata Sub-district.
Lalabata, that has 29899.28 hectares area with agro-climatic zone have 1-time crops planting is not
in accordance with the □requency o□ 2 times paddy cultivation in a year with 11624.66 hectares or
39% o□ the total area in Lalabata sub-districts. Then, the Lalabata District with agro-climatic zones
have 1 time □or rice planting and 2 times □or crops planting is a mismatch to the □requency o□ rice
cultivation in a year have an area o□ 18274.62 hectares or 61% o□ the total area o Lalabata district.
So, the Lalabata District occurs an inexpediency between agro-climatic zones and planting requency. It is because the irrigation technology that provides the water supply so that CWR and
ul□ill twice a year o□ paddy planting.

District o Liliriaja has one type o climate and agro-climatic zone E-type with areas too dry that only allows 1 time or corps planting. The whole District o Liliriaja occurs an inexpediency between agro-climatic zones and planting requency. It is caused by the irrigation technology that provides the water supply so that CWR rice plant are met and to do rice cultivation as much as 2 times in a year, so the lack o rain all a ecting agro-climatic zones did not signi icantly a ect rice cultivation in o this area.

LilirilauSubdistrict based on the type o climate and agro-climatic zones divided by 2, there is E-Type with areas too dry that only allows 1-time crops and C3 type with agro-climatic zone have 1 time or rice planting and 2 times or crops planting. However, based on the requency o planting in Soppeng, exactly in Lilirilau District rice cultivation occurs two times in a year, it indicates a mismatch between the planting requency and Agro-climatic Zone. SubdistrictLilirilau that has 15874.12 hectares area. LilirilauSubdistrict with agro-climatic zone has 1-time crops are not in accordance with the requency o 2 times paddy cultivation in a year that has an area o 899.08 hectares or 6% o the total area o Lilirilau districts. Then the District Lilirilau with agroclimatic zones and crops Rice 1 times 2 times do not correspond to the requency o rice cultivation in a year has an area o 14975.04 hectares or 94% o the total area o the District Lilirilau. So overall the District Lilirilau between agro-climatic zones and planting occurs inexpediency. it is caused by the irrigation technology that provides the water supply that causes CWR can ul ill rice cultivation and can be done 2 times a year so the lack o rain all a ecting agro-climatic zone is not too a ecting rice cultivation in this area.

SubdistrictMarioriawa which has an area o 27054.32 hectares based on the type o climate and agro-climatic zones divided by 2 is the C3 mode with agro-climatic zones with crops o rice 1 times 2 times and Type B2 with two rice agro-climatic zones with crops. According to Table 4.9, Sub-District Marioriawa has corresponding regions and is not suitable agro-climatic zones with a requency between plantings. SubdistrictMarioriawa zone agroclimatic rice 1 time and pulses 2 times do not correspond to the requency o planting two times the rice and 1 times crops a year has broad 10295.63 or 38% o the total area districts Donri-donri, between zones agroclimatic and requency planting, occurs noncon ormity. It is caused by the irrigation technology that provides the water supply so that CWR dan rice plant rice cultivation can be done 2 times a year.

As 62%
o the District o Marioriawa with agro-climatic zones Rice 2 times a year to crops in accordance
with the requency o planting in the District Marioriawa this is caused by the high rainall in the
region.
SubdistrictMarioriwawo based on the type o climate and agro-climatic zones divided by 2 is
Type E with areas too dry that only allows 1-time crops and C3 mode with agro-climatic zones

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