SEASONAL AGRO METEOROLOGICAL BULLETIN
BEGA, 2003/4
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FORE WARD

This Agro met Bulletin is prepared and disseminated by the National Meteorological Services Agency (NMSA). The aim is to provide those sectors of the community involved in Agriculture and related disciplines with the current weather situation in relation to known agricultural practices.

The information contained in the bulletin, if judiciously utilized, are believed to assist planners, decision makers and the farmers at large, through an appropriate media, in minimizing risks, increase efficiency, maximize yield. On the other hand, it is vital tool in monitoring crop/ weather conditions during the growing seasons, to be able to make more realistic assessment of the annual crop production before harvest.

The Agency disseminates ten daily, monthly and seasonal weather reports in which all the necessary current information's relevant to agriculture are compiled.

We are of the opinion that careful and continuous use of this bulletin can benefit to raise ones agro climate consciousness for improving agriculture-oriented practices. Meanwhile, your comments and constructive suggestions are highly appreciated to make the objective of this bulletin a success.

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SUMMARY
Bega 2003/4

Bega season is characterized with sunny and dry weather situation with occasional falls. It extends from October to January. On the other hand, it is a small rainy season for southern and southeastern lowlands under normal condition. During Bega 2003/2004 harvest and post, harvest activities were affected by the occasional falls particularly during the first dekad of December 2003. As a result, some areas reported crop damage due to heavy falls ranging from 30 – 113.3 mm. However, the overall impact was minimal in most parts of the country due to the proper preventive measures taken by the farmers and other communities by using NMSA's forecast.

With regard to air temperature, some central highlands like Wegel Tena, Alemaya, Meraro and Debre Birhan exhibited minimum temperature less than 5°C lowering up to –7°C repeatedly during the season. Thus, this condition could have negative impact on the normal growth and development of annual, perennial and horticultural crops, thereby decreasing yield quality and amount.

During the month of October, 2003 the observed below to much below normal rainfall over most parts of Meher growing areas could have negative impact on crops which are not attaining their maturity and on crops which were at early vegetative stage. As a result, some areas from western Oromiya and northern SNNPR reported medium field condition due to water stress. For instance, Dembi Dolo, Assosa and Hosaina reported persistent wilting, slight wilting and partial dry on crops field respectively during the third dekad of October. Besides, as the moisture status analysis indicates with the exception of pocket areas of western Amhara and Oromiya, most parts of the country exhibited dry to very dry moisture status. On the other hand, the dry weather condition could facilitate the harvest and post harvest activities in areas where harvest and post harvest activities are under question. Pursuant to the crop phenological report, harvest and post harvest activities were underway in some areas of Meher growing areas.

In case of low lands of pastoral and agro pastoral areas of southern Oromiya the Hageya season (mid September – November) rainfall delayed by about one month and the distribution was erratic in most areas. As a result there was no or poor crop harvest is expected in agro pastoral areas. Besides, because of its erratic nature it was not even sufficient for pasture and drinking water in some areas like Yabelo and Negelle. According to the interview made with Yabelo Agricultural Development Bureau, this situation resulted in huge livestock movement (up to 58 Km) in searching water and pasture to the neighboring weredas like Agere Maryam and Burji during the month of October. Moreover, the Deyr season rainfall, which usually received in October to second half of November, was insufficient over most parts of Somali lowlands. As Save the Children Fund UK (5 Nov 2003) pointed out critical water shortage at the beginning of the Deyr season resulted in huge livestock movement towards the neighboring Kebeles with better rainfall in search of water and pasture.

During the month of November, 2003 most parts of western and southern half of the country experienced normal to above normal rainfall. As a result, some areas of western and southwestern parts of the country experienced moist to humid moisture status during the month. South and southeastern parts of the country including areas mainly growing perennial crops could get benefits from the above mentioned moist situation while the reverse was true for the areas where harvest and post harvest activities were under question. Some areas from the south received heavy falls up to 64 mm in one rainy day like Gode. Thus, the erratic nature of rainfall could affect the vegetation condition of the areas. Besides, it could favour the outbreak of pests. On the other hand, the dry and sunny condition favored the harvest and post harvest activities in areas were the activities are under progress. As the moisture status analysis indicates most parts of the country are under dry to very dry moisture condition.

With regard to air temperature, some pocket highland areas of eastern and central Oromiya including eastern Amhara like Wegel Tena, Mehal Meda, Alemaya, Fitche and Bui exhibited extreme minimum air temperature below 5^{o}C repeatedly during the month under review. This situation could have negative impact on the normal growth and development of the plant in the areas.

During the month of December, 2003 harvest and post harvest activities were on progress in most parts of Meher growing areas. However, the observed occasional falls in most parts of the country during the first dekad of the month has negatively affected the on going harvest and post harvest activities. As a result, some areas reported crop damage due to heavy falls. With regard to air temperature some stations such as Wegel Tena, Alemaya, Meraro and Debre Birhan exhibited minimum temperature less than 5°C for 15 – 25 days during the month under review. Thus, this condition could have negative impact on the normal growth and development of crops, which are not attaining their maturity stage during the month including perennial and horticultural crops, thereby decreasing yield quality and amount.

During the month of January, 2004 the observed normal to above normal rainfall over central and eastern highlands including southern and southwestern parts of Belg growing areas could favour land preparation and sowing activities in areas where those activities are under question. Normally North Shewa, East and West Harargie, Arsi, Bale, North and South Wello, Borena and SNNPR (Kembata, Hadiya, Wolayta, Gurage, Keffa and Bench) start their land preparation and sowing activities during December to February. Moreover, the observed rainfall particularly over parts of southern Oromiya and low and mid lands of Somali favored pasture and drinking water

Generally as per our field assessment and other sources, even though the occasional falls and other adverse weather conditions as frost resulted in crop damage and low quality of crop performance in some pocket areas of the country, the overall expected yield is better as compared to that of the preceding year in case of Meher production. With regard to southern and southeastern pastoral and agro pastoral areas, both Deyr and Hageyya season were not good for crop production in agro pastoral areas. Moreover, there was a delayed onset and erratic distribution. As a result, there was extensive livestock movement during the month of October in some weredas. As per latest NDVI (USGS) picture (21 - 31 January, 2004) there was no significant vegetation cover over the low lands of Somali like most parts of Gode, Korahe, Warder and Afder including parts of Degeh Bur and Fik. However, the rainfall situation showed improvement as of January 10 in some areas of the region and the

vegetation condition was in a good shape over the highlands of Somali like Shinile and Jijiga including midlands of Degeh Bur and Kebri Dehar. Regarding to southern Oromiya, though the situation was bad for crop production in agro pastoral areas the observed rainfall as of the second week of November favour pasture and drinking water in Moyale and Dire weredas. In addition to that, the rainfall situation getting better during the month of November, first dekad of December, second and third dekad of January over most parts of Borena and Guji zones of southern Ethiopia, and favored pasture and drinking water to some extent.

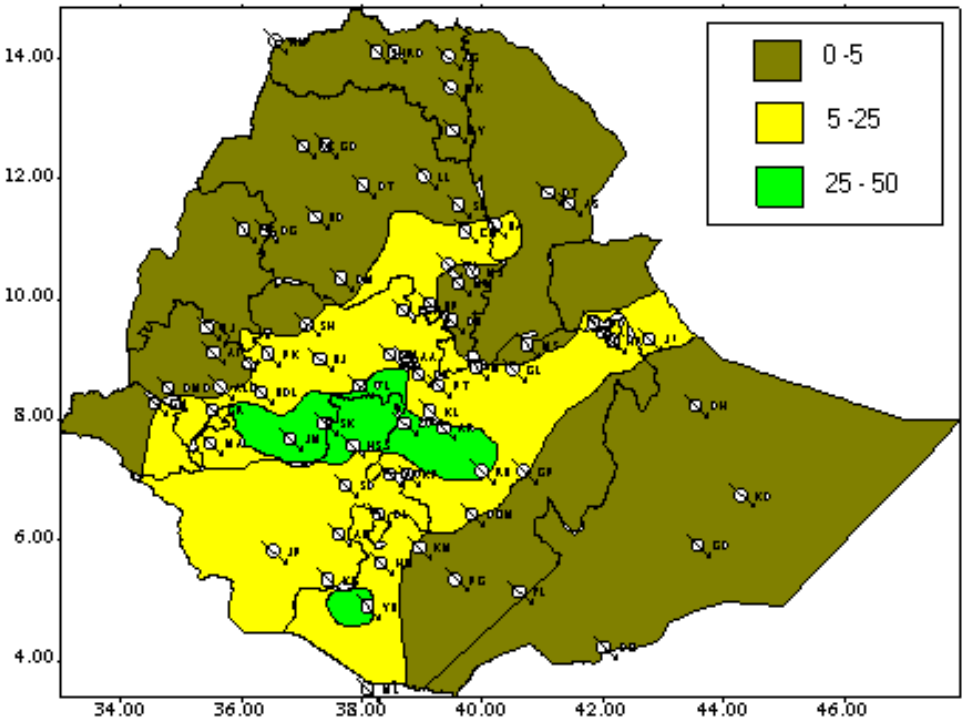


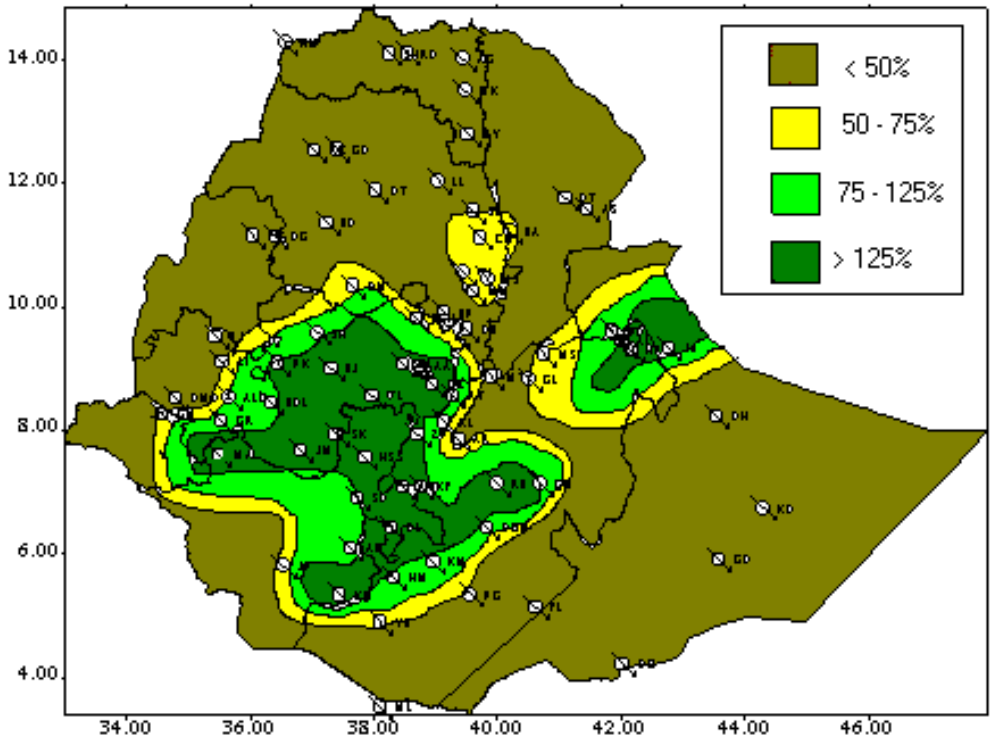
Fig.1 Rainfall distribution in mm (21- 31 January, 2004)

1. WEATHER ASSESSMENT

1.1 January 21-31, 2004

1.1.1 Rainfall Amount (Fig 1)

Northern SNNPR, pocket areas of southern, western and central Oromiya received falls ranges from 25-50 mm, much of SNNPR, much of Oromiya, pocket areas of northern Somali and southeastern Amhara received falls ranges from 5-25mm. The rest of the country received below 5 mm or no rainfall.



Fig, 2 Percent of normal rainfall (21-31 January, 2004)

Explanatory notes for the legend:
<50 -- Much below normal
50—75% -- below normal
75—125% --- Normal
> 125% ---- Above normal

1.1.2 Rainfall Anomaly (Fig. 2)

Northern and eastern SNNPR, western and central Oromiya including pocket areas of eastern Oromiya, pocket areas of northern Somali experienced normal to above normal rainfall distribution while the rest of the country exhibited below normal rainfall.

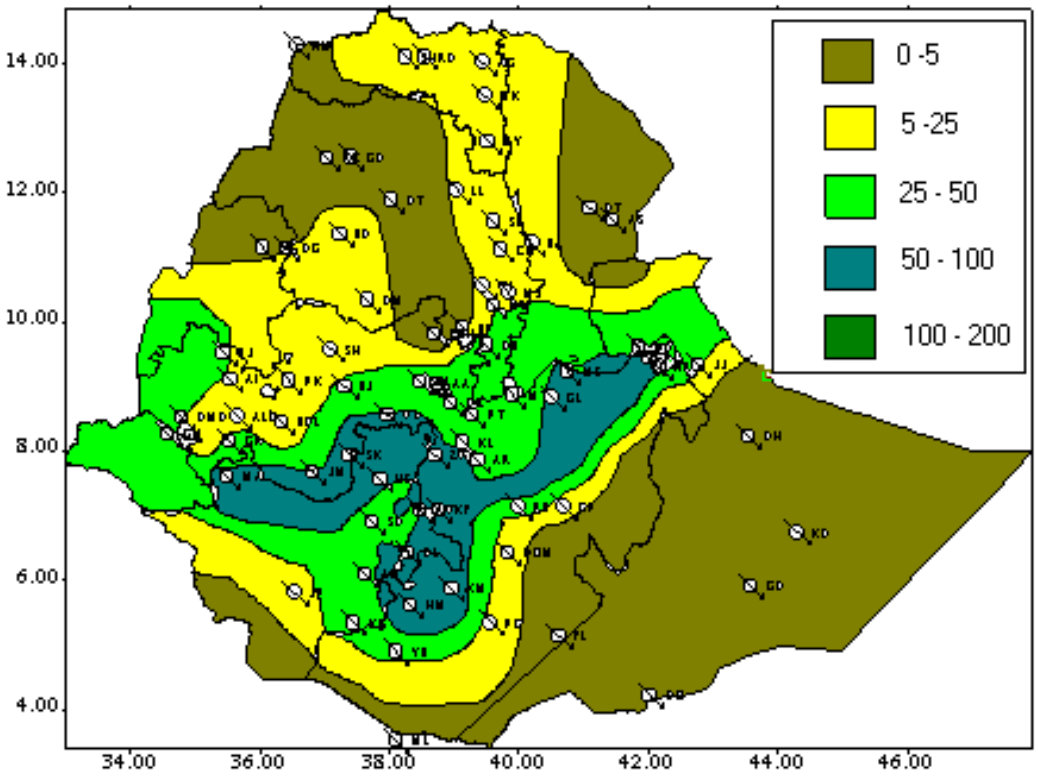


Fig. 3 Rainfall distribution in mm for the month of January 2004

1.2 January 2004

1.2.1 Rainfall Amount (Fig. 3)

Northern SNNPR, parts of eastern and southern Oromiya received falls ranges from 50-100 mm, Gambella, southern Afar, northern Somali, eastern SNNPR, some portion of western, central, eastern and southern Oromiya received 25-50 mm while the rest of the country received less than 25 mm or no rainfall.

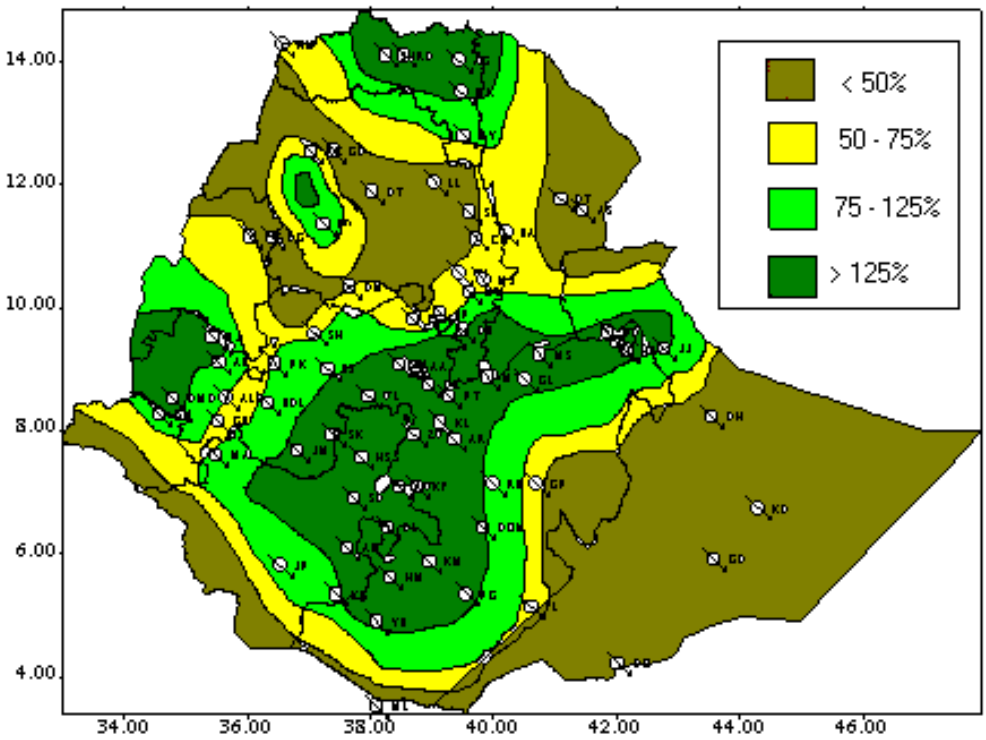


Fig. 4 Percent of normal rainfall for the month of January 2004

Explanatory notes for legend
< 50 -- Much below normal
50 –75% --- Below normal
75 – 125% --- Normal
> 125% ---- Above normal

1.2.2 Rainfall Anomaly (Fig. 4)

Much of Oromiya, Tigray, SNNPR, some portions of northern Somali, southern Afar, western Amhara, and southern Benishangul-Gumuz experienced normal to above normal rainfall while the rest of the country exhibited below normal rainfall.

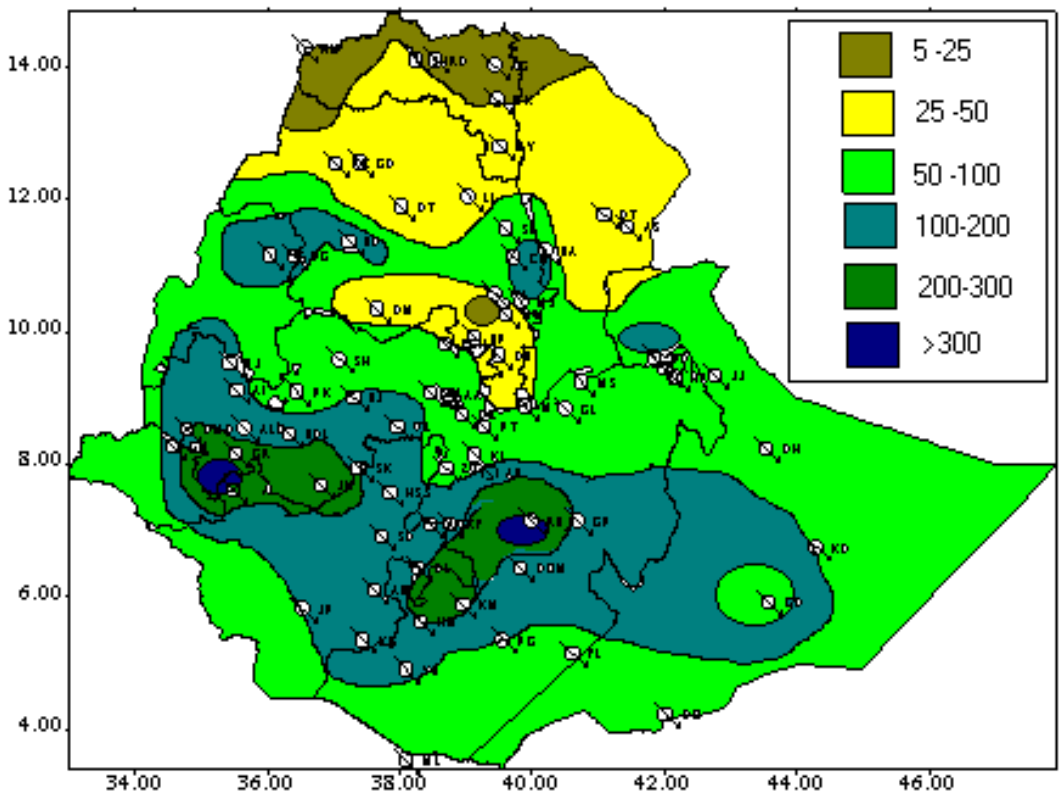


Fig. 5 Rainfall distribution in mm for Bega 2003/4

1.3 Bega 2003/4

1.3.1 Rainfall Amount Fig. 5)

Pocket areas of western and southern Oromiya received greater than 300 mm of seasonal cumulative rainfall. Some parts of southern and western Oromiya received falls ranging from 200-300 mm. Much of SNNPR, some portion of southern Somali, southern and western Oromiya, pocket areas of eastern Gambella, pocket areas of northern Benishangul-Gumuz and pocket areas of western Amhara received falls ranging from 100-200 mm. The rest of the country experienced less than 100 mm of seasonal rainfall.

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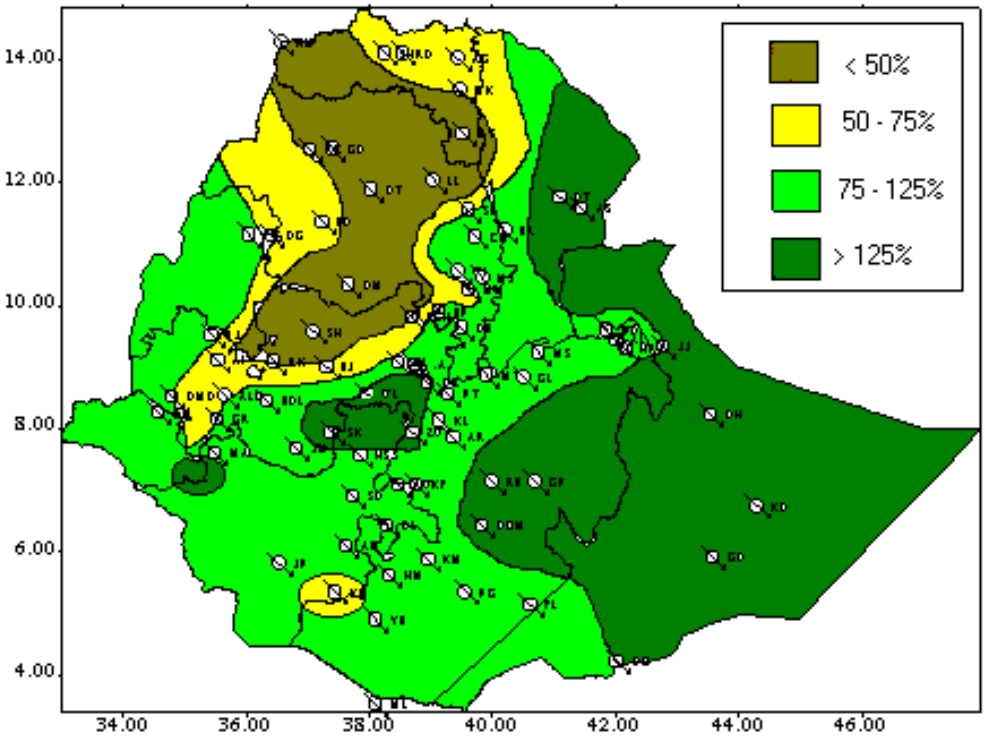


Fig. 6 Percent of Normal rainfall for Bega season, 2003/4

Legend
<50 --- Much below normal
50-75% ----Below normal
75 –125% -- Normal
>125% -- Above normal

1.3.2 Rainfall Anomaly

Gambella, Somali, much of Oromiya, SNNPR, Afar and Benishangul-Gumuz as well as pocket areas of southern Amhara experienced normal to above normal rainfall distribution. The rest were under below normal rainfall condition.

1.4 TEMPERATURE ANOMALY

With regard to air temperature, some areas of central highlands like Wegel Tena, Alemaya, Meraro and Debre Birhan exhibited minimum temperature less than 5°C

lowering up to –7°C repeatedly during the season. Thus, this condition could have negative impact on the normal growth and development of annual, perennial and horticultural crops, thereby decreasing yield quality and amount.

2 WEATHER OUTLOOK

2.1 For February 1-10/2004

The rain bearing systems are expected to have a better strength over southwestern and northeastern Ethiopia. In general, SNNPR, Gamblla, eastern Tigray and Amhara Afar as well as central Oromiya will get normal to above normal rainfall. However, Benishangul-Gumuz, eastern and southern Oromiya and much of Somali will be under dry weather condition that leads to below normal rainfall.

2.2 For the month of February 2004

Under normal circumstance, the highland of southern Ethiopia and parts of northeastern Ethiopia receives rainfall amount 50-100 mm as much of the Rift Valley and its adjoining areas have a rainfall amount 25-50 mm. However, the remaining part of the country remains dry and sunny. In the coming February, the sea surface temperature of northern Atlantic Ocean is expected to be warmer than normal. This phenomenon will enhance the occurrence of rainfall in our country. Generally, Rift valley and its adjoining areas are anticipated to get normal to above normal rainfall. Thus, SNNPR, central Oromiya, eastern Amhara and Tigray, Afar and Gambela will have normal to above normal rainfall. Although Benishngul-Gumuz, eastern and southern Oromiya, northern Somial, western Amhara and Tigray are highly likely to get below normal Rainfall, some places will have a rainfall amount close to normal. On the other hand, dry weather condition will prevail over southern Somali.

2.3 For the Belg season, 2004

According to NMSA classification Belg is a period from February to May. It has vital importance for the growth and development of Belg crops over north, northeastern, south and eastern parts of the country. In the coming Belg season, different models indicated that the influence of episodic events is anticipated to be very low. However, weak to moderate EL-Nino phenomena is likely to occur towards the end of the season. In addition to this, Indian and Atlantic Oceans will have positive impact for the coming Belg. Thus, the on-set and cessation are expected to be normal over Belg rain benefiting areas. Finally, the maximum temperature is expected to be less than the mean due to the anticipation of wet Belg. Generally, eastern Amhara and Tigray, Afar, northern Somali and eastern Oromiya are expected to get normal to above normal rainfall where as southern half of Somali, central Ethiopia, much of SNNPR and southern Oromiya will have normal rainfall. On the other hand, western Amhara and Tigray, Benishangul-Gumuz, Gambela, western Oromiya and the adjoining areas of SNNPR are anticipated to have normal rainfall that has a tendency toward below normal over some places.

3. AGROMETEOROLOGICAL CONDITIONS AND IMPACT ON AGRICULTURE

3.1 VEGETATION CONDITION AND IMPACT ON AGRICULTURE

Bega season is characterized with sunny and dry weather situation with occasional falls. It extends from October to January. On the other hand, it is a small rainy season for southern and southeastern lowlands under normal condition. During Bega 2003/2004 harvest and post, harvest activities were affected by the occasional falls particularly during the first dekad of December 2003. As a result, some areas reported crop damage due to heavy falls ranging from 30 – 113.3 mm. However, the overall impact was minimal in most parts of the country due to the proper preventive measures taken by the farmers and other communities by using NMSA's forecast.

With regard to air temperature, some central highlands like Wegel Tena, Alemaya, Meraro and Debre Birhan exhibited minimum temperature less than 5°C lowering up to –7°C repeatedly during the season. Thus, this condition could have negative impact on the normal growth and development of annual, perennial and horticultural crops, thereby decreasing yield quality and amount.

Generally as per our field assessment and other sources, even though the occasional falls and other adverse weather conditions as frost resulted in crop damage and low quality of crop performance in some pocket areas of the country, the overall expected yield is better as compared to that of the preceding year in case of Meher production. With regard to southern and southeastern pastoral and agro pastoral areas, both Deyr and Hageyya season were not good for crop production in agro pastoral areas. Moreover, there was a delayed onset and erratic distribution. As a result, there was extensive livestock movement during the month of October in some weredas. As per latest NDVI (USGS) picture (21 - 31 January, 2004) there was no significant vegetation cover over the low lands of Somali like most parts of Gode, Korahe, Warder and Afder including parts of Degeh Bur and Fik. However, the rainfall situation showed improvement as of January 10 in some areas of the region and the vegetation condition was in a good shape over the highlands of Somali like Shinile and Jijiga including midlands of Degeh Bur and Kebri Dehar. Regarding to southern Oromiya, though the situation was bad for crop production in agro pastoral areas the observed rainfall as of the second week of November favour pasture and drinking water in Moyale and Dire weredas. In addition to that, the rainfall situation getting better during the month of November, first dekad of December, second and third dekad of January over most parts of Borena and Guji zones of southern Ethiopa, and favored pasture and drinking water to some extent.

3.2 EXPECTED WEATHER IMPACTS ON AGRICULTURE DURING THE COMING BEGA SEASON

The expected normal on set of Belg would favour land preparation and sowing activities over Belg growing areas of North Shewa, East and West Harangue, Arsis, Bale, North and South Wello, Boerne and SNNPR (Kembata, Hadiya, Wolyta, Garage, Kef and Bench) in areas where their land preparation and sowing activities start during the months December to February. Thus, farmers are advised to start their proper Belg agricultural activities on time. The anticipated normal rainfall distribution during the season would favour the water requirement of Belg crops in most areas. Besides, it would also favour pastoral and agro

pastoral areas of southern and southeastern lowlands for their pastoral and agro pastoral activities. It would have positive contribution for land preparation and sowing activities of long cycle crops like maize and sorghum over Meher growing areas. The expected above normal rainfall would increase the likelihood of weed infestation. The anticipated relatively low probability of below normal distribution of rainfall would favour the out breaks of pests. Therefore, the concerned officials should prepare them selves to facilitate the preventive measures on time. The expected reduced extreme maximum temperature would favour the normal growth and development of plants by reducing evapotranspiration.

Table 1 Climatic and Agro-Climatic elements of different stations for the month of January 2004

	Stations	Region	A/ rainfall	Normal	%of Normal	Eto mm/day	Monthly Eto	Moisture Status
1	Adigrat	TIGRAI	20.9	8.7	240.2	3.58	93.08	D
2	Adwa		20.8	0.8	2600.0	3.6	93.6	D
4	Mekele		7.2	2.4	300.0			
5	Metema		0.5	1.2	41.7			
6	Michew		9.2	12.3	74.8	3.37	87.62	D
7	Senkata		0			5.11	132.86	VD
8	Shire		10.2	3.2	318.8	4.22	109.72	VD
1	Assayta	AFAR	0	3.3	0.0			
2	Dubti		0	6.3	0.0			
3	Elidar							
1	Alemketema	AMHARA	8.5	8.9	95.5			
2	Bahirdar		8.1	3.3	245.5	3.22	83.72	VD
3	Bati		24.1	41.3	58.4	3.19	82.94	MD
4	Combolcha		12.6	29.3	43.0	3.52	91.52	D
5	Chefa		0	58.6	0.0			
6	D.Birhan		26	12.1	214.9	4.17	108.42	D
7	D.Markos		8.4	15.2	55.3	4.08	106.08	VD
8	D.Tabor		0.5	8.8	5.7			
9	Dangla		0.5	4.6	10.9	3.71	96.46	VD
10	Debark		0	1.8	0.0			
11	Enwary		17.5			4.77	124.02	D
12	Gonder		1.6	3.6	44.4	4.57	118.82	VD
13	M.Selam							
14	M.Meda		5	18.4	27.2			
15	Majete		28.5	27.6	103.3	3.6	93.6	MD
16	Lalibela		0	3.9	0.0			
17	Sholagebeya		12.1	10.4	116.3	3.56	92.56	D
18	Sirinka		22.1	50.2	44.0	3.5	91	D
19	Woreilu		7.4					
20	Wegeltena		3.5	22.3	15.7	3.78	98.28	VD
1	Aira	OROMIYA	18.3	3.6	508.3	3.32	86.32	D
2	Alemaya		38.2	6.3	606.3	3.76	97.76	MD
3	Ambo		13.2	21	62.9			
4	Arsi Robe		9.9	52.2	19.0	3.59	93.34	D
5	Bedelle		6.3	11.3	55.8	3.43	89.18	VD
6	Bui		69.3			4.24	110.24	M
7	D.Dollo		24	11.7	205.1	3.39	88.14	MD
8	D.Mena		32			3.99	103.74	MD
9	D.Zeit		29.8	14.5	205.5			
8	Ejaji		14.6	15.2	96.1	4.25	110.5	D
9	Fitche		0.9	21	4.3			

10	Gelemso		56.3	17.2	327.3			
11	Gimbi		0	4.5	0.0	4.63	120.38	VD
12	Gore		22.1	41.9	52.7	3.92	101.92	D
13	Jimma		51	28.8	177.1	3.71	96.46	M
14	K.Mengist		63.9	11.7	546.2	3.4	88.4	M
15	Kulumsa		38	19.5	194.9	3.76	97.76	MD
16	Masha		71.4	67.3	106.1	3.18	82.68	M
17	Meisso		31.2	21	148.6	4.2	109.2	MD
18	Metehara		19.1	17.9	106.7	4.73	122.98	D
19	Moyale		0	12	0.0			
20	Nazreth		28.8	11.8	244.1			
21	Neghele		49.8	12.1	411.6	5.24	136.24	MD
22	Nedjo		28.6	7.8	366.7	3.51	91.26	MD
23	Nekemte		7.2	10.2	70.6	3.57	92.82	VD
24	Robe(Bale)		55.5	33.3	166.7	3.82	99.32	M
25	Sekoru		49	29.8	164.4	3.55	92.3	M
26	Shambu		12.2	33.3	36.6	3.81	99.06	D
27	Woliso		53	20.5	258.5			
28	Yabello		58.9	24.1	244.4	4.61	119.86	MD
29	Zeway		68	16	425.0	4.22	109.72	M
1	D.habur	SOMALI	0	1.4	0.0			
2	Gode		0	0.1	0.0			
3	K.Dehar		0	3.1	0.0			
4	Jijiga		33.8	5.6	603.6			
1	A.Minch	SNNPR	41.7	32	130.3			
2	Awassa		46.2	22.7	203.5	3.52	91.52	M
3	Hosaina		96.8	27.1	357.2	3.69	95.94	H
4	Konso		33.2	24.7	134.4			
1	Pawe	B/GUMUZ	0	0.3	0.0	4.02	104.52	VD
1	A.A.Obs.	A.A	24.8	17.5	141.7	3.13	81.38	MD
1	Diredawa	D.D	40.2	51.4	78.2	3.86	100.36	MD
1	Harar	Harai	87.4	3.8	2300.0	3.45	89.7	M

Legend

VD	Very Dry	< 0.1
D	Dry	0.1 - 0.25
MD	Moderatly Dry	0.25 - 0.5
M	Moist	0.5 - 1
H	Humid	>1

Explanatory Note

ETo Reference Evapotranspiration(mm)

DEFNITION OF TERMS

ABOVE NORMAL RAINFALL: - Rainfall in excess of 125% of the long term mean

BELOW NORMAL RAINFALL: - Rainfall below 75 % of the long term mean.

NORMAL RAINFALL: - Rainfall amount between 75 % and 125 % of the long term mean.

BEGA: - It is characterized with sunny and dry weather situation with occasional falls. It extends from October to January. On the other hand, it is a small rainy season for the southern and southeastern lowlands under normal condition. During the season, morning and night times are colder and daytime is warmer.

BELG: - Small Rainy season that extends from February to May and cover s southern, central, eastern and northeastern parts of the country.

CROP WATER REQUIREMENTS: - The amount of water needed to meet the water loss through evapotransipiration of a disease free crop, growing under non-restricting soil conditions including soil water and fertility.

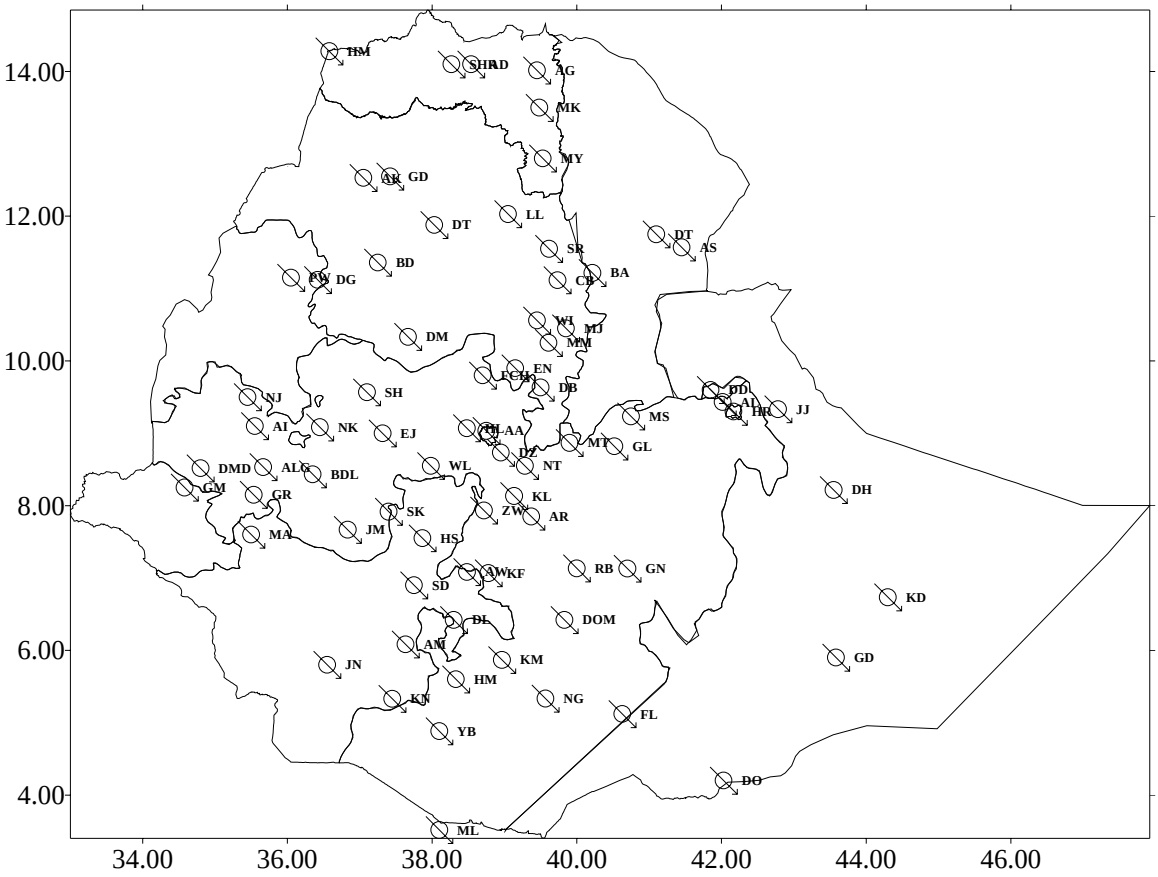
DEKAD: - First or second ten days or the remaining days of a month.

EXTREME TEMPERATURE: - The highest or the lowest temperature among the recorded maximum or minimum temperatures respectively.

ITCZ: - Intertropical convergence zone (narrow zone where trade winds of the two hemispheres meet.

KIREMT: - Main rainy season that extends from June to September for most parts of the country with the exception of the southeastern lowlands of the country.

RAINY DAY: - A day with 1 or more mm of rainfall amount.



Station	Symbol
A. Robe	AR
A.A. Bole	AAB
A.A. Obs	AAO
Adwa	AD
Adigrat	AG
Alemaya	AL
Alge	ALG
Aira	AI
Arba Minch	AM
Awassa	AW
B. Dar	BD
Bati	BA
Bedelle	BD
Combolcha	CB
D.Berehan	DB
D.Habour	DH
D.Markos	DM
D.Zeit	DZ
D/Dawa	DD
Dm.Dolo	DMD
Dubti	DB
Ejaji	EJ
Enwary	EN
Fiche	FCH
Gode(SE)	GD
Gonder(NW)	GD
Gore	GR
Harara	HR
Holleta	HL
Hossaina	HS
Jiiiga	JI
Jimma	JM
K.Dehar	KD
K/Mingist	KM
Koffele	KOF
Kulumsa	KL
M.Meda	MM
Maichew	MY
Majete	MJ
Mekele	MK
Metehara	MT
Mieso	MS
Moyale	ML
Nazereth	NT
Nedjo	NJ
Negelle	NG
Nekemte	NK
Robe	RB
sekoru	SK
Shambu	SH
Shire	SHR
S.Gebeya	SG
Sirinka	SR
Sodo	SD
Woreilu	WI
Woliso	WL
Yabello	YB
Ziway	ZW