Government of Malawi

DEPARTMENT OF CLIMATE CHANGE AND METEOROLOGICAL SERVICES

AGROMETEOROLOGICAL UPDATE

FOR SECOND ROUND 2009/10 AGRICULTURALPRODUCTION ESTIMATES

Released 8th February 2010

2009/10 Season Preparedness

The 2009/10 seasonal rainfall forecast that the Department of Climate Change and Meteorological Services issued on 1st September 2009 indicated that weak El Niño conditions that had established over the tropical Pacific were projected to strengthen to moderate El Niño in the first quarter of 2010. El Niño conditions are usually associated with below normal rainfall over a greater part of Southern Africa region and above normal over Eastern Africa. However, in Malawi El Niño events bring mixed rainfall patterns for instance there was good rainfall performance during 1997/98 and yet that was a strong El Nino season and localised droughts were experienced during 2004/05, 1994/95, 1991/92 and 1982/83 and most of these droughts started in the south.

In summary models suggested that during 2009/2010 rainfall season, a greater part of Malawi would experience normal cumulative rainfall amounts. However, being an El Niño season, extreme weather events such as prolonged dry spells and floods were expected to occur

Start and Progress of 2009/2010 Rainfall Season

El Niño conditions have affected normal rainfall patterns over Malawi. The start of the main rains has been mixed. The rains started early in some districts and late in others. The main rains in the north came during early November which was one month earlier than normal, in the south and western parts of central Malawi the onset was between middle and end of November which was about normal. In the lakeshore districts of Nkhota Kota, Salima and some parts of Mangochi effective rains came between early and mid December 2009.
The distribution and amount of the rainfall have been poor in some parts of the country especially in the south. Prolonged dry spells caused wilting of crops and pastures. The worst affected districts included Nsanje, Chikwawa, Mwanza, Neno, Phalombe and some parts of Thyolo, Mulanje and Blantyre. Total crop failure was reported in some districts especially in the south. The sporadic nature of rains coupled with soaring temperatures facilitated outbreaks of armyworms.

General high rainfall intensities were recorded in most parts of Malawi during February and March 2010 and floods were reported in Nkhotakota, Salima and Mangochi along the lakeshore and in Nsanje district in lower Shire Valley. Cumulative rainfall performance as at 31st of March 2010 indicated that most areas in Malawi had received three quarters of the long term average rainfall amounts for the period. However, pockets of rainfall deficits still existed in some parts of Southern Malawi especially in Chikhwawa and Nsanje districts

El-Niñ0 Update

Most dynamical and statistical model forecasts project a continuation of El Nino conditions through at least the April-May 2010.

Rainfall Forecast for April to June 2010

As the main rainfall season comes to an end, Easterly waves are expected to maintain locally heavy rains in some parts of Malawi especially during the better part of April before incursions of cool and moisture air bring Chiperoni weather over the country. Therefore, expect light to moderate rainfall to persist particularly over highlands and along the lakeshore districts during May and June 2010.

Malawi Maize Yield Assessment using FAO Crop Specific Water Balance Model

The Crop Specific Water Balance Model was developed by Food and Agriculture Organization (Frere & Popov 1979, 1986). The Water Balance model is a very simple and physically sound soil water balance which is used to assess the impact of weather conditions on crops in any developing countries of the world. The water balance model is a calculation technique which compares available water (rainfall) and water requirements of a given crop for each 10-day period of the growing season.

A shortfall or large excess of water in any 10-day period will result in a reduction of the water requirement satisfaction index which the model generates as a means of monitoring crop conditions and forecasting yields. The model is used as a maize crop monitoring and yield assessment tool but can also be adapted for other crops. The model is used as an early warning tool for food security and it has been in use in Malawi since late 1980's

The Crop Specific Water Balance model requires data for rainfall, potential evapotranspiration, crop coefficient, soil water holding capacity and crop data such as planting dates and cycle length. Efforts are underway to improve the water balance based models by incorporating crop productivity models. One of the potential candidates for this is the FAO AquaCrop Model.

2009/10 MODEL RESULTS

The results from the FAO Crop Specific Water Requirement Satisfaction Index (WRSI) model suggest that Maize production this year will be lower than last year. The overall maize production at national level is estimated at **3,266,956 Metric Tons which is** enough for domestic consumption and some for surplus. However, household food shortages are expected in some districts which were worst hit by dry prolonged spells particularly in Chikhwawa and Nsanje where farmers are not expected to harvest anything from the rain-fed crop.

TABLE 1: 2009/10 LOCAL & COMPOSITE MAIZE PRODUCTION ESTIMATES

CROP YIELD ASSESSMENT BASED ON THE WATER SATISFACTION INDEX (WRSI)
YIELD: kg/ha WRSI: % AREA: Hectares PRODUCTION: Tonnes
90% CONFIDENCE INTERVAL: Y(est)+/-t(0,10)*Std. Err. of Y(est)
AREA BASED ON SECOND ROUND 2009/10 CROP ESTIMATES FIGURES

ADD	09/10 WRSI	09/10 YIELD	YIELD LOW	YIELD HIGH	09/10 AREA	09/10 PROD	PROD LOW	PROD HIGH
SHIRE VALLEY	56	416	64	768	29325	12197	1882	22513
BLANTYRE	87	2047	1412	2682	145107	297012	204873	389151
MACHINGA	87	1676	1168	2184	217390	364303	253870	474736
SALIMA	94	2443	1877	3009	32536	79497	61080	97913
LILONGWE	93	1852	1514	2191	228605	423491	346057	500924
KASUNGU	95	2451	1974	2928	209304	512961	413151	612772
MZUZU	93	2216	1791	2641	85678	189847	153426	226269
KARONGA	95	2704	2089	3320	30836	83388	64413	102362
NATIONAL	**87**	**2005**	**1531**	**2479**	**978781**	**1962696**	**1498752**	**2426641**

TABLE 2: 2009/10 HYBRID MAIZE PRODUCTION ESTIMATES

CROP YIELD ASSESSMENT BASED ON THE WATER SATISFACTION INDEX (WRSI)
YIELD: kg/ha WRSI: % AREA: Hectares PRODUCTION: Tonnes
90% CONFIDENCE INTERVAL: Y(est)+/-t(0,10)*Std. Err. of Y(est)
AREA BASED ON SECOND ROUND 2009/10 CROP ESTIMATES FIGURES

ADD	09/10 WRSI	09/10 YIELD	YIELD LOW	YIELD HIGH	09/10 AREA	09/10 PROD	PROD LOW	PROD HIGH
SHIRE VALLEY	56	61	0	570	13086	796	0	7457
BLANTYRE	88	2368	1726	3009	105624	250096	182357	317835
MACHINGA	89	1694	1175	2213	84295	142812	99039	186585
SALIMA	96	2508	1336	3679	27609	69235	36896	101574
LILONGWE	95	2441	2001	2881	117535	286898	235159	338638
KASUNGU	97	2550	1850	3250	144380	368152	267118	469186
MZUZU	96	2147	1214	3080	61061	131099	74135	188064
KARONGA	96	2626	1464	3788	21010	55171	30750	79593
NATIONAL	**89**	**2270**	**1611**	**2939**	**574600**	**1304260**	**925455**	**1688931**

Weather station rainfall and WRSI evolution from sowing for maize