Government of Malawi

DEPARTMENT OF CLIMATE CHANGE AND METEOROLOGICAL SERVICES

THIRD ROUND 2011/12 AGRICULTURAL PRODUCTION ESTIMATES

AGROMETEOROLOGICAL UPDATE

Released 15th June 2012

SEASONAL HIGHLIGHTS

- **Malawi has experienced variable onset of planting rains ranging from early October 2011 to January 2012 and the start of rains was characterised by poor and erratic rainfall**
- **Poor and erratic rainfall caused wide variation in planting dates, poor germination and crop establishment and wilting of crops**
- **Generally below average rainfall was experienced over the country between November and December 2011**
- **Good rainfall performance was experienced over Malawi in January 2012 as a result of Tropical Depression "DANDO" and Tropical Cyclone "FUNSO" that were located in the Mozambique channel**
- **Many areas experienced prolonged dry spells in February but the south was worst hit. Good rains to support agriculture production returned to most areas of Malawi in March.**
- **Climate models predict development of El Niño conditions between June and August 2012 and Malawi is expected to experience occasional light winter rainfall during the period**
- **Agrometeorological model estimates National Maize production for 2011/12 season at 3,571,955 Metric Tons**

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2011/12 GROWING SEASON PREPAREDNESS

The Department of Climate Change and Meteorological Services (DCC&MS) released the downscaled 2011/12 Seasonal Forecast on 7th September 2011.The forecast was based on models that use scientifically established relationships between rainfall over Southern Africa and Sea Surface Temperatures (SSTs) over the oceans. While some models predicted El Nino/ Southern Oscillation (ENSO) neutral conditions which implied neither El Nino nor La Nina, the majority predicted increasingly negative SSTs (cooling) in the central tropical Pacific Ocean, implying the return of La Nina conditions, up to March 2012.

For Malawi, the consensus outlook indicated that during the period October to December 2011, the northern half of the country had 35% chance of rainfall total being above normal, 40% chance of being normal and 25% chance of being below normal while the Southern half has 25% chance of rainfall total being above normal, 40% chance of being normal and 35% chance of being below normal. During the period January to March 2012, the northern half of Malawi had 35% chance of rainfall total being above normal, 40% chance of being normal and 25% chance of being below normal while the Southern half had 40% chance of rainfall total being above normal, 35% chance of being normal and 25% chance of being below normal.

Based on the above analysis, the 2011/2012 forecast indicated that from October to December 2011, the northern half of the country would receive normal to above normal total rainfall amounts while the southern half was expected to experience normal to below normal total rainfall amounts. The greater part of the country was expected to experience normal to above normal total rainfall amounts during January to March and April 2012.

The seasonal forecast was presented to Ministry of Agriculture and Food Security and other key stakeholders. Seasonal climate forecasts are issued for **planning and decision making.** For operational purposes users are encouraged to use short (up to 3 days) and medium range (5-10 days) forecasts that are issued by the department.

Seasonal climate forecast do not provide information on the start, cessation and seasonal distribution of the rains. It is therefore advised that all interested parties' know the mean annual rainfall for their area, the main crops to be grown and their crop water requirement (CWR), for good planning a head of the start of the season. Crop growing period and water requirement vary from crop to crop as shown in the table below**.**

Growing period and crop water requirement estimates for some crops

Crop	Growing period (days)	CWR (mm)
Maize	90 – 140	500 -700
Sorghum	90 – 140	450 -650
Groundnuts	90 – 140	500 -700
Beans	60 – 120	300 -500
Sunflower	90 – 130	600 -1000

Even though a seasonal forecast is obtained after thorough analysis of most of the systems that affect the weather of the country or a region, it becomes more useful

information if users of such information continue to update themselves with climate outlooks provided by the meteorological services over the season.

Agricultural advisors need to regularly monitor seasonal climate outlook information. For example, if there is a high probability of below-average rainfall occurring, say 80% or 4 in 5 years, the appropriate response is to make management decisions anticipating low rainfall.

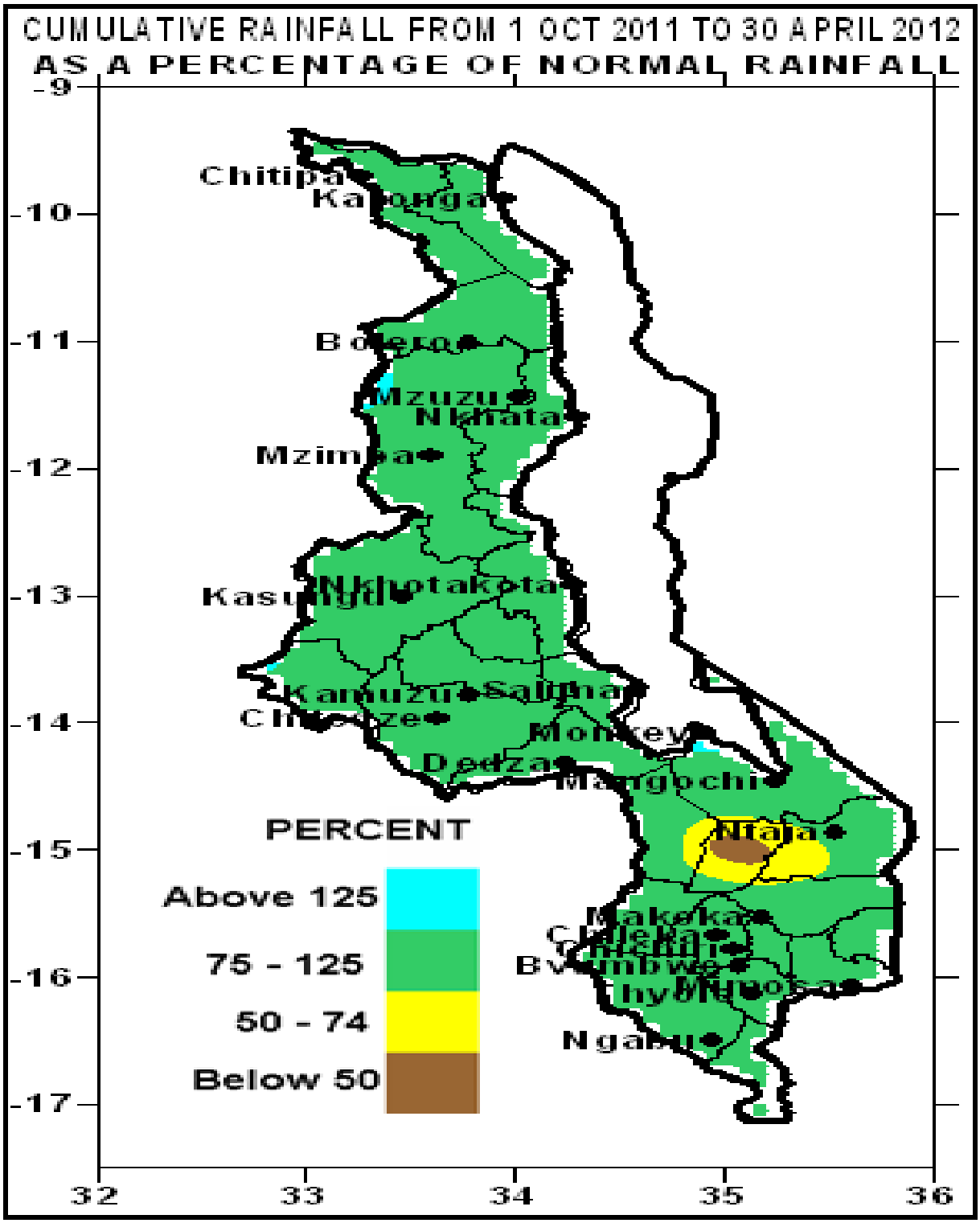
Subsequently the response to a changing situation should be in a number of steps; at each step the best decision is made on the basis of current information. Often the mistake people make is to make one decision based on the first seasonal climate outlook and then ignore keeping track of events. Weather patterns are notorious for changing at short notice.

PROGRESS OF 2011/12 RAINFALL SEASON

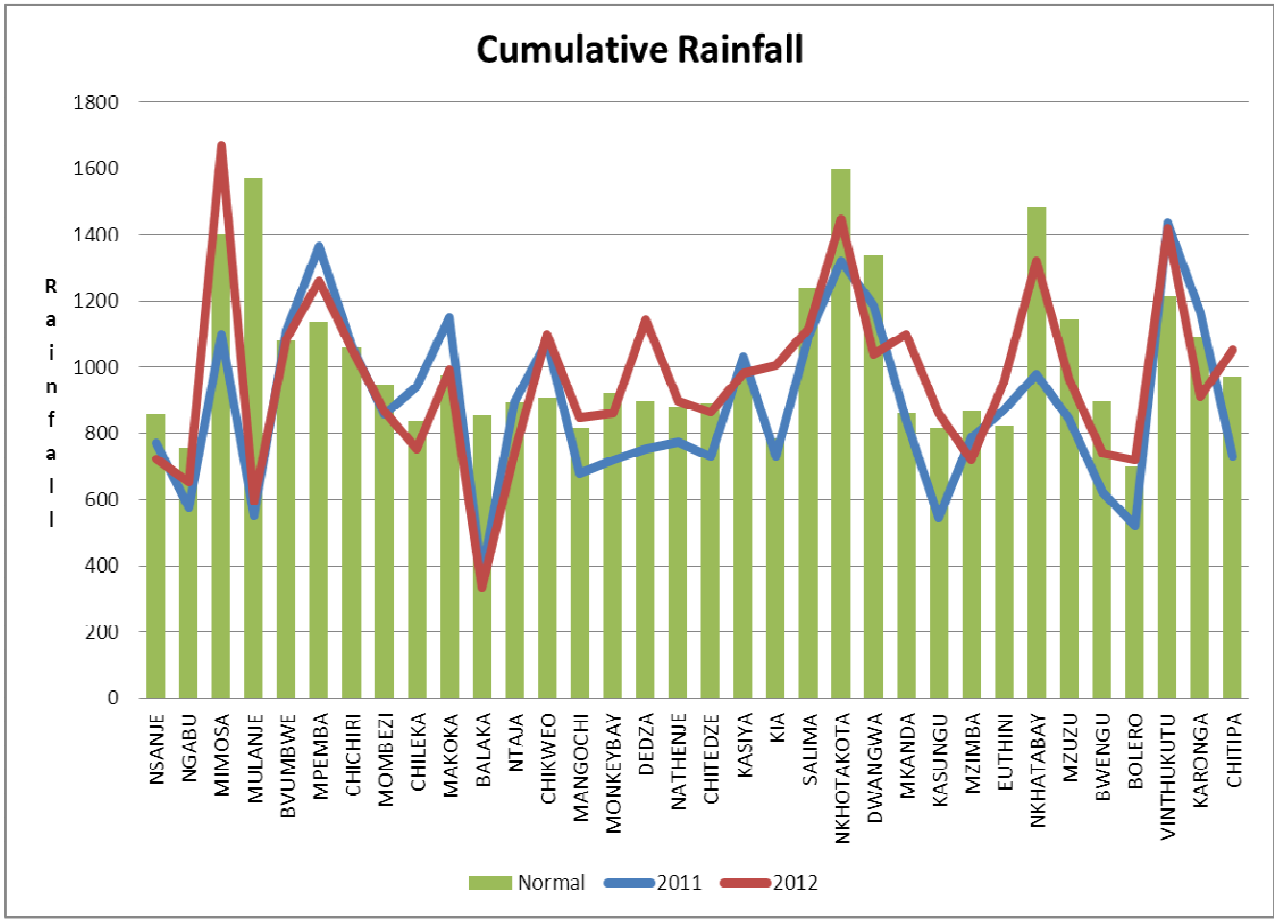
The start of effective rains in Malawi has been variable from as early as October 2011 to as late as January 2012. The first half of season was characterized by poor and erratic onset of rains particularly over the Agricultural Development Divisions in the southern half of Malawi including Kasungu and Salima while the northern half had experienced an early onset with relatively better distribution and intensity. Poor and erratic rains persisted in central and southern Malawi throughout November and December 2011, with good rains being experienced early January 2012. The good rains allowed farmers to complete their planting before the 15th of January, which is considered as the cut-off date for planting rain-fed crops in Malawi. However, high intensity rainfall in the south led to flooding in Chikhwawa and Nsanje districts. In northern Malawi, good rains were received in December and January, facilitating good crop development. The dry spells in the south and the central areas resulted in outbreaks of armyworms, delayed planting and there were reports of crop wilting in some areas. In February 2012 many areas experienced extended dry spells as a result below average rainfall amounts were reported in most areas and southern Malawi was worst hit. Severe dry spells negatively impacted crop production in Balaka, Zomba, Mwanza, Neno, parts of Ntcheu, Chikhwawa Nsanje and Phalombe districts. In March 2012 good rains resumed with high intensity in some areas. Most areas registered average to above average total rainfall amounts. However, Dry spells had persisted around Balaka district over Karonga south in the north

The cessation of the main rains was between early and mid April 2012 which representated a normal cessastion for the South and Centre and a bit earlyfor the North where climatologically the main rainfall season is supposed to end between end of April and early May.

Cumulative rainfall performance from October 2011 up to 30 April, 2012 indicated that most areas had received long term average cumulative rainfall amounts with poor and erratic distribution. However a pocket of below long term average rainfall amounts existed around Balaka district for the second consecutive season.



At the same time cumulative rainfall from October 2011 up to 30 April, 2012 showed a mixed bag in that some areas had received more rains in 2011/12 growing season compared to last season while others had less rainfall this season.



RAINFALL OUTLOOK FOR JUNE TO AUGUST 2012

Climate models predict development of El Niño conditions between June and August 2012 but still within the same period there is considerable forecast uncertainty as to whether ENSO-neutral or El Niño conditions will prevail, due largely to the inability to predict whether the warmer Sea Surface Temperatures will result in the ocean-atmosphere coupling required for a sustained El Niño event.

Meanwhile a series of high pressure systems are expected to periodically induce cool and moist South Easterly Winds into Malawi.Therefore, expect occasional light winter rainfall, Chiperoni type, particularly over highlands and along the lakeshore during the period. The DCC&MS is likely to release the 2012/13 downscaled Seasonal Forecast for Malawi early September after undergoing the South AfricaRegion Climate Outlook Forum (SARCOF) process

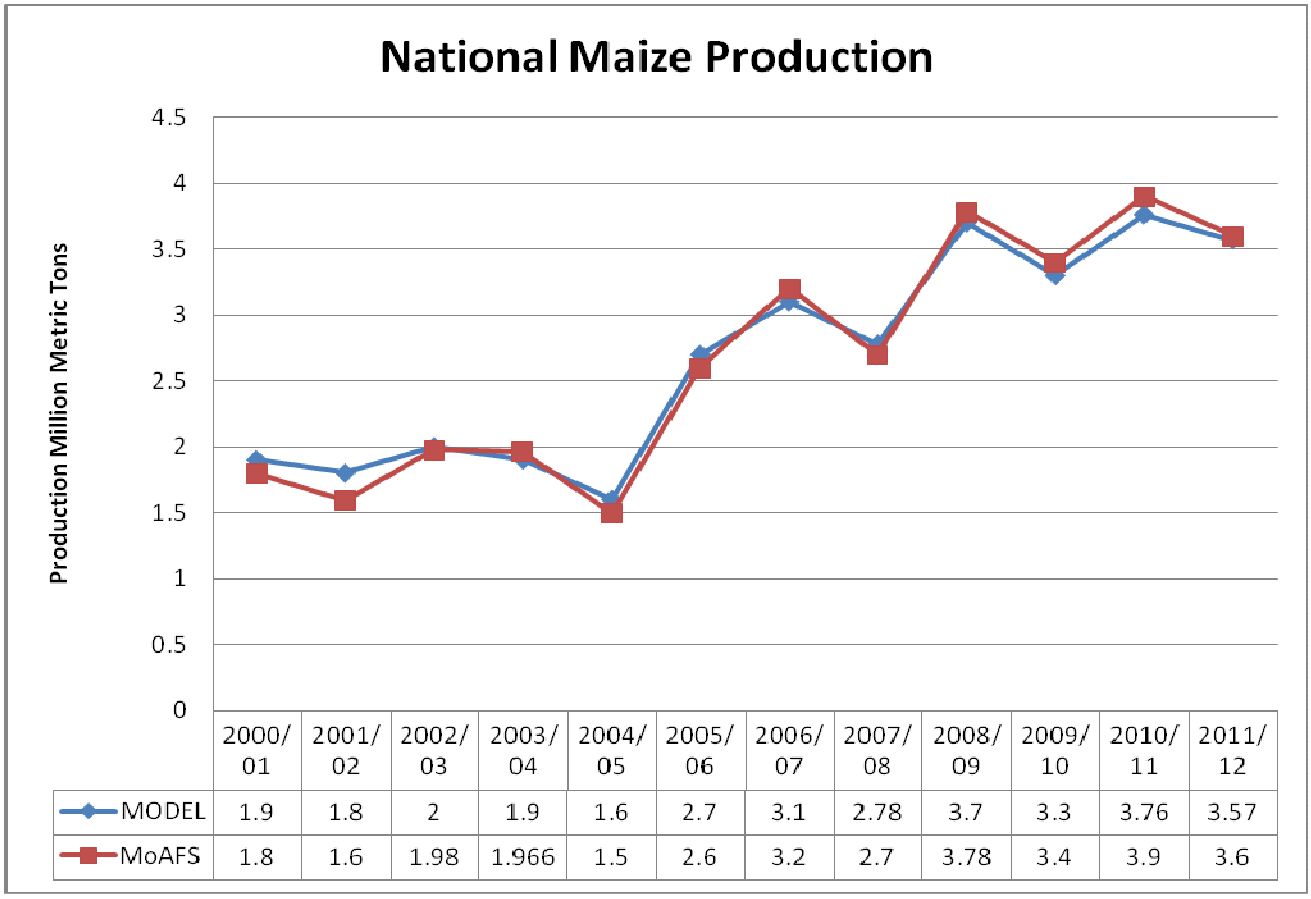
THE CROP WATER REQUIREMENT SATISFACTION INDEX MODEL

The use of WRSI Model

The model is used to forecast Maize yield and production for early warning for food

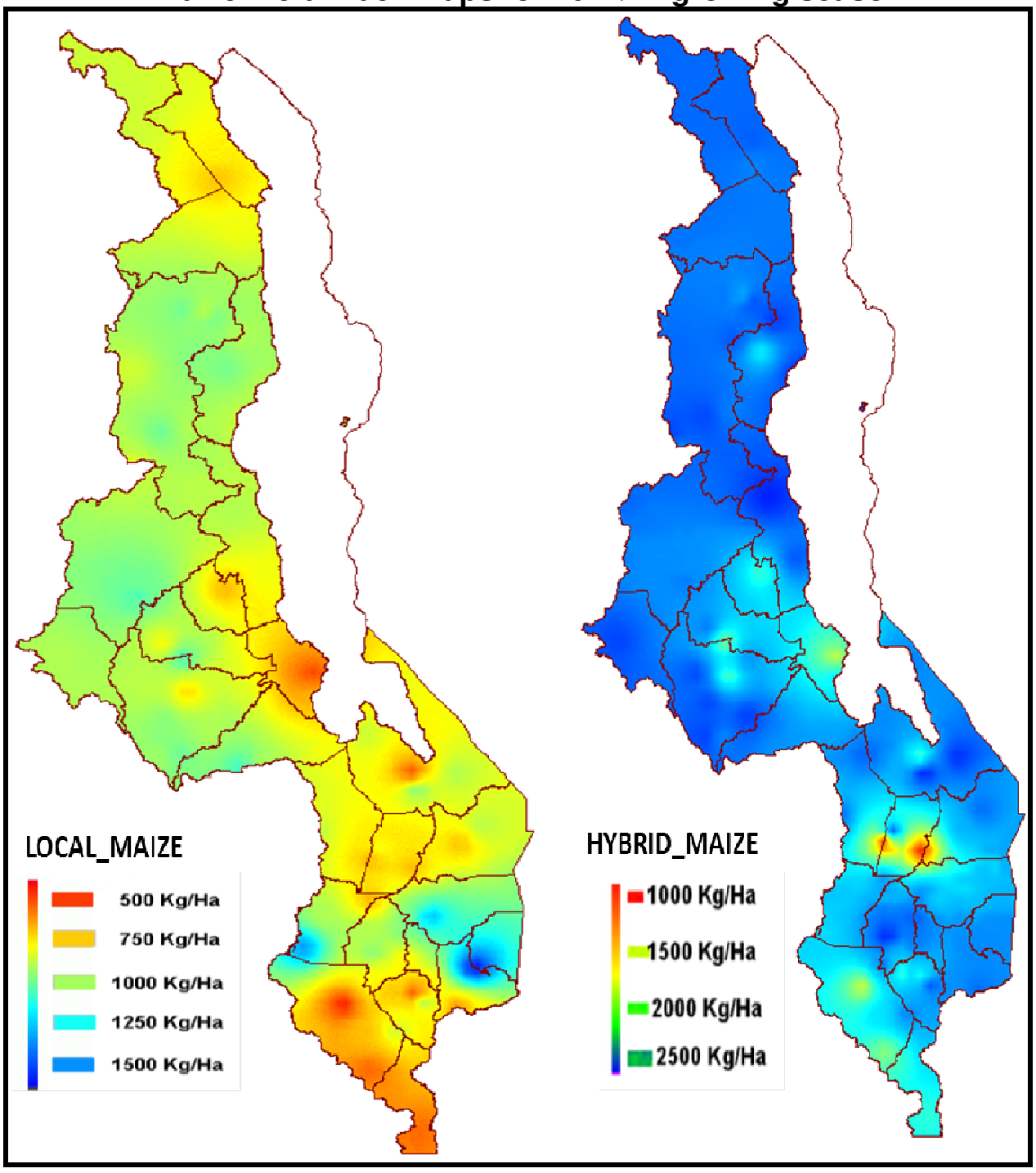
security purposes. This calls for early and accurate information on crop production potential. For early warning, the output product must be delivered to the user in a timely manner. Timeliness is the availability of the information with sufficient lead time so that early options can be considered in management decisions. For crop yield forecasting, this means before harvest time and obviously, the earlier the better. However, the earlier the forecast, the larger is the potential forecast error.

Performance of the WRSI Model against Agricultural Production Estimates Survey



	2000/01	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12
MODEL	1.9	1.8	2	1.9	1.6	2.7	3.1	2.78	3.7	3.3	3.76	3.57
MoAFS	1.8	1.6	1.98	1.966	1.5	2.6	3.2	2.7	3.78	3.4	3.9	3.6

Maize Yield Index Maps for 2011/12 growing season



2011/12 THIRD ROUND SUMMARISED RESULTS FROM THE MODEL

Table 1a: Local Maize Yield and Production at district level

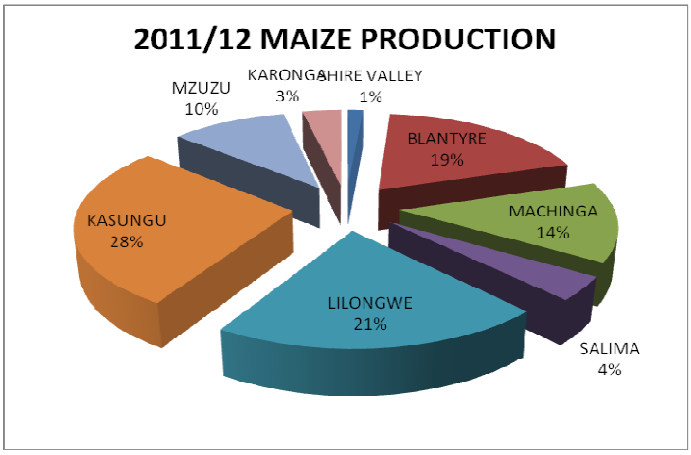
ADD	Area Pl.	WRSI	a	b	S.E.	t stud.
SHIRE VALLEY	21356	88	-65.01	1.679	14.289	1.761
BLANTYRE	153672	88	-68.00	1.663	13.821	1.714
MACHINGA	182602	83	-86.13	1.978	15.190	1.714
SALIMA	32909	92	-128.30	2.444	13.652	1.721
LILONGWE	192621	89	-114.41	2.275	10.452	1.692
KASUNGU	218409	91	-80.44	1.909	11.668	1.693
MZUZU	81442	91	-85.82	1.980	10.945	1.717
KARONGA	26813	92	-140.85	2.583	13.004	1.812
NATIONAL	**909824**	**89**	**-86.17**	**1.954**	**12.980**	**1.645**

RDP	EST.YIELD (% Max.)	EST.YIELD (kg/ha)	EST.PROD. (Tonnes)	YIELD LOW	YIELD HIGH	PROD. LOW	PROD. HIGH
Balaka	78	1442	50894	962	1922	33939	67849
Blantyre	79	2415	65558	1688	3143	45804	85311
Chikwawa	82	1288	21167	894	1683	14686	27649
Chiradzulu	79	1945	32480	1359	2531	22693	42267
Chitipa	97	2747	42264	2083	3412	32044	52484
Dedza	89	1730	99234	1386	2074	79502	118965
Dowa	94	2289	145949	1808	2770	115260	176638
Karonga	97	2283	26092	1731	2835	19783	32402
Kasungu	94	2852	197620	2252	3451	156066	239174
Likoma	95	1902	10	1526	2277	8	11
Lilongwe	89	2107	154487	1688	2526	123769	185205
Machinga	78	1980	72709	1320	2639	48487	96931
Mangochi	78	1736	103723	1157	2314	69169	138277
Mchinji	94	2279	137290	1800	2758	108422	166159
Mulanje	79	2155	72983	1506	2805	50992	94974
Mwanza	79	1538	13495	1075	2002	9429	17561
Mzimba	95	2871	188272	2303	3438	151059	225486
Neno	79	1635	40561	1142	2127	28339	52782
Nkhata Bay	95	2408	18592	1932	2884	14917	22267
Nkhotakota	95	2348	33195	1769	2927	25015	41376
Nsanje	82	1487	7325	1032	1942	5082	9568
Ntcheu	89	1894	117282	1517	2270	93962	140601
Ntchisi	94	3032	76156	2394	3670	60142	92169
Phalombe	79	2181	53308	1524	2839	37246	69371
Rumphi	95	2975	24200	2387	3563	19416	28983
Salima	95	2194	41194	1654	2735	31042	51346
Thyolo	79	2382	42748	1664	3100	29867	55628
Zomba	78	1607	81685	1072	2143	54473	108897

Table 1b: Hybrid Maize Yield and Production at district level							
ADD	Area Pl.	WRSI	a	b	S.E.	t stud.	
SHIRE VALLEY	10625	90	-108.484	1.991	12.513	1.734	
BLANTYRE	142729	89	-108.072	1.982	10.000	1.740	
MACHINGA	95031	85	-72.913	1.448	7.893	1.833	
SALIMA	27753	94	-57.574	1.334	18.938	1.729	
LILONGWE	133850	93	-52.891	1.350	6.276	1.833	
KASUNGU	172830	95	-31.645	1.063	11.382	1.729	
MZUZU	64604	95	-24.802	0.853	13.925	1.782	
KARONGA	23989	92	-194.014	2.779	18.037	1.771	
NATIONAL	**671411**	**92**	**-76.262**	**1.763**	**14.768**	**1.645**	
RDP	EST.YIELD (% Max.)	EST.YIELD (kg/ha)	EST.PROD. (Tonnes)	YIELD LOW	YIELD HIGH	PROD. LOW	PROD. HIGH
Balaka	51	1682	26711	1202	2161	19101	34321
Blantyre	69	2625	57378	1959	3291	42811	71945
Chikwawa	70	1673	11912	1154	2192	8220	15604
Chiradzulu	69	2482	33658	1852	3112	25113	42204
Chitipa	62	2433	28899	1178	3687	13997	43801
Dedza	73	2389	71449	2012	2766	60179	82718
Dowa	70	2497	96482	1791	3202	69230	123734
Karonga	62	2107	25511	1020	3193	12356	38665
Kasungu	70	2426	155789	1741	3112	111785	199792
Likoma	56	1977	273	1108	2845	153	393
Lilongwe	73	3130	236152	2636	3624	198903	273401
Machinga	51	2366	29208	1692	3040	20887	37530
Mangochi	51	1590	56355	1137	2042	40299	72410
Mchinji	70	2478	124242	1778	3179	89149	159335
Mulanje	69	2639	74864	1969	3310	55858	93871
Mwanza	69	2150	15707	1604	2696	11719	19695
Mzimba	56	2102	104288	1178	3026	58456	150120
Neno	69	2086	59161	1556	2615	44141	74180
NkhataBay	56	1977	14549	1108	2845	8155	20943
Nkhotakota	68	2402	26732	1242	3563	13822	39641
Nsanje	70	2242	7859	1547	2937	5423	10295
Ntcheu	73	2334	66505	1966	2702	56015	76995
Ntchisi	70	2669	52966	1915	3423	38006	67927
Phalombe	69	2502	38216	1867	3137	28514	47918
Rumphi	56	2454	18412	1376	3533	10320	26503
Salima	68	2562	42592	1325	3799	22023	63161
Thyolo	69	2580	72254	1925	3236	53910	90597
Zomba	51	2021	63361	1445	2597	45309	81413

Table 2a: Local Maize Yield and Prod at ADD and National level						
ADD	10/11 WRSI	10/11 YIELD	YIELD LOW	YIELD HIGH	11/12 AREA	11/12 PRODUCTION
SHIRE VALLEY	88	1334	926	1743	21356	28492
BLANTYRE	88	2090	1460	2719	153672	321132
MACHINGA	83	1692	1129	2256	182602	309011
SALIMA	92	2260	1703	2818	32909	74390
LILONGWE	89	1926	1543	2309	192621	371002
KASUNGU	91	2550	2014	3087	218409	557015
MZUZU	91	2837	2276	3398	81442	231074
KARONGA	92	2549	1933	3166	26813	68356
NATIONAL	**89**	**2155**	**1627**	**2682**	**909824**	**1,960,472**

Table 2b: Hybrid Maize Yield and Prod at ADD and National level						
ADD	11/12 WRSI	11/12 YIELD	YIELD LOW	YIELD HIGH	11/12 AREA	11/12 PRODUCTION
SHIRE VALLEY	90	1861	1284	2438	10625	19771
BLANTYRE	89	2461	1836	3086	142729	351238
MACHINGA	85	1848	1322	2375	95031	175635
SALIMA	94	2498	1292	3704	27753	69324
LILONGWE	93	2795	2354	3236	133850	374106
KASUNGU	95	2485	1783	3187	172830	429479
MZUZU	95	2129	1193	3064	64604	137522
KARONGA	92	2268	1099	3438	23989	54409
NATIONAL	**92**	**2400**	**1733**	**3067**	**671411**	**1,611,483**



In summary despite the poor and erratic start of planting rains and prolonged dry spells in February, Malawi is expected to have produced a total of **3,571,955** MT of maize during the 2011/12 growing season.