8th November, 2016

CIMMYT announces new pre-commercial maize hybrids available for uptake by partners, especially in Southern Africa

Applications for product allocation are due by 30th November 2016

Attached: Results of the 2016 Maize Regional Trials conducted by CIMMYT-Southern Africa Regional Office

Introduction

New and improved maize hybrids, developed by the CIMMYT Global Maize Program, are available for uptake by public and private sector partners, especially those interested in marketing or disseminating hybrid maize seed across southern Africa and similar agro-ecological zones. NARS and seed companies are hereby invited to apply for permission for allocation of these pre-commercial maize hybrids for potential registration, seed scale-up and delivery to the farming communities, based on the performance data generated through Regional Trials conducted by CIMMYT Southern Africa Regional Office (CIMMYT-SARO). Product performance and other relevant information for the promising hybrids available for allocation is attached.

Each year, CIMMYT Global Maize Program, through CIMMYT-SARO, conducts regional hybrid maize trials through a network of NARS and private seed companies in southern and eastern Africa under various management and environmental conditions (**site summary attached**). Maize hybrids are supplied by CIMMYT-SARO, private seed companies and National Agricultural Research Program in southern Africa. The objectives of these regional trials are:

1. To provide data for selection of possible products for on-farm testing and demonstrations (Mother and Baby Trials, National Performance Trials, Advanced National Performance Trials, Value of Cultivation and Use, Regional On-Farm Varietal Trials);
2. To provide data to guide release, use and dissemination of elite breeding germplasm;

3. To provide relevant performance data to support variety registration and release of new improved hybrids on regional as well as country basis;
4. To provide a common platform for partners to assess/evaluate their products from the breeding programs;
5. To monitor breeding progress and enhance regional genetic gains in maize breeding and product development;
6. To provide better alternatives to and enhance replacement of outdated hybrids in the market; and
7. To enrich and widen the genetic base of elite maize germplasm through germplasm exchange.

Interested institutions are requested to submit a letter of interest along with duly-filled **application form** (template attached) by **30th November 2016** by email to Dr B.M. Prasanna, Director, Global Maize Program, CIMMYT (b.m.prasanna@cgiar.org) with copy to Nick Davis, Program Manager, Global Maize Program, CIMMYT (n.davis@cgiar.org).

Details of Regional Trials conducted by CIMMYT in southern Africa in 2016

1. EHYB16 – Early/extra-early maturing elite pre-released and released hybrids regional trial
2. IHYB16 – Intermediate maturing elite pre-released and released hybrids regional trial
3. LHYB16 – Late maturing elite pre-released and released hybrids regional trial
4. WEHYB16 – Early maturing elite pre-released and released WEMA project hybrids regional trial
5. WLHYB16 – Medium/Late maturing elite pre-released and released WEMA project hybrids regional trial
6. ADVQPM16 – Advance elite pre-released and released quality protein maize (QPM) hybrids regional trial

2016 CIMMYT-SARO pre-commercial maize hybrids available for uptake

In 2016, approximately, 80% of entries were contributed by CIMMYT-SARO. The yield and agronomic performance of entries across contrasting environments in southern Africa are summarized and performance for selected CIMMYT hybrids available for uptake are provided in **Tables 1-6**.

Interested NARS and seed companies are hereby invited to apply for permission to register and commercialize selected maize hybrids from the available products. Kindly submit a letter of interest/application along with duly-filled **application form** (template attached) to Dr B.M. Prasanna, Director, Global Maize Program, CIMMYT (b.m.prasanna@cgiar.org) with copy to Nick Davis, Program Manager, Global Maize Program, CIMMYT (n.davis@cgiar.org) by **30th November 2016**. CIMMYT Maize Product Allocation Committee will review the applications received by the due date and will take decisions on allocation of specific products based on clear criteria designed to promote equitable support to our valued partners (see Appendix 1).

Once CIMMYT finalizes its allocation decisions, applicants will be notified as to the success or otherwise of their applications by **7th December 2016**. CIMMYT will maintain absolute confidentiality of commercially sensitive information (e.g., pedigree of an allocated hybrid) for all the allocation decisions and related data. Successful applicants will be expected to demonstrate to CIMMYT the path of their commercialization efforts within reasonable timeframe, and are expected to sign an agreement to that effect.

Further information regarding the product allocation process is given in **Appendix 1** below. For any further clarifications in this regard, please do not hesitate to contact any of the following contact persons in CIMMYT:

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APPENDIX 1: Allocation and Use of CIMMYT's Elite Maize Products for Varity Registration and Commercialization

The principal purpose of CIMMYT's elite maize germplasm development work is to enhance the reach of improved, adapted, stress-tolerant and nutritious maize varieties to the farmers in targeted geographies, especially in sub-Saharan Africa, Latin America and Asia. CIMMYT Global Maize Program through its breeding hubs in Africa, Asia and Latin America develops elite pre-commercial hybrids as well as improved open-pollinated varieties (OPVs) suited to various agro-ecological zones.

Interested institutions (both public and private) may apply for permission to register CIMMYT's elite maize hybrids or OPVs in specified countries within the framework of the applicable laws, rules and regulations of those countries, harmonized regional seed laws, and the Standard Material Transfer Agreement (SMTA). In allocating a specific product or granting permission to an institute to register CIMMYT's elite product, CIMMYT retains all legal rights on the parental lines of the specific hybrid or OPVs as CIMMYT germplasm is an International Public Good. The recipient institution has permission to use these parental lines in scaling-up and commercializing the specific hybrid combination for which right to register and market are given by CIMMYT. In many instances, seed of the parental lines of the CIMMYT-derived hybrids as well as the hybrids/OPVs themselves may be in the possession of parties other than the Institution to which permission is granted for a specific target geography; therefore, such parental lines and varieties may continue to be used for testing and research purposes, or for commercialization by other institutions in different countries.

The approach used by CIMMYT in granting permission to Institutions to register CIMMYT's elite maize products differs depending on whether the variety is an open-pollinated variety (OPV) or a hybrid.

Open-Pollinated Varieties: OPVs are easier to produce, may be recycled and therefore are often preferred by resource-poor farmers. Consequently, when granting permission to an Institution to register CIMMYT OPVs, the agreement states that the Partner Institution agrees to make breeder and foundation seed of these CIMMYT OPVs available to all interested parties subject to:

a) All applicable laws, rules and regulations in the Specified Countries and regions;
b) Reasonable notice (6 months) being given by other interested parties for quantities of breeder and foundation seed to be purchased from the Partner Institution;
c) Other interested parties commercializing seed of these CIMMYT Open-Pollinated Varieties under the variety name given upon registration but using their own seed packaging.

In this case, the OPV is registered by an Institution, who becomes the maintainer of the variety, but on condition that other institutions may multiply and market the seed within the framework of a country's seed regulations. The Institution registering the CIMMYT variety may

give the OPV a unique name.

Hybrids: By nature, hybrids are uniquely defined by their parental combination, while they are more difficult to produce than OPVs and the grain from hybrids should not be planted as seed. Consequently, permission to register hybrids is granted to particular Institutions on a confidential basis. The Institution becomes the maintainer of the hybrid variety, and may give the hybrid a unique name. The Institution is therefore not obliged to publicly reveal the source of the variety nor provide parental seed to other interested parties.

Allocation Process for CIMMYT's Elite Pre-commercial Products to Interested Institutions

Institutions that are interested in registering CIMMYT elite products (pre-commercial maize hybrids or OPVs) may contact CIMMYT Global Maize Program Director (b.m.prasanna@cgiar.org) or Global Maize Program Manager (n.davis@cgiar.org) and request for permission to register varieties of their choice, based on the web announcement. If more than one partner is interested in registering a particular product in a given geography, CIMMYT reserves the right to allocate the variety to only one partner based on an evaluation of the following criteria:

1. Investment by the applicant in improved maize variety testing and seed production.
2. Likelihood that seed will become widely available **to smallholder farmers**.
3. Likelihood that seed will become widely available in the target geography **as soon as possible**.
4. Diversity among the suppliers of improved seed.
5. Diversity of the regions where the variety will be marketed.
6. Track record of the applicant as a CIMMYT collaborator.
7. Relative importance of the allocated product to the variety portfolio or success of an applicant.

Once a particular product has been allocated to an applicant based on the letter of interest and filled in product allocation request form, the successful applicant will receive a product allocation certificate and an agreement for signing. Once the process is completed, the applicant will be responsible for further testing, registration and commercialization of the allocated product in the target geography for which the product is allocated by CIMMYT. CIMMYT will provide small quantities of breeders' seed of the hybrid (and its parents, where appropriate) to enable the Institution to begin testing and multiplication of the product.

2016 CIMMYT-SARO Trial site information

Trial	Site #	Planting Date	Location	Country	Collaborator	Management	Harvest Date	PlotSize (m2)
IHYB16	109	14-Dec-15	CIMMYT Harare	Zimbabwe	C. Magorokosho	Foliar disease stress	21-May-16	3.375
LHYB16	109	14-Dec-15	CIMMYT Harare	Zimbabwe	C. Magorokosho	Foliar disease stress	21-May-16	3.3375
WEHYB16	33	20-Dec-15	CIMMYT Harare	Zimbabwe	A. Tarekegne	Foliar disease stress	13-Jun-15	3.1875
ADVQPM16	45	16-Dec-15	CIMMYT Harare	Zimbabwe	A. Tarekegne	Foliar disease stress	13-Jun-15	3.1875
EHYB16	108	14-Dec-15	CIMMYT Harare	Zimbabwe	C. Magorokosho	Foliar disease stress	21-May-16	3.375
IHYB16	83	13-Jan-16	Makoholi	Zimbabwe	Nakai. Nakai	Low pH stress	6-Jun-16	7.74
IHYB16	24	2-Dec-15	Marondera	Zimbabwe	J. Cairns	Low pH stress	29-May-16	5.625
IHYB16	94	30-Dec-15	Kasama	Zambia	L. SINYINDA	Low pH stress	23-Jun-16	3.375
LHYB16	24	2-Dec-15	Marondera	Zimbabwe	J. Cairns	Low pH stress	29-May-16	5.625
LHYB16	77	15-Jan-16	Bvumbwe	Malawi	C. Hwale	Low pH stress	12-Jul-16	9.45
LHYB16	79	23-Dec-15	Bembeke	Malawi	C. Hwale	Low pH stress	12-Jul-16	9.45
LHYB16	94	30-Dec-15	Kasama	Zambia	L. SINYINDA	Low pH stress	8-Jun-16	3.375
ADVQPM16	17	1-Jan-16	Msekera	Zambia	D. MELELE	Low pH stress	30-May-16	8.25
ADVQPM16	9	9-Feb-16	Makoholi	Zimbabwe	N. Goremedema	Low pH stress	22-Jun-16	6.375
EHYB16	24	2-Dec-15	Marondera	Zimbabwe	J. Cairns	Low pH stress	29-May-16	5.625
EHYB16	80	24-Dec-15	Bembeke	Malawi	K . Kesbell	Low pH stress	23-May-16	6.375
EHYB16	94	29-Dec-15	Kasama	Zambia	L. Sinyinda	Low pH stress	28-Jun-16	3.375
WEHYB16	9	5-Jan-16	Lutzville	South Africa	L. Moermoholo	Managed drought	8-Aug-16	6.375
WLHYB16	9	5-Jan-16	Lutzville	South Africa	L. Moermoholo	Managed drought	8-Aug-16	6.375
IHYB16	100	9-Jan-16	Nampula	Mozambique	Boaventura. Muachs	Managed Low Nitrogen stress	13-Jun-15	5.25
IHYB16	15	29-Dec-15	Gwebi	Zimbabwe	Z. Mainassara	Managed Low Nitrogen stress	21-Jun-16	5.625
IHYB16	17	16-Dec-15	CIMMYT Harare	Zimbabwe	Z. Mainassara	Managed Low Nitrogen stress	12-May-16	5.25
IHYB16	18	17-Dec-15	CIMMYT Harare	Zimbabwe	Z. Mainassara	Managed Low Nitrogen stress	24-May-16	5.25
IHYB16	19	18-Dec-15	CIMMYT Harare	Zimbabwe	Z. Mainassara	Managed Low Nitrogen stress	26-May-16	5.25
IHYB16	20	14-Dec-15	Rattray-Arnold	Zimbabwe	M. Zeman-Alah	Managed Low Nitrogen stress	15-Jun-16	6
IHYB16	89	7-Jan-16	Vaalharts	South Africa	L. Moremoholo	Managed Low Nitrogen stress	12-Jul-16	7.28
IHYB16	92	4-Jan-16	Golden Valley	Zambia	L. Sinyinda	Managed Low Nitrogen stress	8-Jun-16	3.375
LHYB16	15	29-Dec-15	Gwebi	Zimbabwe	Z. Mainassara	Managed Low Nitrogen stress	21-Jun-16	5.625
LHYB16	17	14-Dec-15	CIMMYT Harare	Zimbabwe	Z. Mainassara	Managed Low Nitrogen stress	26-May-16	5.25
LHYB16	18	17-Dec-15	CIMMYT Harare	Zimbabwe	Z. Mainassara	Managed Low Nitrogen stress	24-May-16	5.25
LHYB16	19	18-Dec-15	CIMMYT Harare	Zimbabwe	Z. Mainassara	Managed Low Nitrogen stress	26-May-16	5.25
LHYB16	20	10-Dec-15	Rattray-Arnold	Zimbabwe	Z. Mainassara	Managed Low Nitrogen stress	14-Jun-16	5.625
LHYB16	89	8-Jan-16	Vaalharts	South Africa	L. Moremoholo	Managed Low Nitrogen stress	11-Jul-16	6.375

LHYB16	92	4-Jan-16	Golden Valley	Zambia	L. Sinyinda	Managed Low Nitrogen stress	8-Jun-16	6.75
WEHYB16	35	16-Dec-15	Rattray-Arnold	Zimbabwe	A. Tarekegne	Managed Low Nitrogen stress	15-Jun-16	5.625
WLHYB16	35	16-Dec-15	Kadoma	Zimbabwe	A. Tarekegne	Managed Low Nitrogen stress	15-Jun-16	6
ADVQPM16	13	8-Jan-15	Vaalharts	South Africa	L. Moremoholo	Managed Low Nitrogen stress	8-Jul-16	6.375
ADVQPM16	16	4-Jan-16	Golden Valley	Zambia	L. Sinyinda	Managed Low Nitrogen stress	8-Jun-16	3.375
ADVQPM16	35	10-Dec-15	Rattray-Arnold	Zimbabwe	A. Tarekegne	Managed Low Nitrogen stress	20-May-16	3
ADVQPM16	38	14-Dec-15	CIMMYT Harare	Zimbabwe	A. Tarekegne	Managed Low Nitrogen stress	1-May-16	6
ADVQPM16	39	11-Jan-16	Gwebi	Zimbabwe	A. Tarekegne	Managed Low Nitrogen stress	15-May-16	6
EHYB16	15	29-Dec-15	Gwebi	Zimbabwe	Z. Mainassara	Managed Low Nitrogen stress	21-Jun-16	5.625
EHYB16	16	18-Dec-15	CIMMYT Harare	Zimbabwe	Z. Mainassara	Managed Low Nitrogen stress	19-May-16	5.25
EHYB16	17	16-Dec-15	CIMMYT Harare	Zimbabwe	Z. Mainassara	Managed Low Nitrogen stress	5-Dec-16	5.25
EHYB16	18	17-Dec-15	CIMMYT Harare	Zimbabwe	Z. Mainassara	Managed Low Nitrogen stress	19/05/2016	5.25
EHYB16	20	16-Dec-15	Rattray-Arnold	Zimbabwe	Z. Mainassara	Managed Low Nitrogen stress	14-Jun-16	5.625
EHYB16	89	7-Jan-16	Vaalharts	South Africa	L. Moremoholo	Managed Low Nitrogen stress	11-Jul-16	7.28
EHYB16	92	4-Jan-16	Golden Valley	Zambia	L. Sinyindi	Managed Low Nitrogen stress	8-Jun-16	6.75
IHYB16	27	14-Dec-15	CIMMYT Harare	Zimbabwe	Z. Mainassara	Managed Low Phosphorus stress	24-May-16	5.25
LHYB16	27	14-Dec-15	CIMMYT Harare	Zimbabwe	Z. Mainassara	Managed Low Phosphorus stress	26/05/2016	5.25
EHYB16	27	14-Dec-15	CIMMYT Harare	Zimbabwe	Z. Mainassara	Managed Low Phosphorus stress	19-May-16	5.25
WEHYB16	33	30-Dec-15	CIMMYT Harare	Zimbabwe	A. Tarekegne	Managed Low Phosphorus stress	21-Jun-16	3.375
WEHYB16	55	30-Dec-15	CIMMYT Harare	Zimbabwe	A. Tarekegne	Managed Low Phosphorus stress	13-Jun-15	3.375
WLHYB16	33	30-Dec-15	CIMMYT Harare	Zimbabwe	A. Tarekegne	Managed Low Phosphorus stress	21-Jun-16	3.375
ADVQPM16	36	30-Dec-15	CIMMYT Harare	Zimbabwe	A. Tarekegne	Managed Low Phosphorus stress	21-Jun-16	3.375
IHYB16	1	28-Nov-15	Gwebi	Zimbabwe	A. Tarekegne	Optimal	13-Jun-15	6.75
IHYB16	10	12-Dec-15	Syngenta Farm	Zambia	M. Milupi	Optimal	27-May-16	8.586
IHYB16	101	6-Jan-16	Lichinga	Mozambique	Nelito . Joao	Optimal	13-Jun-15	5.25
IHYB16	11	5-Dec-15	CIMMYT Harare	Zimbabwe	A. Tarekegne	Optimal	13-Jun-15	6.75
IHYB16	12	5-Dec-15	CIMMYT Harare	Zimbabwe	A. Tarekegne	Optimal	20-May-16	6.75
IHYB16	2	28-Nov-15	Gwebi	Zimbabwe	A. Tarekegne	Optimal	13-Jun-15	6.75
IHYB16	28	3-Jan-16	Riverview	Zimbabwe	A. Tarekegne	Optimal	20-May-16	3.375
IHYB16	29	20-Dec-15	CIMMYT Harare	Zimbabwe	C. Magorokosho	Optimal	21-May-16	6.375
IHYB16	3	16-Dec-15	CHIBERO	Zimbabwe	C. Magorokosho	Optimal	21-May-16	6.75
IHYB16	5	16-Dec-15	CIMMYT Harare	Zimbabwe	C. Magorokosho	Optimal	10-May-16	3.3675

IHYB16	6	27-Nov-15	Glendale	Zimbabwe	A. Tarekegne	Optimal	13-Jun-15	6.75
IHYB16	64	13-Dec-15	Rattray-Arnold	Zimbabwe	A. Tarekegne	Optimal	15-Jun-16	6.75
IHYB16	67	29-Dec-16	Mbawa	Malawi	C. Mwale	Optimal	20-Augl-16	6.375
IHYB16	7	27-Nov-15	Glendale	Zimbabwe	A. Tarekegne	Optimal	13-Jun-15	6.75
IHYB16	76	31-Dec-15	Meru	Malawi	C. Mwale	Optimal	21-Jun-16	6.375
IHYB16	77	15-Jan-16	Bvumbwe	Malawi	C. Mwale	Optimal	13-Jul-16	7.875
IHYB16	78	29-Dec-15	Mbawa	Malawi	C. Mwale	Optimal	20-Jun-16	7.875
IHYB16	79	28-Dec-15	Zombwe	Malawi	C. Mwale	Optimal	20-Jun-16	7.875
IHYB16	8	19-Dec-15	Mpongwe	Zambia	K. Simpasa	Optimal	27-Jul-16	7.875
IHYB16	80	22-Dec-15	Chitedze	Malawi	C. Mwale	Optimal	24-May-16	8.025
IHYB16	82	26-Jan-16	Panmure-Shamva	Zimbabwe	N. Goredema	Optimal	9-Jun-16	6.84
IHYB16	88	20-Dec-15	Cedara	South Africa	L. Moremoholo	Optimal	25-Jul-16	6.375
IHYB16	9	23-Dec-15	Lusaka West	Zambia	H. Masole	Optimal	10-May-16	8.25
IHYB16	90	15-Dec-15	ZAMSEED Farm	Zambia	B. Verma	Optimal	20-May-16	6.375
IHYB16	93	3-Jan-16	Mount Makulu	Zambia	L. Sinyinda	Optimal	6-Jun-16	6.75
IHYB16	96	17-Dec-15	Komani	Zimbabwe	A. Henderson	Optimal	22-Jul-16	7.65
IHYB16	97	13-Dec-15	Kadoma	Zimbabwe	A. Henderson	Optimal	17-Jul-16	7.65
IHYB16	98	15-Jan-16	Chokwe	Mozambique	E. Nhamucho	Optimal	15/6/2016	8.4
LHYB16	1	10-Dec-15	Gwebi	Zimbabwe	A. Tarekegne	Optimal	25-May-16	6.75
LHYB16	10	14-Dec-15	Syngenta Farm	Zambia	M. Milupi	Optimal	27-May-16	8.586
LHYB16	100	7-Jan-16	Lichinga	Mozambique	Nelito Joao	Optimal	13-Jun-15	8.4
LHYB16	11	5-Dec-15	CIMMYT Harare	Zimbabwe	A. Tarekegne	Optimal	15-May-16	6.75
LHYB16	12	5-Dec-15	CIMMYT Harare	Zimbabwe	A. Tarekegne	Optimal	15-May-16	6.75
LHYB16	2	10-Dec-15	Gwebi	Zimbabwe	A. Tarekegne	Optimal	25-May-16	6.75
LHYB16	28	3-Jan-16	Riverview	Zimbabwe	A. Tarekegne	Optimal	20-May-16	3.375
LHYB16	5	16-Dec-15	CIMMYT Harare	Zimbabwe	C. Magorokosho	Optimal	10-May-16	3.375
LHYB16	6	17-Nov-15	Glendale	Zimbabwe	A. Tarekegne	Optimal	1-May-16	6.75
LHYB16	61	3-Dec-15	Rattray-Arnold	Zimbabwe	A. Tarekegne	Optimal	15-Jun-16	6.75
LHYB16	63	5-Jan-16	Irrine-farm	Zimbabwe	A. Tarekegne	Optimal	18-May-16	6.75
LHYB16	7	17-Nov-15	Glendale	Zimbabwe	A. Tarekegne	Optimal	20-May-16	6.75
LHYB16	76	26-Dec-15	Meru	Malawi	C. Mwale	Optimal	22-Jun-16	7.875
LHYB16	8	21-Dec-15	Mpongwe	Zambia	K. Simposa	Optimal	23/6/2016	7.875
LHYB16	80	12-Dec-15	Chitedze	Malawi	C. Mwale	Optimal	25-May-16	7.875
LHYB16	82	18-Jan-16	Panmure-Shamva	Zimbabwe	N. Goredema	Optimal	27-May-16	6.375
LHYB16	83	19-Jan-16	Makoholi	Zimbabwe	Nakai. Nakai	Optimal	6-Jun-16	7.74
LHYB16	90	23-Dec-15	ZAMSEED	Zambia	B. Verma	Optimal	20-05-2016	7.875
LHYB16	93	4-Jan-16	Golden Valley	Zambia	S. LUBASI	Optimal	16-Jun-16	6.75
LHYB16	96	17-Dec-15	Komani	Zimbabwe	A. Henderson	Optimal	22-Jul-16	7.65
LHYB16	98	10-Jan-16	Chokwe	Mozambique	E. Nhamucho	Optimal	13-Jun-15	8.4
WEHYB16	1	30-Nov-15	Gwebi	Zimbabwe	A. Tarekegne	Optimal	13-Jun-15	6.75
WEHYB16	10	23-Dec-15	Vaalharts	South Africa	L. Moremoholo	Optimal	7-Jul-16	6.375
WEHYB16	11	23-Dec-15	ZAMSEED Farm	Zambia	B. Verma	Optimal	20-Jun-16	6.375
WEHYB16	18	18-Dec-15	Mpongwe	Zambia	K. Simposa	Optimal	24/6/2016	7.875
WEHYB16	19	21-Dec-15	Lusaka West	Zambia	H. Masole	Optimal	22-Jun-16	7.875
WEHYB16	2	30-Nov-15	Gwebi	Zimbabwe	A. Tarekegne	Optimal	13-Jun-15	6.75
WEHYB16	20	5-Dec-15	CIMMYT Harare	Zimbabwe	A. Tarekegne	Optimal	13-Jun-15	6.75
WEHYB16	21	5-Dec-15	CIMMYT Harare	Zimbabwe	A. Tarekegne	Optimal	13-Jun-15	6.75

WEHYB16	3	27-Nov-15	CIMMYT Harare	Zimbabwe	A. Tarekegne	Optimal	13-Jun-15	6
WEHYB16	31	13-Dec-15	Rattray-Arnold	Zimbabwe	A. Tarekegne	Optimal	15-Jun-16	6.75
WEHYB16	36	18-Dec-15	CIMMYT Harare	Zimbabwe	A. Tarekegne	Optimal	13-Jun-15	6
WEHYB16	37	11-Jan-16	Gwebi	Zimbabwe	A. Tarekegne	Optimal	15-May-16	6
WEHYB16	38	5-Jan-16	Irrine-farm	Zimbabwe	A. Tarekegne	Optimal	18-May-16	6.75
WEHYB16	4	27-Nov-15	Glendale	Zimbabwe	A. Tarekegne	Optimal	13-Jun-15	6.75
WEHYB16	7	22-Dec-15	Cedara	South Africa	L. Moremoholo	Optimal	18-Aug-16	6.75
WEHYB16	8	21-Dec-15	Cedara	South Africa	L. Moermoholo	Optimal	30-Jul-16	6.375
WLHYB16	1	28-Nov-15	Gwebi	Zimbabwe	A. Tarekegne	Optimal	13-Jun-15	6.75
WLHYB16	10	7-Dec-15	Vaalharts	South Africa	L. Moremoholo	Optimal	11-Jul-16	6.375
WLHYB16	11	23-Dec-15	ZAMSEED Farm	Zambia	B. Verma	Optimal	30-Jun-16	6.375
WLHYB16	18	12-Dec-15	Mpongwe	Zambia	K. Simposa	Optimal	24/6/2016	7.875
WLHYB16	19	21-Dec-15	Lusaka West	Zambia	H. Masole	Optimal	26-Jun-16	7.875
WLHYB16	2	16-Dec-15	Gwebi	Zimbabwe	A. Tarekegne	Optimal	15-May-16	6.75
WLHYB16	20	5-Dec-15	CIMMY Harare	Zimbabwe	A. Tarekegne	Optimal	13-Jun-15	6.75
WLHYB16	21	5-Dec-15	CIMMYT Harare	Zimbabwe	A. Tarekegne	Optimal	13-Jun-15	6.75
WLHYB16	3	28-Dec-15	Glendale	Zimbabwe	A. Tarekegne	Optimal	13-Jun-15	6.75
WLHYB16	31	13-Dec-15	Rattray-Arnold	Zimbabwe	A. Tarekegne	Optimal	15-Jun-16	6.75
WLHYB16	33	20-Dec-15	Gwebi	Zimbabwe	A. Tarekegne	Optimal	13-Jun-15	6.375
WLHYB16	36	18-Dec-15	CIMMYT Harare	Zimbabwe	A. Tarekegne	Optimal	18-May-16	6
WLHYB16	37	12-Jan-16	Gwebi	Zimbabwe	A. Tarekegne	Optimal	15-May-16	6
WLHYB16	38	5-Jan-16	Irrine-farm	Zimbabwe	A. Tarekegne	Optimal	18-May-16	6.75
WLHYB16	4	27-Nov-15	Glendale	Zimbabwe	A. Tarekegne	Optimal	13-Jun-15	6.75
WLHYB16	7	22-Dec-15	Cedara	South Africa	L. Moremoholo	Optimal	18-Aug-16	6.75
WLHYB16	8	21-Dec-15	Cedara	South Africa	L. Moremoholo	Optimal	4-May-16	6.375
ADVQPM16	14	16-Dec-15	ZAMSEED Farm	Zambia	B. Verma	Optimal	12-May-16	7.875
ADVQPM16	18	5-Dec-15	CIMMYT Harare	Zimbabwe	A. Tarekegne	Optimal	13-Jun-15	6.75
ADVQPM16	19	17-Dec-15	Kommani	Zimbabwe	A. Henderson	Optimal	22-Jul-16	7.65
ADVQPM16	2	28-Dec-15	Glendale	Zimbabwe	A. Tarekegne	Optimal	13-Jun-15	6.75
ADVQPM16	3	18-Dec-15	Mpongwe	Zambia	K. Simposa	Optimal	24/6/2016	7.875
ADVQPM16	34	10-Dec-15	Rattray-Arnold	Zimbabwe	A. Tarekegne	Optimal	18-May-16	6.75
ADVQPM16	4	23-Dec-15	Lusaka West	Zambia	H. Masole	Optimal	27-Jun-16	7.875
ADVQPM16	5	10-Jan-16	Chitedze	Malawi	K. Kaonga	Optimal	24-May-16	8.025
ADVQPM16	6	24-Dec-15	Chitala	Malawi	K. Kaonga	Optimal	24-May-16	8.025
ADVQPM16	8	25-Jan-15	Panmure-Shamva	Zimbabwe	N. Goredema	Optimal	6-May-16	6.375
EHYB16	10	14-Dec-15	Syngenta Farm	Zambia	M. Milupi	Optimal	27-May-16	8.586
EHYB16	101	22-Dec-15	Sussundenga	Mozambique	E. Mulima	Optimal	13-Jun-15	8.4
EHYB16	106	16-Dec-15	SIRDC Farm	Zimbabwe	M. Mativavarira	Optimal	8-Jun-16	7.65
EHYB16	11	5-Dec-15	CIMMYT Harare	Zimbabwe	A. Tarekegne	Optimal	13-Jun-15	6.75
EHYB16	12	5-Dec-15	CIMMYT Harare	Zimbabwe	A. Tarekegne	Optimal	13-Jun-15	6.75
EHYB16	2	16-Dec-15	Gwebi	Zimbabwe	A. Tarekegne	Optimal	25-May-16	6.75
EHYB16	28	3-Jan-16	Riverview	Zimbabwe	A. Tarekegne	Optimal	20-May-16	3.375
EHYB16	30	4-Dec-15	Rattray-Arnold	Zimbabwe	L. Musundire	Optimal	30-May-16	6.375
EHYB16	6	27-Nov-15	Glendale	Zimbabwe	A. Tarekegne	Optimal	15-May-16	6.75
EHYB16	66	13-Dec-15	Rattray-Arnold	Zimbabwe	A. Tarekegne	Optimal	15-Jun-16	6.75
EHYB16	68	5-Jan-16	Irrine-farm	Zimbabwe	A. Tarekegne	Optimal	18-May-16	6.75
EHYB16	7	27-Nov-15	Glendale	Zimbabwe	A. Tarekegne	Optimal	13-Jun-15	6.75

EHYB16	76	8-Jan-16	Chitedze	Malawi	K. Kaonga	Optimal	10-Jun-16	8.1
EHYB16	78	26-Dec-15	Chitala	Malawi	ND. Chikond	Optimal	24-May-16	8.1
EHYB16	8	19-Dec-15	Mpongwe	Zambia	K. Simpasa	Optimal	27-Jul-16	7.875
EHYB16	82	18-Jan-16	Panmure-Shamva	Zimbabwe	N. Goredema	Optimal	27-May-16	5.625
EHYB16	83	19-Jan-16	Makoholi	Zimbabwe	Nakai. Nakai	Optimal	22-Jun-16	7.74
EHYB16	9	23-Dec-15	Lusaka West	Zambia	H. Masole	Optimal	18-May-16	7.875
EHYB16	90	23-Dec-15	ZAMSEED Farm	Zambia	B. Verma	Optimal	10-May-16	7.875
EHYB16	93	24-Dec-15	Mount Makulu	Zambia	V. NABEENE	Optimal	18-Jun-16	8.25
EHYB16	96	17-Dec-15	Komani	Zimbabwe	A. Henderson	Optimal	22-Jul-16	7.65
EHYB16	98	23-Jan-16	Chokwe	Mozambique	E. Nhamucho	Optimal	13-Jun-15	8.4
EHYB16	99	10-Jan-16	Chokwe	Mozambique	A. Fungulane	Optimal	13-Jun-15	8.4
EHYB16	67	16-Dec-15	Kadoma	Zimbabwe	A. Tarekegne	Random stress	15-Jun-16	6.75
IHYB16	65	16-Dec-15	Kadoma	Zimbabwe	A. Tarekegne	Random stress	15-Jun-16	6.75
IHYB16	66	5-Jan-16	Irrine-farm	Zimbabwe	A. Tarekegne	Random stress	18-May-16	6.75
IHYB16	87	21-Dec-15	Cedara	South Africa	L. Moremoholo	Random stress	25-Jul-16	6.375
IHYB16	91	10-Dec-15	E.T.G Farm	Zambia	M. Maurya	Random stress	5-Oct-16	7.875
LHYB16	62	16-Dec-15	Kadoma	Zimbabwe	A. Tarekegne	Random stress	15-Jun-16	6.75
LHYB16	78	29-Dec-15	Chitala	Malawi	C. Mwale	Random stress	12-Jul-16	7.875
LHYB16	87	21-Dec-15	Cedara	South Africa	L. Moermoholo	Random stress	30-Jul-16	6.375
LHYB16	91	10-Dec-15	E.T.G Farm	Zambia	M. Maurya	Random stress	5-Jun-16	7.875
LHYB16	97	13-Dec-15	Golden Valley	Zambia	L. Sinyindi	Random stress	17-May-16	6.375
WEHYB16	12	10-Dec-15	CIMMYT Harare	Zimbabwe	M. Maurya	Random stress	5-Dec-16	7.875
WEHYB16	34	16-Dec-15	Kadoma	Zimbabwe	A. Tarekegne	Random stress	15-Jun-16	6.75
WLHYB16	12	17-Dec-15	CIMMYT Harare	Zimbabwe	M. Maurya	Random stress	5-Oct-16	7.875
WLHYB16	34	16-Dec-15	Kadoma	Zimbabwe	A. Tarekegne	Random stress	15-Jun-16	6.75
ADVQPM16	15	21-Dec-15	E.T.G. Farm	Zambia	M. Maurya	Random stress	15-May-16	7.875
ADVQPM16	21	15-Jan-16	Chokwe	Mozambique	A. Tarekegne	Random stress	13-Jun-15	8.4
ADVQPM16	22	23-Dec-15	Sussundenga	Mozambique	E. Mulima	Random stress	13-Jun-15	8.4
ADVQPM16	23	5-Jan-16	Chokwe	Mozambique	P. Fato	Random stress	13-Jun-15	8.4
ADVQPM16	37	16-Dec-15	Kadoma	Zimbabwe	A. Tarekegne	Random stress	15-Jun-16	6.75
ADVQPM16	40	28-Dec-15	Irrine-farm	Zimbabwe	A. Tarekegne	Random stress	18-May-16	6.75
EHYB16	79	18-Jan-16	Baka	Malawi	A. Mvula	Random stress	24-May-16	8.025
EHYB16	87	22-Dec-15	Cedara	South Africa	L. Moermoholo	Random stress	10-Aug-16	6.375
EHYB16	91	21-Dec-15	E.T.G Farm	Zambia	M. Maurya	Random Stress	5-Dec-16	7.875
EHYB16	97	13-Dec-15	Kadoma	Zimbabwe	A. Henderson	Random stress	17-Jul-16	7.65

Mean yield performance and agronomic attributes of elite medium/late maturing CIMMYT hybrids and commercial and internal genetic check hybrids in Southern Africa 2016 regional trials (WLHYB16)

Entry	Name	Comment	Management				Grain	Relative	Grain	Anth	Anthesis-silking	Plant	Ear	Ear+	Lodging	Gray Leaf Spot	Common Rust	Leaf Blight
			HD	A-Opt	C-RS	Low N	Moist	grain yield	Text	Date	interval	Height	Height	Position		(GLS)	(P.sorg)	(E.turc.)
			----------t/ha----------				%	%	1-5	d	d	cm	cm	0-1	%	1-5	1-5	1-5
1	PAN53	Baseline comm check	9.09	6.99	3.61	2.05	33.7	103	18.2	70.5	-0.2	254.9	134.3	0.53	11.1	2.8	1.3	1.3
2	PHB30G19	Baseline comm check	8.15	5.90	2.93	1.57	31.5	84	19.8	70.5	2.6	259.2	126.7	0.51	13.3	2.7	1.9	1.9
3	SC627	Baseline comm check	5.75	5.29	2.78	1.42	24.2	78	17.4	70.7	0.5	265.9	142.8	0.56	2.8	1.0	3.1	1.6
4	CZH132045	Internal genetic check	8.51	6.31	3.76	2.25	29.0	104	18.6	71.2	-0.1	243.7	132.1	0.57	10.8	2.1	1.8	1.1
5	CZH132044	Internal genetic check	7.56	6.72	3.31	1.87	38.6	96	17.7	67.3	1.2	247.3	115.2	0.48	6.3	2.8	1.6	1.6
6	CZH142011	Available	9.17	7.14	3.86	1.68	30.6	102	18.2	65.9	1.8	249.9	133.6	0.55	1.2	3.0	1.0	1.5
15	CZH15149	Available	9.52	7.75	4.10	1.85	33.7	114	18.4	68.8	0.5	233.3	139.0	0.59	5.6	2.2	1.5	1.1
24	CZH15158	Available	10.97	7.78	3.51	1.83	32.2	109	19.3	71.8	-2.3	264.8	137.1	0.57	1.4	1.6	2.0	1.4
26	CZH15160	Available	9.12	7.63	3.35	2.07	35.1	106	18.2	72.2	-2.0	259.4	141.1	0.56	5.4	2.9	1.5	1.3
27	CZH15161	Available	11.27	8.17	4.18	1.76	36.8	117	19.1	73.5	-1.9	254.3	144.4	0.57	2.7	2.5	1.5	1.6
29	CZH15163	Available	11.52	8.29	3.80	1.71	34.4	115	19.2	73.7	-0.6	261.5	145.8	0.59	5.3	3.4	1.6	1.2
36	CZH15170	Available	9.58	7.59	3.87	1.46	37.6	107	19.2	69.1	0.5	252.3	125.0	0.52	2.9	2.5	1.9	1.3
Mean			9.17	7.03	3.34	1.83	33.7	100	18.5	71.6	0.0	255.8	138.6	0.56	5.9	2.3	1.8	1.8
LSD (0.05)			1.20	0.77	0.92	0.94	3.6	10	1.4	1.1	1.3	13.1	9.0	0.03	7.4	1.4	1.3	1.1
H			0.80	0.76	0.66	0.46	0.5		0.9	0.9	0.6	0.8	0.8	0.73	0.5	0.0	0.3	
nLoc			3	8	7	3	7	23	6	7	3	5	7	8	6	1	1	1

ME = Mega-environment; ME-A, -C= Mega-environment A, C
Opt = Optimum (53, 000 plants) ; HD = high density (80, 000 plants); RS = Random stress; N= Nitrogen

Diseases scored on 1-5 scale: 1 = tolerant, 5 = susceptible Kernel texture rated on 1-5 scale: 1 = flint, 5= dent.
Ear position values are ratios of ear height to plant height, small values indicate low ear position; large values indicate high ear position.

Mean yield performance and agronomic attributes of available elite CIMMYT QPM hybrids and commercial and internal genetic check hybrids in Southern Africa 2016 regional trial (ADVQPM16)

Entry	QPM hybrid	Comment	Environment				Relative Grain yield	Kernel quality[+]	Grain Moist	Anth Date	Anthesis-Silking interval (ASI)	Plant Height	Ear Height	Ear Position	Gray Leaf Spot (GLS)	Common Rust (P.sorg)	Leaf Blight (E.turc.)
			Opt	Low N	RS	LpH											
			----------t/ha----------				%	1-5	%	d	d	cm	cm	0-1	1-5	1-5	1-5
1	ZS261	QPM Comm. Check	5.56	2.46	2.59	3.06	88	3.0	15.0	61.5	0.9	228.4	121.0	0.50	2.7	1.9	1.7
2	PAN53	Non-QPM comm check	7.33	2.72	3.49	4.53	107	2.2	16.4	62.8	1.0	242.8	130.0	0.53	2.7	1.0	1.8
3	CZH04032	QPM inter genet check	6.05	2.43	3.40	4.01	94	2.4	15.9	61.3	0.7	225.7	120.3	0.52	2.6	1.1	1.3
19	CZH15098Q	Available	6.59	3.66	4.01	5.14	114	3.4	15.0	59.6	0.4	223.4	111.6	0.48	3.2	1.4	2.0
20	CZH15099Q	Available	6.98	3.24	4.19	5.82	113	2.4	15.0	60.8	1.1	228.4	124.0	0.52	3.0	0.9	1.4
26	CZH15105Q	Available	7.02	3.01	3.55	4.68	108	3.4	16.1	60.5	0.5	239.5	130.4	0.53	2.7	1.0	1.4
38	CZH15117Q	Available	6.97	3.22	4.36	5.31	115	3.2	15.5	61.3	0.5	223.9	119.3	0.51	2.6	2.4	1.6
46	CZH15125Q	Available	7.22	3.06	3.47	5.32	112	3.9	15.5	60.0	0.1	221.4	114.4	0.49	3.0	1.5	1.4
51	CZH15130Q	Available	7.42	2.78	3.82	4.48	111	3.0	17.4	64.5	1.1	248.5	143.4	0.57	2.9	0.8	1.2
58	CZH15137Q	Available	7.51	2.95	3.36	5.86	112	2.5	15.7	61.5	0.8	250.6	134.9	0.53	2.8	5.9	1.6
59	CZH15138Q	Available	7.52	2.92	3.43	5.65	114	2.7	15.6	61.5	-0.5	248.0	140.2	0.55	2.7	2.7	2.0
60	CZH15139Q	Available	7.06	2.98	4.78	4.80	118	3.2	16.4	63.1	0.2	234.4	127.4	0.52	2.7	1.2	1.7
63	CZH15142Q	Available	7.32	3.16	4.15	5.63	116	2.7	15.2	60.1	0.7	230.3	116.1	0.49	2.6	2.2	1.6
	Mean		6.48	2.58	3.46	4.74	100	2.7	15.8	61.9	0.6	231.0	123.8	0.52	2.7	1.5	1.5
	LSD (0.05)		0.55	0.72	1.00	1.00		0.9	0.8	1.3	0.8	8.5	8.0	0.03	0.4	1.7	0.5
	Heritability		0.84	0.50	0.48	0.37		0.6	0.7	0.8	0.0	0.9	0.9	0.67	0.6	0.1	0.0
	nLoc		13	5	6	2	26	3	11	9	9	13	13	13	7	5	6

[+] kernel chalkiness; 1= hard kernel (less chalky); 5 = chalky kernel

Opt = Optimum; Low N = Low N stress; RS = Random stress; LpH = Low soil pH (acidic soil)

Opt = Optimum (53, 000 plants) ; RS = Random stress; N= Nitrogen; P= phosphorus; pH = soil pH (acidity).
Diseases scored on 1-5 scale: 1 = tolerant, 5 = susceptible.
Ear position values are ratios of ear height to plant height, small values indicate low ear position large values indicate high ear placement

Mean yield performance and agronomic attributes of available elite early/extra-early maturing CIMMYT hybrids and commercial and internal genetic check hybrids in southern Africa 2016 regional trial (EHYB16)

Entry	Hybrid	Comment	ME-A Opt	ME_A HD	ME-B Opt	ME-C RS	ME-D Opt	Low N	Low P	Low pH	Grain Moist	Relative grain yield	Grain Text	Anth Date	Anthesis-silking interval (ASI)	Plant Height	Ear Height	Ear Position	Lodging	Gray Leaf Spot	Common Rust	Leaf Blight
			----------t/ha----------								%	%	1-5	d	d	cm	cm	0-1	%	1-5	1-5	1-5
1	SC303	Baseline comm check	5.62	6.76	3.77	3.07	3.71	3.18	4.42	2.83	14.2	79	2.4	56.9	1.7	220.3	99.1	0.45	11.8	1.9	1.5	1.9
2	SC403	Baseline comm check	6.45	7.50	4.89	2.98	3.51	2.67	6.07	2.76	15.5	84	2.5	59.4	2.1	235.7	108.9	0.46	5.5	2.1	1.6	2.1
3	P2859W	Cross-cutting comm check	7.37	8.88	5.40	3.19	4.53	2.70	6.24	3.43	16.8	93	3.0	61.3	4.1	231.9	108.5	0.47	2.1	2.1	1.5	1.6
4	SC513	Cross-cutting comm check	6.58	6.99	5.00	2.81	4.39	2.33	4.92	3.26	16.0	81	3.1	60.8	4.0	232.8	114.3	0.49	11.1	1.9	1.6	1.8
5	CZH1261	Internal genetic check	7.83	9.48	6.60	3.29	3.81	3.20	6.30	3.29	18.0	98	3.2	62.2	0.9	236.8	124.4	0.52	5.2	2.0	1.2	1.5
6	CZH1258	Internal genetic check	8.33	10.38	6.28	3.84	5.06	2.83	7.92	3.07	18.9	102	3.1	60.7	2.3	237.3	122.0	0.51	4.0	2.1	1.3	1.3
16	CZH142133	Available	8.80	10.51	7.55	3.73	4.45	3.42	8.11	3.74	17.6	111	3.1	63.5	1.3	246.7	125.0	0.51	8.6	2.1	1.4	1.7
21	CZH142060	Available	8.56	10.13	6.88	4.12	4.12	3.22	9.05	4.05	18.5	110	2.7	63.4	1.7	236.8	128.0	0.54	0.8	2.0	1.6	1.5
23	CZH142151	Available	8.96	10.73	7.35	3.97	3.79	3.42	7.38	3.06	17.7	110	3.2	64.0	1.3	241.9	120.5	0.50	5.8	2.2	1.5	1.6
25	CZH15001	Available	8.03	9.30	6.53	3.35	3.98	3.63	6.61	3.70	15.9	104	3.7	63.0	1.5	235.5	112.7	0.48	9.5	1.9	1.2	1.9
34	CZH15010	Available	9.00	10.19	7.17	3.99	3.80	3.23	8.54	3.52	18.3	109	2.7	63.9	-0.8	251.2	133.4	0.53	1.6	1.7	1.3	1.7
38	CZH15014	Available	7.67	10.03	6.53	3.93	2.72	3.88	8.50	3.51	18.4	105	2.9	60.0	1.2	234.3	101.1	0.43	0.7	1.9	1.3	1.6
41	CZH15017	Available	7.89	9.22	6.04	3.94	4.47	4.08	8.52	3.04	18.1	109	2.8	62.3	1.7	226.6	109.9	0.48	4.3	2.2	1.5	1.7
	Mean		7.79	9.41	6.27	3.58	3.82	3.26	7.10	3.38	17.6	100	2.9	61.9	1.4	235.6	114.7	0.48	3.6	2.0	1.4	1.7
	LSD (0.05)		0.51	1.18	0.82	0.70	1.27	0.42	1.70	0.95	0.5	9	0.3	0.9	0.5	6.5	5.0	0.02	7.1	0.2	0.3	0.3
	H		0.89	0.77	0.62	0.59	0.62	0.76		0.40	0.9		0.9	0.9	0.2	0.9	0.9	0.92	0.2	0.0	0.2	0.1
	nLoc		14	3	4	7	2	7	1	4	10	35	10	10	8	13	13	13	5	8	6	6

ME = Mega-environment; ME-A, -B, -C, -D = Mega-environment A, B, C, D

Opt = Optimum (53, 000 plants) ; HD = high density (80, 000 plants); RS = Random stress; N= Nitrogen; P= phosphorus; pH = soil pH (acidity).
Diseases scored on 1-5 scale: 1 = tolerant, 5 = susceptible.
Kernel texture rated on 1-5 scale: 1 = flint, 5= dent.
Ear position values are ratios of ear height to plant height, small values indicate low ear position; large values indicate high ear position.

Mean yield performance and agronomic attributes of elite early maturing CIMMYT hybrids and commercial and internal genetic check hybrids in Southern Africa 2016 regional trials (WEHYB16)

Entry	Hybrid	Comment	Management				Grain	Relative	Grain	Anthesis	Anthesis-silking interval	Plant	Ear	Ear	Lodging	Gray Leaf Spot	Common Rust	Leaf Blight
			A-OPT	HD	C-RS	LOW N	Moist	grain yield	Text	Date		Height	Height	Position			(P.sorg)	(E.turc.)
			----------t/ha----------				%	%	1-5	d	d	cm	cm	0-1	%	1-5	1-5	1-5
1	SC403	Baseline comm check	6.32	7.31	2.84	1.79	15.9	61	2.4	61.6	2.0	236.4	112.5	0.49	12.3	1.9	3.3	2.3
2	P2859W	Baseline comm check	7.95	8.98	4.18	2.32	17.4	142	5.3	64.3	1.3	232.0	110.6	0.48	6.0	1.5	2.1	1.8
3	SC513	Baseline comm check	6.88	8.34	2.54	1.85	16.2	50	2.8	63.2	3.3	247.8	127.4	0.53	24.5	1.5	2.1	3.1
4	CZH1261	Internal genetic check	8.60	9.89	2.92	2.78	18.1	88	3.0	63.7	1.7	241.7	120.9	0.52	2.1	1.9	2.3	2.2
5	CZH1258	Internal genetic check	8.08	10.17	2.59	2.76	18.2	112	3.3	62.9	1.5	243.0	119.6	0.50	6.9	1.6	2.3	1.8
8	CZH15182	Available	8.42	11.06	3.63	2.04	18.3	113	2.5	64.2	1.7	244.3	131.6	0.54	4.6	1.9	2.7	2.2
10	CZH15184	Available	8.76	11.40	3.68	3.03	19.0	142	3.2	66.7	2.1	253.7	130.4	0.53	2.0	2.4	3.1	2.0
14	CZH15188	Available	7.60	10.69	3.92	3.13	18.1	115	2.4	64.0	1.4	238.3	118.3	0.51	7.9	2.1	2.1	1.8
20	CZH15194	Available	7.95	10.24	2.52	2.89	18.6	136	3.4	67.2	0.9	239.3	127.1	0.54	6.2	1.6	2.3	2.5
21	CZH15195	Available	7.66	10.47	2.96	2.54	18.3	115	3.5	64.1	0.7	230.6	122.0	0.55	5.0	1.8	2.5	1.8
24	CZH15198	Available	7.36	8.82	2.89	2.26	17.9	114	3.7	63.3	2.0	227.9	115.9	0.52	3.2	1.6	2.5	1.8
45	CZH15219	Available	7.78	9.49	2.49	2.90	18.2	129	2.3	64.9	0.8	249.9	129.1	0.53	4.4	1.5	1.7	2.1
47	CZH15221	Available	6.84	9.31	2.93	2.50	17.2	117	3.0	64.6	-0.1	243.1	121.6	0.51	5.3	1.4	2.0	2.0
48	CZH15222	Available	8.35	10.01	2.81	2.72	16.9	139	3.2	64.9	1.2	229.4	124.2	0.56	3.0	1.7	3.4	2.5
53	CZH15227	Available	8.56	10.26	3.81	2.57	18.3	115	2.5	65.9	0.8	258.0	133.2	0.54	6.6	2.0	1.7	2.6
55	CZH15229	Available	8.25	10.60	3.86	3.01	18.6	127	2.1	67.9	0.2	249.2	133.6	0.54	3.6	1.7	1.9	2.7
	Mean		7.79	9.53	3.05	2.51	17.9	100	2.9	64.2	1.3	236.4	119.6	0.52	7.3	1.8	2.2	2.3
	LSD (0.05)		0.89	1.38	0.70	0.57	0.5	23	0.5	1.2	1.4	7.0	6.7	0.02	7.5	0.4	0.8	0.7
	H		0.76	0.70	0.53	0.37	0.7		0.9	0.8	0.5	0.9	0.91	0.9	0.45677136	0.7	0.3	0.1
	nLoc		14	2	6	4	12	24	7	9	3	11	13	11	5	4	2	4

ME = Mega-environment; ME-A, C= Mega-environment A, C

Opt = Optimum (53, 000 plants) ; HD = high density (80, 000 plants); RS = Random stress; N= Nitrogen Diseases scored on 1-5 scale: 1 = tolerant, 5 = susceptible.
Kernel texture rated on 1-5 scale: 1 = flint, 5= dent.
Ear position values are ratios of ear height to plant height, small values indicate low ear position; large values indicate high ear position.

Mean yield performance and agronomic attributes of available elite intermediate maturing CIMMYT hybrids and commercial and internal genetic check hybrids in southern Africa 2016 regional trial (IHYB16)

Entry	Hybrid	Comment	ME-A Opt	ME-A HD	ME-B Opt	ME-C RS	ME-D Opt	Low N	Low pH	Low P	Grain Moist	Relative grain yield	Grain Text	Anth Date	Anthesis-silking interval	Plant Height	Ear Height	Ear Position	Lodging	Gray Leaf Spot	Common Rust (P.sorg)	Leaf Blight (E.turc.)
			t/ha								%	%	1-5	d	d	cm	cm	0-1	%	1-5	1-5	1-5
1	PAN53	Baseline comm check	8.74	9.03	5.99	3.06	4.08	2.10	3.85	7.33	17.6	102	2.8	67.1	1.2	240.3	126.9	0.53	12.8	1.7	1.7	1.6
2	PHB30G19	Baseline comm check	8.01	6.23	4.94	3.08	2.52	1.60	2.97	6.34	17.9	85	2.5	66.9	2.4	243.3	119.6	0.48	15.8	1.7	1.7	1.6
3	P2859W	Cross-cutting comm check	7.92	7.73	5.47	3.16	3.75	2.23	3.95	6.50	16.6	96	3.6	65.8	1.7	225.4	113.4	0.50	16.7	1.9	1.7	1.6
4	SC513	Cross-cutting comm check	6.99	5.39	4.69	3.25	4.16	1.93	2.68	6.35	15.8	85	3.3	65.1	2.1	231.4	122.7	0.51	31.2	1.8	1.8	1.6
5	CZH1227	Internal genetic check	7.99	8.71	5.09	3.45	3.94	2.36	4.80	7.07	17.4	99	1.9	65.8	0.9	229.0	122.0	0.53	7.5	1.7	1.8	1.6
6	CZH128	Internal genetic check	8.95	9.65	6.12	3.44	4.91	2.48	3.71	7.21	17.3	106	3.0	66.1	0.7	236.7	127.9	0.54	6.5	1.7	2.0	1.6
11	CZH141029	Available	9.09	11.25	5.88	3.23	2.93	2.27	4.39	7.46	17.6	106	2.9	67.7	0.3	247.5	133.8	0.54	2.7	1.7	1.6	1.4
17	CZH15026	Available	10.17	11.96	6.08	4.08	4.27	2.51	4.73	7.85	18.0	118	2.9	67.8	2.0	250.1	131.2	0.52	3.1	1.8	1.8	1.7
19	CZH15028	Available	8.94	8.68	5.86	3.31	3.59	2.79	3.99	6.59	17.1	105	2.8	65.4	0.1	234.1	126.0	0.54	6.3	1.9	1.8	1.5
23	CZH15032	Available	8.55	9.75	5.48	3.91	2.52	2.73	4.22	7.56	17.4	104	3.2	64.5	1.6	224.8	114.4	0.50	7.8	2.0	1.7	1.6
35	CZH15044	Available	8.79	10.10	6.15	3.74	1.71	2.30	4.42	7.10	17.5	105	3.1	64.8	1.9	229.8	116.8	0.49	6.5	1.7	2.0	1.6
44	CZH15053	Available	9.84	11.01	5.97	3.24	2.45	2.39	4.30	8.13	18.4	108	3.4	67.9	1.0	249.5	139.5	0.55	3.6	1.6	1.8	1.8
47	CZH15056	Available	8.78	10.50	6.22	3.60	2.08	2.37	4.10	7.63	18.1	106	3.5	67.8	0.7	230.6	125.0	0.54	9.2	1.6	1.8	1.5
48	CZH15057	Available	9.46	10.60	6.13	3.60	3.28	2.59	4.57	8.13	18.0	112	2.4	67.5	1.0	240.1	131.5	0.55	3.5	1.7	1.7	1.6
51	CZH15060	Available	8.87	9.44	5.63	4.17	3.61	2.63	4.00	7.12	18.1	111	3.2	66.9	1.4	234.2	119.8	0.50	5.8	1.7	1.6	1.6
53	CZH15062	Available	8.87	10.16	5.97	3.42	2.35	3.07	4.36	6.40	17.4	110	3.5	65.7	0.9	228.3	118.3	0.51	3.8	1.5	1.4	1.6
	Mean		8.54	9.20	5.56	3.37	2.87	2.26	3.97	6.83	17.4	100	3.1	66.7	1.6	237.7	125.4	0.52	9.7	1.8	1.7	1.6
	LSD (0.05)		0.53	1.31	0.70	0.74	1.72	0.42	0.75	1.23	0.5	8	0.3	0.8	0.5	6.3	5.3	0.02	5.6	0.2	0.4	0.3
	H		0.91	0.67	0.65	0.27	0.72	0.62	0.37	0.66	0.7	1	0.9	0.9	0.8	0.9	0.9	0.86	0.7	0.2	0.3	0.0
	nLoc		16	3	6	5	1	9	4	1	17	45	11	15	10	18	19	15	8	8	7	6

ME = Mega-environment; ME-A, -B, -C, -D = Mega-environment A, B, C, D

Opt = Optimum (53, 000 plants) ; HD = high density (80, 000 plants); RS = Random stress; N= Nitrogen; P= phosphorus; pH = soil pH (acidity).
Diseases scored on 1-5 scale: 1 = tolerant, 5 = susceptible.
Kernel texture rated on 1-5 scale: 1 = flint, 5= dent.
Ear position values are ratios of ear height to plant height, small values indicate low ear position; large values indicate high ear position.

Mean yield performance and agronomic attributes of available elite late maturing CIMMYT hybrids and commercial and internal check hybrids in southern Africa 2016 regional trial (LHYB16)

Entry	Hybrid	Comment	ME-A Opt	ME-A HD	ME-B Opt	ME-C RS	ME-D Opt	Low N	Low pH	Low P	Grain Moist	Relative grain yield	Grain Text	Anth Date	Anthesis-silking interval	Plant Height	Ear Height	Ear Position	Lodging	Gray Leaf Spot	Common Rust (P.sorg)	Leaf Blight (E.turc.)
			t/ha								%	%	1-5	d	d	cm	cm	0-1	%	1-5	1-5	1-5
1	SC719	Baseline comm check	9.33	10.54	8.07	5.58	5.16	3.05	3.90	7.11	20.4	107	3.7	69.7	1.9	267.5	150.6	0.55	3.1	1.7	1.6	1.7
2	PAN 7M-81	Baseline comm check	10.15	11.59	8.01	5.46	5.54	3.61	4.60	7.68	19.4	112	3.8	68.2	1.8	246.0	137.9	0.55	4.0	1.7	1.5	1.3
3	PAN53	Cross-cutting comm check	8.21	9.39	7.48	4.11	2.92	3.48	4.24	6.47	19.7	98	3.1	66.8	0.9	246.5	127.5	0.51	11.4	2.0	1.4	1.4
4	PHB30G19	Cross-cutting comm check	7.15	6.73	5.84	3.74	2.17	2.49	3.26	5.28	20.1	79	2.9	66.9	2.3	251.6	127.3	0.49	8.2	1.7	1.8	1.4
5	CZH1227	Internal genetic check	7.72	8.02	6.12	3.72	3.19	3.23	4.69	6.88	19.0	93	2.0	65.8	0.8	227.3	121.1	0.53	1.6	1.8	1.5	1.4
6	CZH128	Internal genetic check	8.72	9.95	7.26	4.98	3.89	3.12	3.99	7.08	19.2	99	2.9	66.6	0.6	236.9	127.5	0.54	1.3	2.0	1.5	1.4
16	CZH15064	Available	10.03	11.15	8.70	5.22	5.92	3.25	4.63	8.09	19.9	112	4.4	68.9	1.3	247.8	134.9	0.54	6.9	1.9	1.4	1.2
17	CZH15065	Available	9.37	10.74	7.71	5.01	4.44	3.27	4.23	7.17	20.7	107	3.7	68.0	2.1	259.3	143.5	0.55	4.2	1.7	1.8	1.3
19	CZH15067	Available	9.47	10.35	7.39	5.44	4.14	3.44	4.41	8.08	20.8	110	2.7	68.1	1.6	254.1	131.9	0.50	2.4	2.0	1.4	1.5
22	CZH15070	Available	9.31	11.55	6.36	5.04	5.16	3.44	4.49	8.07	19.5	108	3.4	69.0	2.1	255.6	136.5	0.52	11.2	2.1	1.4	1.5
27	CZH15075	Available	8.85	10.02	7.45	5.37	3.49	3.50	4.51	6.91	18.7	108	4.1	65.1	1.0	233.0	119.3	0.50	5.5	2.1	1.6	1.6
29	CZH15077	Available	9.38	10.45	8.18	5.30	5.57	3.48	3.78	7.59	19.8	108	3.6	69.5	1.1	244.3	137.1	0.55	6.6	1.9	1.4	1.7
32	CZH15080	Available	8.48	10.35	7.32	5.25	3.96	3.79	5.06	8.10	19.7	110	3.1	67.4	1.4	229.0	118.7	0.51	4.5	1.7	1.4	1.3
33	CZH15081	Available	8.47	9.34	7.68	4.44	6.34	3.60	4.79	7.19	19.8	107	3.2	66.1	1.8	238.2	117.1	0.49	9.4	2.0	1.5	1.2
42	CZH15090	Available	9.17	10.01	7.89	5.08	5.41	3.66	3.85	8.68	19.1	110	3.1	65.5	1.2	239.5	122.7	0.51	7.4	2.0	1.5	1.4
44	CZH15092	Available	9.30	11.66	7.81	5.39	4.31	3.13	4.17	8.94	19.6	107	2.0	69.4	1.3	259.7	138.3	0.52	5.0	1.9	1.3	1.3
	Mean		8.64	9.59	7.03	4.76	4.23	3.13	4.13	7.25	19.6	100	3.1	68	1.5	244.0	129	0.52	6.5	1.9	1.5	1.4
	LSD (0.05)		0.73	1.22	0.94	1.01	2.64	0.64	0.83	1.52	0.7	8	0.3	1.2	0.9	5.8	4.9	0.02	5.9	0.3	0.3	0.3
	H		0.86	0.82	0.64	0.41	0.53	0.67	0.36	0.64	0.4		0.8	0.9	0.4	0.9	0.9	0.84	0.1	0.2	0.2	0.0
	nLoc		9	3	2	6	1	7	5	1	10	34	8	9	4	18	17	15	6	7	2	3

ME = Mega-environment; ME-A, -B, -C, -D = Mega-environment A, B, C, D

Opt = Optimum (53, 000 plants) ; HD = high density (80, 000 plants); RS = Random stress; N= Nitrogen; P= phosphorus; pH = soil pH (acidity)

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