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The U.S. Government's Global Hunger & Food Security Initiative



MAIZE VARIETY DESCRIPTION

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CIMMYT
International Maize and Wheat Improvement Center



Disclaimer: The hybrids and open-pollinated varieties listed in this brochure were rated based on collaborative trials conducted annually by National Agricultural Research Programs, non-governmental organizations, private seed companies and CIMMYT across southern and eastern Africa between 2007 and 2015. Results are based on a minimum of two years' data. The information in this publication is based on results available at the time of publication. This does not exclude that the varieties may perform differently if grown at other sites, or under different conditions, or that certain varieties are also produced by other seed producers.

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Characteristics of Drought Tolerant Maize Hybrids

- Greater yield stability – yields between 20-30% more under moderate drought conditions than other commercial varieties.
- High yield potential (no yield loss in optimal years).
- Resistance to major diseases (e.g., maize streak virus (MSV), Turcicum leaf blight (TLB), and grey leaf spot (GLS) and superior milling or cooking quality.
- Very uniform.
- Seed must be purchased every season.

MH30

- Three-way hybrid, released in 2013.
- Yield potential: 8-11 t/ha.
- Maturity: intermediate to late, 130-140 days to maturity.
- Adaptation: mid altitude and low altitude areas of Malawi.
- Drought tolerant hybrid.
- Tolerant to GLS, MSV and leaf blights.
- Texture: semi-flint; color: white.
- Average plant height: 235 cm; ear height: 120 cm.

MH31

- Three-way hybrid, released in 2013.
- Yield potential: 8-11 t/ha.
- Maturity: intermediate to late, 130-140 days to maturity.
- Adaptation: mid altitude and low altitude areas of Malawi.
- Drought tolerant hybrid.
- Tolerant to GLS, MSV and leaf blights.
- Texture: semi-flint; color: white.
- Average plant height: 235 cm; ear height: 120 cm.



MH32

- Three-way hybrid, released in 2013.
- Yield potential: 8-11 t/ha.
- Maturity: intermediate to late ,130-140 days to maturity.
- Adaptation: mid altitude and low altitude areas of Malawi.
- Drought tolerant hybrid.
- Tolerant to GLS, MSV and leaf blights.
- Texture: semi-flint; color: white.
- Average plant height: 235 cm, ear height: 120 cm.

Peacock10

- Three-way hybrid, released in 2014.
- Yield potential: 8-11 t/ha.
- Maturity: It reaches mid-pollen shed between 64-75 days after planting, depending on crop management.
- Adaptation: mid altitude, warm and cool humid zones of Malawi.
- Drought and low nitrogen tolerance.
- Tolerant to MSV, GLS, common rust and northern blight.
- Weevil and insect resistant.
- Texture: semi-flint; color: white.
- Average plant height: 235 cm, ear height: 120 cm.

Cap 9001

- Three-way hybrid, released in 2009.
- Yield potential: 8-11 t/ha (with potential for double cobs).
- Adaptation: mid altitude, warm and cool humid zones of Malawi.
- Drought and low nitrogen tolerant.
- Tolerant to MSV, GLS, common rust, northern leaf blight and ear rots.
- Weevil and insect resistant.
- Texture: flint; color: white.
- Average plant height: 175 cm, ear height: 74 cm.



MH26

- Three-way hybrid, released in 2008.
- Yield potential: 8-12 t/ha.
- Maturity: 135 to 140 days to maturity.
- Adaptation: mid altitude, warm and cool humid zones of Malawi.
- Drought and low nitrogen tolerance.
- Tolerance to MSV, GLS, common rust and northern blight.
- Weevil and insect tolerance.
- Texture: semi-flint; color: white.
- Average plant height: 235 cm, ear height: 120 cm.

MH33

- Three-way hybrid, released in 2014.
- Yield potential: 8-11 t/ha.
- Maturity: 140 days to maturity.
- Adaptation: low and mid altitudes, warm and cool humid zones of Malawi.
- Drought and low nitrogen tolerance.
- Tolerance to MSV, GLS, rust and leaf blight.
- Weevil and insect resistant.
- Texture: semi-flint; color: white.
- Average plant height: 227 cm, ear height: 130 cm.

MH34

- Three-way hybrid, released in 2013.
- Yield potential: 8-10 t/ha.
- Maturity: 140 days to maturity.
- Adaptation: low- and mid-altitude zones of Malawi.
- Drought tolerance.
- Tolerant to MSV, GLS, rust and leaf blight.
- Weevil and insect resistant.
- Texture: semi-flint; color: white.
- Average plant height: 211 cm, ear height: 131 cm.





MH35

- Three-way hybrid, released in 2013.
- Yield potential: 8-10 t/ha.
- Maturity: 140 days to maturity.
- Adaptation: low- and mid-altitude areas of Malawi.
- Drought tolerance; good performance under drought trials.
- Tolerant to GLS, rust and leaf blight.
- Texture: flint; color: white.
- Average plant height: 208 cm, ear height: 108 cm.

MH36

- Three-way hybrid, released in 2013.
- Yield potential: 8-10 t/ha.
- Maturity: 140 days to maturity.
- Adaptation: low- and mid-altitude areas of Malawi.
- Drought tolerance.
- Tolerant to GLS, rust and leaf blight.
- Texture: flint; color: white.
- Average plant height: 193 cm, ear height: 94 cm.

Provitamin A hybrids

- Enriched maize varieties have levels of about 6-8 μ g/g provitamin A (carotenoids).
- Provitamin A carotenoids such as beta-carotene are natural plant pigments that the body converts into vitamin A.
- Carotenoids are essential to many aspects of health, yet humans and other animals synthesize them.
- Vitamin A deficiency can result in morbidity and blindness.
- Provitamin A carotenoids can be converted to retinol (or vitamin A), and stored in the liver.
- Provitamin A hybrids are high yielding and drought and disease resistant.
- Provitamin A hybrids have been developed through conventional plant breeding to increase the micronutrient density.



HPH1301 (MH 39A)

- Three-way cross, released in 2016.
- Yield potential: 5-7 t/ha.
- Maturity: early to intermediate, 130 days to maturity.
- Drought tolerance.
- Tolerant to GLS, MSV, rust, moderate tolerance to TLB.
- Texture: flint; color: orange.
- Average plant height: 174 cm, ear height: 76 cm.
- Provitamin A content of 12.0 µg/g.
- Carotene color intensity score of 2.6.
- Good popping characteristics.

HPH1311 (MH 40A)

- Three-way cross, released in 2016.
- Yield potential: 5-6 t/ha.
- Maturity: early to intermediate, 120 days to maturity.
- Drought tolerance.
- Tolerant to MSV, GLS, rust, moderate tolerance to TLB.
- Texture: flint; color: orange.
- Average plant height: 174 cm, ear height: 80 cm.
- Provitamin A content of 9.970 µg/g.
- Carotene color intensity score of 1.8.

HPH1322 (MH 43A)

- Three-way cross, released in 2016.
- Yield potential: 5-7.5 t/ha.
- Maturity: early to intermediate, 120 days to maturity.
- Drought tolerance.
- Tolerance to MSV, GLS, rust, moderate tolerance to TLB.
- Texture: flint; color: white.
- Average plant height: 168 cm, ear height: 78 cm.
- Provitamin A content of 9.3 µg/g.
- Carotene color intensity score of 2.7.
- High popping characteristics and suitable for roasting (*higher popping among the 4 listed in this section*).
- Produces twin cobs.





HPH1317 (MH 42A)

- Three-way cross, released in 2016.
- Yield potential: 5-6 t/ha.
- Maturity: early to intermediate, 120 days to maturity.
- Tolerance to MSV, GLS, rust, moderate tolerance to TLB.
- Texture: flint; color: orange.
- Average plant height: 168 cm, ear height: 78 cm.
- Provitamin A content of 14.9 $\mu\text{g/g}$ (*highest vitamin A levels among the 4 listed in this section, and selected purposefully by the NARS based on vitamin A levels*).
- Carotene color intensity score of 2.7.

Drought Tolerant Open Pollinated Varieties (OPVs)

- Yield 20-30% under drought, compared to other OPVs.
- Can be recycled for 2-3 seasons without significant yield loss.
- Less uniform than hybrids.
- Cheaper seeds compared to hybrids.

ZM523

- Yield potential: 6 t/ha.
- Maturity: early, 120-130 days to maturity.
- Adaptation: mid altitudes and lowlands of Malawi.
- Drought and low nitrogen tolerance.
- Tolerance to MSV, GLS, common rust, northern leaf blight.
- Texture: semi-flint/semi-dent; color: white.
- This variety is comparable to ZM521, but has a higher yield potential, slightly better rust (*P. sorghi*) and ear rot resistance, and less lodging.



ZM309

- OPV, released in 2009.
- Yield potential: 5 t/ha.
- Maturity: very early, 110-120 days to maturity in mid altitudes, 90-110 in hot lowlands.
- Adaptation: lowlands.
- Drought and low nitrogen tolerance.
- Tolerance to MSV, GLS and common rust.
- Texture: semi-flint; color: white.

Quality Protein OPV

- High in two essential amino acids: lysine and tryptophan.
- Nutritive value in milk protein is 90%, while the average maize variety has only about 40% protein value.

Chitedze 2-Quality protein maize (QPM)

- OPV, released in 2009.
- Yield potential: 3-5 t/ha.
- Maturity: early to intermediate, 110-120 days to maturity.
- Adaptation: mid altitude.
- Drought tolerance.
- Tolerance to MSV, GLS and common rust.
- Texture: semi-flint; color: white.
- High level of tryptophan and lysine.



Hybrids

Variety	Company	Grain Color	Days to Maturity	Grain Texture	Height (cm)		Disease tolerance		Pot Potential Yield (t/ha)	
					Plant	Ear	Leaf blight	GLS MSV		
Hybrids										
MH 30	Peacock	White	130-140	semi flint	223	104	2.0	1.6	2.5	8-11
MH31	CPM Agr. Ent.	White	130-140	semi flint	227	110	2.2	1.3	1.5	8-11
MH 32	Vireishama	White	130-140	semi flint	222	105	1.9	1.3	2.0	8-11
Peacock 10	Peacock Seeds	White	140	semi flint	235	120	2.0	2.0	2.0	8-11
Cap 9001	Peacock Seeds	White	135-139	semi flint	175	74				
MH26	Demeter & Premium Seeds	White	135-140	semi flint	235	120	1.6	1.5	1.0	8-11
MH33	Peacock Seeds	White	140	semi flint	227	130	2.2	2.0	1.0	8-11
MH34	Global Seeds & Mmgomma	White	140	semi flint	211	131	1.7	1.6	1.0	8-11
MH35	Multi Seeds Company (MUSECO)	White	140	semi flint	208	108	1.8	1.0	1.0	8-11
MH36	Multi Seeds Company (MUSECO)	White	140	semi flint	193	94	2.1	1.2	1	8-11
Provitamin A content										
MH 39A		Orange	130	flint	174	76	2.0	1.5	1.0	5-7
MH 40A		Orange	120	flint	174	80	2.0	1.9	1.0	5-7.5
MH 43A		Orange	120	flint	168	78	1.9	1.6	1.0	5-7
MH 42A		Orange	120	flint	168	78	1.9	1.8	1.5	5
OPVs										
ZM309	Panthochi & Demeter	White	110	semi flint			2.3	1.6	1.0	5
ZM523	Panthochi & Demeter	White	120-130	semi flint			2.3	1.6	1.6	6
Chitedze 2 (QPM)	Mmgomma Seed Company	White	135-140	semi flint			3.0	2.0	1.5	3-5



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