

**Table 1. Yield performances of groundnut variety Huayu 17 in various tests in China.**

Test	Year	No. of sites	Average pod yield (kg ha <sup>-1</sup> )	Pod yield increase over control (%)
New lines tests	1993–95	3	5265	21.7
SPNGVT <sup>1</sup>	1996–97	14	3962	12.5
Large block yield test	1998	14	4947	13.3
High-yielding potential	1998	1	9079	–
Uniform test in Northern China	1998–99	9	3554	14.3

1. Shandong Provincial New Groundnut Variety Trial.

more pod yield than the high-yielding control Luhua 11. In the uniform test conducted during 1998–99 at 14 sites of 6 provinces in northern China, Huayu 17 outyielded the control cultivar Luhua 9 by 14.3%. Under excellent conditions with good cultural practices and management of diseases, insect pests, and weeds, Huayu 17 created a new record of high yield in 1998 of 605.29 kg pods on 0.07 ha among early maturity groundnut varieties at Laizhou Agricultural Extension Station, Shandong Province.

### Main characteristics

Huayu 17 is a virginia bunch groundnut variety with jumbo pod and low oil content. It matures 3–5 days earlier than Luhua 9 (Table 2) and 10–12 days earlier than Luhua 11.

**Table 2. Main characteristics of groundnut variety Huayu 17<sup>1</sup>.**

Characteristics	Huayu 17	Luhua 9 (control)
Growth habit	Erect	Erect
Days to maturity	127	132
Length of main axis (n) (cm)	49.5	44.5
No. of n+1 branches (≥5cm)	7.1	9.2
Length of n+1 branches (cm)	54.8	54.6
Leaf color	Light green	Dark green
No. of mature pods plant <sup>-1</sup>	8.5	7.6
100-seed mass (g)	85.4	77.7
100-pod mass (g)	216.1	189
Shelling (%)	69.4	72.3
Seed color	Tan	Pink
Oil content (%)	44.6	51.2
O/L ratio <sup>2</sup>	1.62	1.39

1. Mean of data from uniform test in northern China, 1998.

2. O/L = oleic acid/linoleic acid.

Under natural conditions, Huayu 17 showed high resistance to late leaf spot (scoring 2–3 on a 1–9 scale, where 1 = no disease, and 9 = 81–100% severity) and moderate resistance to peanut stripe virus.

### Adaptation

Huayu 17 has been recommended for both spring and summer plantings in northern China. In order to obtain high yield, growers should choose good natural conditions with plastic mulching techniques. The plant density should be maintained at 150,000 to 180,000 holes with 2 seeds per hole.

## Groundnut Variety CG 7: A Boost to Malawian Agriculture

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Groundnut is an important legume crop in smallholder agriculture in Malawi, providing approximately 25% of the agricultural income. It is an important source of cash for smallholder farmers, especially women. Groundnut is also important in the diet, being the major source of vegetable protein and edible fat in rural Malawi. It is also a valuable component in crop rotation and improves soil fertility. Currently, farmers in Malawi grow mainly six groundnut varieties—Chalimbana, Chitembana, Mawanga, Malimba, Mani Pintar, and CG 7. Chalimbana is most widely grown, occupying about 82% of national groundnut area.

## Development and release of CG 7

CG 7, also known as ICGMS 42 or ICGV-SM 83708, is a high-yielding virginia bunch variety, jointly developed by the Department of Agricultural Research and Technical Services (DARTS) and ICRISAT. It was released for production in 1990, recommended for all groundnut-growing areas in Malawi. It is suitable for both confectionery use and oil extraction, and is more tolerant of drought and much easier to harvest than Chalimbana. Potential seed yield can exceed 2 t ha<sup>-1</sup>.

### CG 7 adoption trends in Malawi

Analysis of CG 7 adoption trends is based on data obtained from the Famine Early Warning System (FEWS), Lilongwe, Malawi. The data were originally collected by the Department of Extension under the Ministry of Agriculture and Irrigation Development from different Extension Planning Areas (EPAs) in Malawi. The data were then aggregated by the Rural Development Project (RDP) and finally aggregated by the Agricultural Development Division (ADD). Information was available on area and production of different groundnut varieties for four consecutive seasons from 1996/97 to 1999/2000. The adoption rate of a particular variety was computed as a percentage, i.e., area under that variety as a proportion of total groundnut area during that season. Adoption trends of CG 7 over the past four seasons are presented in Figure 1. Adoption has increased in roughly geometric progression to the current level of 10.15%. These trends suggest that CG 7 area in the next season is likely to be almost double the current area.

### Yield and economic contribution of different groundnut varieties

Table 1 shows the production, adoption, and economic contribution of different groundnut varieties. Chalimbana

had the highest adoption (82%), followed by CG 7 (10%). The monetary value of this production was US\$ 34.52 million for Chalimbana and US\$ 6.42 million for CG 7. However, CG 7 is higher yielding, with pod yield advantage of 337 kg ha<sup>-1</sup> and seed yield advantage of 236 kg ha<sup>-1</sup> over Chalimbana, Mani Pintar, Malimba, and Mawanga. At current prices and exchange rate, the yield advantage of 236 kg ha<sup>-1</sup> is worth MK 8246 (= US\$ 118) per hectare. Thus, for every hectare of local varieties replaced by CG 7, national agricultural income would increase by US\$ 118. If even half the area currently under local varieties is replaced by CG 7, the national agricultural income would increase by US\$ 17 million per year. These calculations are based on the current price of MK 35 kg<sup>-1</sup> and an exchange rate of US\$ 1 = MK 70.

Further analysis was conducted, comparing the yield and economic contribution of CG 7 and Chalimbana at different adoption rates, assuming current yield levels for the two varieties (Table 2). The results clearly show the substantial economic benefit to be derived from replacing Chalimbana with higher-yielding varieties such as CG 7.

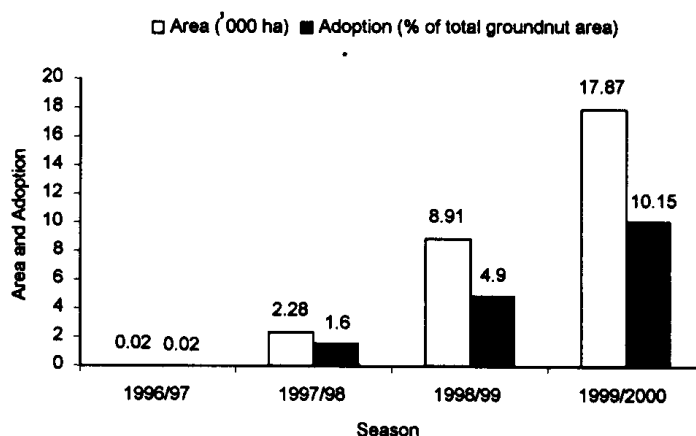


Figure 1. Adoption trends of groundnut variety CG 7 in Malawi, 1996/97 to 1999/2000.

Table 1. Production levels and value of output of different groundnut varieties in Malawi, 2000.

Variety	Area (ha)	Adoption (%)	Seed yield (kg ha <sup>-1</sup> )	Production (t)	Value of output ('000 MK)	Value of output ('000 US\$)
Chalimbana	144,731	82	681.46	69,040	2,416,411	34,520
CG 7	17,869	10	1025.69	12,830	449,036	6,415
Malimba	10,711	6	703.58	5,275	184,632	2,638
Mani Pintar	1,889	1	595.55	788	27,563	394
Mawanga	897	0.5	775.92	487	17,052	244
JL 24	3	0	1000.00	2	74	1
Total (national)	176,100			88,422	3,094,768	44,212

**Table 2. Economic value of production from Chalimbana and CG 7 at different adoption rates in Malawi.**

Variety (Adoption rate)	Seed yield (t)	Income (US\$ million)	Income gap (US\$ million)
CG 7 (10%)	12,830	6.415	2.153
Chalimbana (10%)	8,523	4.262	
CG 7 (25%)	31,609	15.805	5.304
Chalimbana (25%)	21,001	10.501	
CG 7 (40%)	50,575	25.287	8.486
Chalimbana (40%)	33,602	16.801	

Since the yield gap is wide, farmers can obtain significant benefits even from small plots. Cash income will improve, particularly for women farmers, who produce a major share of groundnut in smallholder areas. Besides, the additional production will help improve the nutritional status of households. Further studies on CG 7 adoption and economic benefits will be carried out during the 2000/01 growing season by administering structured questionnaires.

### **Future trends**

Until 1997, adoption of CG 7 remained rather low. There were several reasons, but the major bottleneck was non-availability of seed. There is no organized groundnut seed production and delivery system in place in Malawi, and almost no interest from private seed companies. However,

in recent years several non-government organizations (NGOs) (ActionAid, Self Help Development, PLAN International, CARE Malawi, World Vision Malawi, NASFAM, Catholic Relief Services), and other developmental organizations such as MAFE and PROSCARP have been actively involved. Their efforts target the informal seed supply system (community-based or farmer-to-farmer seed exchange) for CG 7, which is gradually being distributed to communities where these organizations are active. The recently initiated Maize Productivity Task Force, specifically Action Group 2, was also largely involved in establishing the National Smallholder Seed Producer's Association (NASSPA), which is helping to accelerate the spread of improved crop varieties including CG 7.

Another factor is the establishment of two major projects funded by the United States Agency for International Development (USAID), the ICRISAT-DARTS-USAID Project on Groundnut and Pigeonpea, and the GALDAL Project. Ensuring the production and supply of breeder and basic seed of CG 7 is a key component of the ICRISAT-DARTS project. The GALDAL Project will be actively involved in promoting certified seed production through seed projects and other mechanisms. The goal is to maximize the number of farmers who receive CG 7 seed. As a result, we expect that non-availability of CG 7 seed will no longer be a major constraint in the near future.

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