

Promoting the conservation and use of neglected and underutilized species



# Noug

*Guizotia abyssinica*

a neglected and underutilized oil-seed  
crop from the Ethiopian highlands



Global  
Facilitation  
Unit  
for Underutilized  
Species





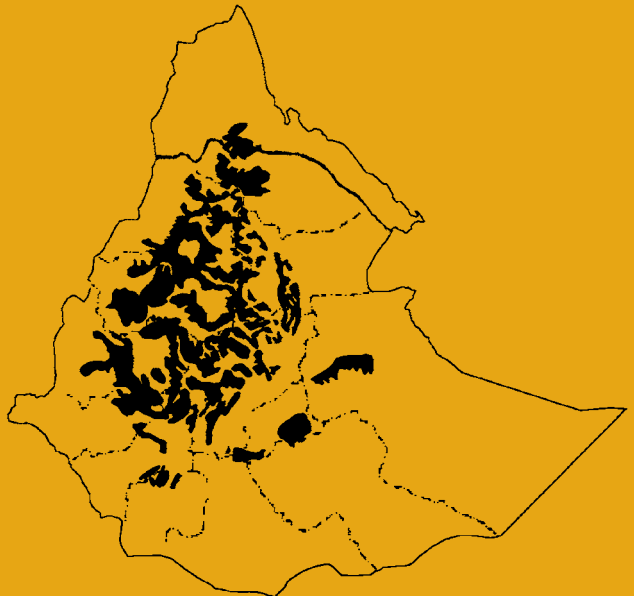
# What is Noug?

**Noug is an oil-seed crop, indigenous to Ethiopia and holds significant promise for improving rural livelihoods in Sub-Saharan Africa. The species is used in intercropping systems, grows on poor but also extremely wet soils, and contributes to soil conservation. While hardly improved, and suffering from low yields and susceptibility to insect herbivores, it contributes up to 50% of the Ethiopian oil-seed crop. Noug belongs to the Compositae family and is closely related to sunflower. It differs from domesticated sunflower mainly due to its high level of branching, numerous flower heads and small seeds. The oil content of noug seed varies from 30 to 50%. The fatty acid composition is typical for seed oils of the Compositae family with linoleic acid being the dominant component.**



**Ethiopia is well known as centre of diversity for several crops, including teff, enset and Ethiopian mustard. As a result, it has been suggested as Africa's independent origin of domestication.**

Noug diversity is greatest in Ethiopia and Eritrea and local farmers are able to distinguish many different land-races. The process of Noug domestication is incomplete, probably due to frequent interbreeding with its co-occurring wild relatives. Apart from Africa (Ethiopia, Sudan, Uganda, Democratic Republic of Congo, Tanzania, Malawi, Zimbabwe), noug is also cultivated in parts of South Asia (India, Nepal, Bangladesh, Bhutan) where it was introduced several thousand years ago, and the West Indies.



*Noug distribution in Ethiopia and Eritrea*



**An international collaborative research effort has been launched in order to understand and manage the genetic diversity of noug for its improvement.**

The challenge of this project (2007-2010) is to show how modern molecular breeding efforts can be adapted and implemented for neglected and underutilized species, such as noug, through research on their diversity. This approach is especially powerful when conducted in the context of genomic information and tools that have already been developed for related major crops, in this case sunflower and lettuce.

**This requires:**

- collection, characterization and conservation of ecologically and genetically diverse germplasm
- initiation or re-orientation of existing breeding and crop deployment programs to capitalize on this diversity, and
- transfer of knowledge and technology to breeders and farmers in Ethiopia.

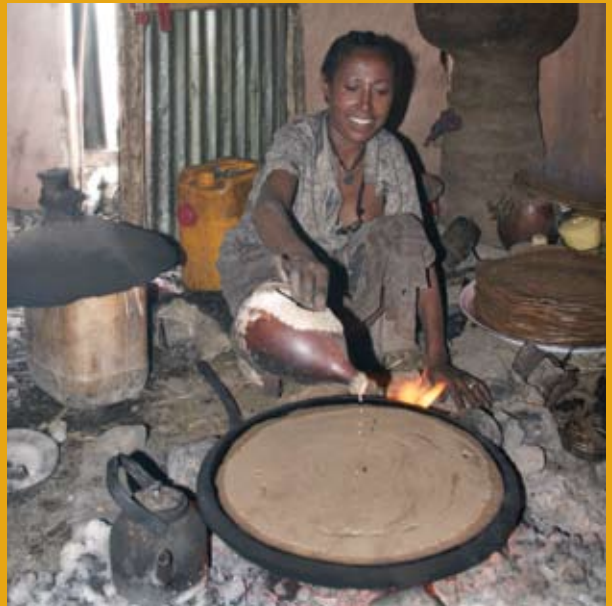
# The importance of research on neglected and underutilized species

**An unintended consequence of the green revolution has been a massive reduction in the number of species and diversity of crops.**

This process of crop replacement is a threat to local and global food security because the replaced indigenous crops often are essential for low input agriculture, have unique nutritional and cultural value, and contain a diversity of locally adapted genotypes with resistance to a wide array of biotic and abiotic stresses.

Global climate change and degradation of once-productive lands have further heightened the demand for crops that perform well in harsh and/or changing environments. Research on noug is designed to improve the yield and quality of this neglected and underutilized species so it can contribute to

the food security and income of subsistence farmers. More projects of this kind on a wide range of neglected and underutilized species are needed to work towards a sustainable solution for increased food security and poverty alleviation as stated in the United Nations Millennium Development Goals.



## Partners:



### **Addis Ababa University**

Addis Ababa, Ethiopia  
Prof. Endashaw Bekele



### **Ethiopian Institute for Agricultural Research**

Addis Ababa, Ethiopia  
Dr. Bulcha Woyessa



### **Institute of Biodiversity Conservation**

Addis Ababa, Ethiopia  
Dr. Kassahun Embaye



### **University of British Columbia**

Vancouver, Canada  
Prof. Loren Rieseberg



### **Indiana University**

Indiana, USA  
Prof. Loren Rieseberg



### **Bioversity International**

Rome, Italy  
Dr. Jan Engels



### **Global Facilitation Unit for Underutilized Species**

Rome, Italy  
Dr. Irmgard Hoeschle-Zeledon

Project undertaken with the financial support of the Government of Canada provided through the Canadian International Development Agency (CIDA)



Canadian International  
Development Agency

Additional funding provided by NSF



## Contacts:

Dr. Irmgard Hoeschle-Zeledon  
underutilized-species@cgiar.org

Hannes Dempewolf  
handem@interchange.ubc.ca

## Photo credits:

Antonie van den Bos (botanypictures.com), Martin Wierzbicki (photosbymartin.com) and George Busby