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*MUCUNA PRURIENS* AND  
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**Abstract:** *Mucuna pruriens* and *Canavalia ensiformis* are among the most promising legumes currently being studied and promoted as green manures and cover crops in the humid tropics. Traditional food uses of mucuna and canavalia in Ghana are described, based on information from farmers in Ghana's forest and transition zones. Practices followed in growing the two legumes are summarized briefly.

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# TRADITIONAL FOOD USES OF *MUCUNA PRURIENS* AND *CANAVALIA ENSIFORMIS* IN GHANA

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## INTRODUCTION

*Mucuna pruriens* and *Canavalia ensiformis* are among the most promising legumes currently being studied and promoted as green manures and cover crops in the humid tropics. In Mexico and Central America alone, at least 50 NGOs, universities and research institutions currently feature these two legumes in their research and extension programs. Documented benefits of green manure/cover crops with mucuna and canavalia include the provision of up to 9 t/ha of dry matter containing an estimated 150 kg/ha of nitrogen, effective weed control even of *Imperata cylindrica*, the reduction of drought stress in winter maize, erosion control and effects on soil pathogens (Miranda Medrano, 1985; Zea, 1992; Hulugalle, Lal, and Ter Kuile, 1986; Barreto, 1994; Derpsch and Florentín, 1992; González Chávez et al. 1990; Versteeg and Koudokpon, 1990; Triomphe, 1991; Narváez Carvajal and Paredes Hernández, 1994; Lobo Burle et al., 1992; Smyth, Cravo, and Melgar, 1991). Mucuna is already used by some 25,000 farmers in Mesoamerica while canavalia is gaining ground among farmers in drier regions where it can also be used as a forage crop for cattle, thanks to independent farmer-to-farmer diffusion and focused research and extension efforts in various regions (Buckles, 1995; Bunch, 1990; Gordón et al., 1993).

Despite these advances, the use of green manure/cover crops is constrained by the opportunity costs of land, labor and rainfall dedicated to a crop with no direct economic use. This is especially the case in areas where land use is intense or where complex intercropping systems (maize-bean-squash in Mesoamerica) are common. Further adoption and adaptation of green manure/cover crops such as mucuna and canavalia would consequently benefit greatly from a better understanding of the potential food and forage uses of these crops. This article describes traditional food uses of mucuna and canavalia in Ghana, West Africa, with a view to stimulating further research on the multiple uses of these versatile legumes.<sup>2</sup>

## SOURCES OF INFORMATION

Data on traditional uses of mucuna and canavalia in Ghana were collected through informal discussions with approximately 60 farmers in the forest and transition zones of the country from 1991 to 1994. Most interviews were

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<sup>1</sup> Agronomist, Crops Research Institute; Anthropologist, CIMMYT; Agronomist, CIMMYT and Agronomist, Crops Research Institute, respectively.

<sup>2</sup> Ezueh (1977) mentions the use of mucuna as a minor food crop in Nigeria.

conducted in the villages of Goaso, Nkawie and Effiduase in the forest zone and Sekodumasi, Ejura and Nkoranza in the transition zone. During this period, some of the authors made random stops at villages in various other parts of the country to interview farmers on the use of these legumes, particularly on the road from Kumasi to Accra, Kumasi to Sunyani, Kumasi to Techiman and Kumasi to Goaso. Observations in farmers' fields were also made during visits to on-farm trials, and extension staff in all of these zones were interviewed.

## RESULTS

Results of the interviews show that many farmers in the forest and transition zones grow small quantities of mucuna or canavalia for food. About 90% and 55% of the people interviewed in the forest and transition zones, respectively, knew that mucuna and/or canavalia are used for food. Most of the respondents (about 80% and 30% in the forest and transition zones, respectively) also indicated that they regularly consume mucuna or canavalia in soups and stews. The interviews in the forest zone indicated that mucuna is much more popular than canavalia and almost as popular as lima beans. In the forest zone, mucuna is consumed almost every day by many households. In the transition zone, however, lima beans are used more often than mucuna, which in turn is used more often than canavalia.

Farmers usually plant only a few stands of these legumes, normally four to eight plants in part of their fields. Mucuna is planted beneath trees so the vines can climb to bear fruit. Planting is done together with the other crops at the beginning of the major season (April). The legumes may also be established from volunteer crops of previous years. Both mucuna and canavalia are grown for home use, although the legumes are sold in small quantities in both urban and rural markets, typically as fresh beans in the pod.

The seed of commonly grown types of mucuna is ash, black or mottled in color while canavalia is white or mottled. The farmers classify the mucuna according to maturity period. The mottled-seed mucuna is described as early while the black and ash are described as late maturing. All mucuna varieties are known as Adua-apia in the language of the Ashanti. Canavalia, known in Ghana as Adua Nkrante, is classified as erect (white seeded, *Canavalia radiata*) and climbing (mottled seeded, *Canavalia ensiformis*).

Most informants over 70 years of age interviewed during the study indicated that their grandparents grew mucuna and canavalia for food, an observation suggesting that these legumes have been used in Ghana for at least a century, if not more. The interviews also indicated that both mucuna and canavalia are grown mainly by old and/or married women.

None of the people interviewed had knowledge of the potential benefits of mucuna or canavalia as green manure/cover crops, although some informants were familiar with the use of other crops such as *Pueraria* and *Centrosema* as cover on plantations. Nevertheless, some farmers observed that if mucuna is allowed to grow without control it smothers field crops and weeds. All experienced growers of mucuna and canavalia indicated that these legumes can easily be controlled, hence they pose no threat as weeds.

### *METHOD OF PREPARATION*

The beans of mucuna and canavalia contain approximately 24% protein, a clear indication of their nutritional value (de la Vega, Giral, and Soletto, 1981; Yesid Bernal and Jiménez, 1990). However, mucuna beans also naturally contain the chemical Levodopa. This chemical is used in the treatment of Parkinson's disease but can also produce vomiting and a toxic, confusional state in humans. In 1989, an outbreak of acute psychosis affecting more than 200 people in Mozambique was attributed to the consumption of mucuna (Infante et al., 1990). The authors of the medical report indicate that due to famine and drought, mucuna beans were prepared improperly and consumed in much larger quantities than normal. This experience raises concerns about preparation techniques and safe consumption levels. The consumption of canavalia does not appear to present risks to human health.

Traditional food uses of mucuna and canavalia in Ghana provide reasonable guidelines to safe levels for human consumption, although research on this issue is still needed.<sup>3</sup> Only small quantities of the beans are consumed daily. Interviews with Ghanaian women indicated that between 10 and 15 mucuna beans or 10 canavalia beans are consumed per person during a meal. In both cases, the legumes are boiled for 40 minutes with other ingredients and the water discarded before the beans are used in stews and soups. Dry or fresh beans can be used. No health problems associated with the consumption of mucuna or canavalia prepared in this manner were reported.

To prepare a stew, mucuna or canavalia beans are boiled with chilies and onions.<sup>4</sup> The seed coat and the water used in boiling are discarded and the remaining endosperm is ground into a fine paste along with the other ingredients. The seed coat is discarded because it does not grind easily. Salt and heated palm oil are added to the paste and the dish is eaten with yam, plantain or cocoyam.

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<sup>3</sup> Rolf Myhrman of Judson College, Michigan, is undertaking an analysis of Levodopa contained in several velvetbean varieties and preparation techniques, with assistance from Mark Versteeg of IITA-Benin and Daniel Buckles of CIMMYT.

<sup>4</sup> The recipes were collected by Joyce Halegoah of the Crops Research Institute.

Soups are also prepared by boiling mucuna or canavalia seeds with chilies and egg plants or cocoyam leaves. After discarding the seed coat of the legume and water used in boiling, a fine paste is prepared from the ingredients and dissolved in a soup made of onions, tomatoes, salt and meat or chicken. Soup in Ghana is eaten with fufu, a starchy food made of pounded cassava and plantain, cocoyam or yam. A soup or stew prepared for a family of four includes between 40 and 60 seeds of mucuna or between 20 and 40 seeds of canavalia.

Most of the respondents likened the taste of both mucuna and canavalia to groundnuts when used in soups and eggs when used to prepare stew. Although some of the respondents maintained that the taste of mucuna and canavalia is different, there was no consistent response as to which of them has a better taste. There was, however, a general response that the taste of different varieties of each of the legumes did not differ. About 40% of informants who use these legumes said they mainly consume mature, fresh beans while the rest indicated that they consume both the dry and fresh beans. Although all the respondents indicated that the taste of dry and fresh beans is the same, most prefer to use the fresh bean because cooking time is reduced. Dry beans can be cracked, soaked overnight or briefly toasted on a fire to reduce cooking time.

#### **CONCLUSION**

Mucuna and canavalia have been grown extensively as minor food crops in Ghana for at least a century. The legumes are used frequently in stews and soups, but in very small quantities during any one meal. Boiling the mucuna bean for 40 minutes and discarding the water seem to render it safe for limited human consumption. Human consumption of canavalia presents no known complications. Given the proven utility of mucuna and canavalia as green manure/cover crops, further research on potential food uses is called for. Traditional food uses of these legumes in Ghana are encouraging, and can provide some guidelines to farm families.

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