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LEGUME DIVERSITY AND ETHNOBOTANICAL SURVEYS IN THE NORTHERN GUINEA SAVANNAH OF NIGERIA

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6 Conclusion

The ethnobotanical surveys conducted in the Northern Guinea Savannah of Nigeria showed that there is no special recognition of the legume family as a plant family, but wild and naturalized legumes are utilized in many ways and soil improving attributes are observed. In addition, the cultivation of crop legumes, such as cowpea and bambarra nut is a common practice and legumes are the main protein source in the study area.

The majority of the herbarium species was recognized, but several species were only known by key informants. Most respondents could give a local name to the species and classify the plant according to local taxonomy. In addition, many respondents could describe the surrounding of the plant including plant habitat, soil type, possible indicator functions, impact on soil fertility, observation of rood nodulation and associated plants. Men had in general a closer observation of the environment due their involvement in agriculture and animal herding; women could sometimes only describe the uses of plants, but not the plant habitat. But in general, the observation of the surrounding and of biological processes must be considered as very high. In all resource use domains, the abundance of species was perceived to be on increase and there was no significant difference between resource use domains.

The recorded uses of wild legumes were most frequent in the area of traditional medicine, compared to other areas covered such as food for animals, technical uses, supernatural uses, ethnoveterinary uses, human nutrition and erosion control or manure. Legumes are frequently used for the cure of many different diseases. In view of animal fodder, informants were in general aware of the palatability of species and there was a tendency of agreement on species with high and low potential as animal fodder. The knowledge in ethnoveterinary practices was unequally distributed between ethnic groups and sexes, with the tendency that pastoralists and males are more knowledgeable in this field. Supernatural practices are common in the area and several legumes are used for this purpose. Some species are frequently used in human nutrition, but in general wild legumes do not play an important role in this area. Legumes were not integrated as cover crops in prevailing production systems, but many legumes growing in cultivated fields are recognized as soil improving plants. The various technical uses reported also had few linkages to the agricultural production system.

Cowpea is a common (cash) crop in the area. Bambarra groundnut is planted less frequently. Both crops are temporarily and spatially integrated in the existing production system. Compared to other cultivated crops, inorganic fertilizer is usually not used and soil-improving attributes are perceived by farmers. In none of the domains was a great diversity of cowpea and bambarra groundnut varieties recorded. But in all domains, a genetic erosion of local landraces due to accidental loss, individual abandonment and large-scale abandonment was perceived.

This ethnobotanical assessment tapped the indigenous knowledge on legumes and the importance of legumes in daily life is obvious. The recording of indigenous knowledge must be seen as important in this study, because of a high migration – in general from the North to the South – that was observed during the study, implying a loss of knowledge on uses of plants.

The information about the indigenous knowledge of legumes gathered in this study could be used further in development projects. For instance, development projects aiming to improve the formal and informal seed supply system and strengthen local storage methods would target problems perceived by people in the study area which concern a lack of access to qualitative high planting material and appropriate storage facilities. Projects that integrate legumes in the prevailing production system could mobilize the knowledge and recognition farmers already have on legumes. The segregation of women in social life and their exclusion from agricultural field work leads to the fact that women are often not involved in development projects. This study has indicated that women are highly motivated to participate and results signalled that they have many responsibilities in resource management and they could be better targeted in further projects.

7 Summary

7.1 Summary in English

The population pressure leads to a cultivation of marginal areas and a shortening of fallow periods in the Northern Guinea Savannah of Nigeria. This restricts traditional land use systems with a high crop livestock interaction. The integration of legumes in the prevailing production systems could strengthen the crop-livestock interaction and the people could benefit of the multipurpose uses of legumes, such as for animal fodder, soil improving characteristics and for human nutrition. This study aimed at conducting an ethnobotanical assessment of the local recognition of wild/naturalized and cultivated legumes.

The target area was situated in Kaduna State, in the centre of Nigeria. This area is classified in different resource use domains according to population pressure and market access. Thirteen villages out of four different resource use domains were chosen for the interviews.

As far as wild legumes are concerned, 427 semi-structured interviews and with the visual aid of a voucher herbarium consisting out of 55 wild/naturalized legumes that were collected in the study area were conducted. The interviews were done separately with men and women and with different ethnic groups, mainly Hausa and Fulani. Concerning cultivated legumes, 74 interviews with men (mainly Hausa) with the help of cowpea and bambarra nut seed samples were conducted.

The interviews on wild legumes contained questions concerning the vernacular name, the local classification, plant habitat, species abundance in the area, indicator functions, soil preferences of species, soil fertility attributing characteristics and traditional uses such as for human medicine, ethnoveterinary medicine, human consumption, technical uses and supernatural uses. The recognition of the herbarium specimens was high. Most respondents were able to give the vernacular name, information on plant characteristics and list different uses. Wild/naturalized legumes were used in many ways in by both sexes and ethnic groups with human medicine considered as the most important, 70 different diseases were treated with 45 legumes out of the herbarium. For veterinary medicine, 17 species were used to treat 20 different diseases. Eight legumes were used for 20 different technical applications. Thirty-

six species were used in supernatural practices differentiating 20 applications. Thirty-five species were considered as valuable animal fodder in the rainy and some also in the dry season. As far as supernatural uses and ethnoveterinary practices are concerned, there was a difference in knowledge between gender and between ethnic groups. In general gender related activities concerning collection and the use of wild leguminous plants were observed.

The surveys on cowpea (*Vigna unguiculata*) and bambarra groundnut (*Vigna subterranea*) contained questions on cultivar diversity, genetic erosion of local varieties, the production system and the seed storage and supply system. There was no great diversity of cowpea/bambarra nut in all resource use domains. The crops were spatially and temporally integrated in the production system and considered as having soil fertility attributes. Most farmers stored their seed for the next growing season and seed exchange with neighbours and other villages was a common practice. The strengthening of the informal and formal seed supply system was generally seen as important by the respondents. The information gathered on cowpea and bambarra groundnut showed a static genetic erosion of traditional cultivars in all resource use domains due to three different main reasons: individual abandonment, accidental loss and large scale abandonment.

Taking into account all the results gathered during the surveys, it has to be stated that there is a high recognition of legumes in the study area. The multipurpose uses of legumes are acknowledged and there is the potential to integrate legumes in the existing production system. The information gathered in the ethnobotanical assessment on indigenous knowledge of legumes should be further embedded in development projects enhancing the integration of legumes in the production system, plant conservation, women empowerment and projects improving the seed supply system in the study area.

7.2 Die Zusammenfassung auf Deutsch

Das Bevölkerungswachstum führt zur Kultivierung von marginalen Gebieten and zu einer Kürzung von Brachephasen in der nördlichen Guinea Savanne von Nigeria. Dies führt zu einer Einschränkung der traditionellen Landnutzung mit einer synergistischen Wechselwirkung zwischen Ackerbau und Viehhaltung. Die Integration von Leguminosen in die bestehenden Produktionssysteme könnte die Wechselwirkung verstärken und die

Menschen könnten von der Vielseitigkeit von Leguminosen profitieren, wie z. B. als Tierfutter, Bodenverbesserer und als Ernährung für den Menschen.

Diese Studie hatte als Ziel, eine ethnobotanische Erhebung über das lokale Wissen über wilde/naturalisierte und kultivierte Leguminosen durchzuführen. Die untersuchte Region befindet sich in Kaduna State, im Zentrum Nigerias gelegen. Diese Gegend ist in unterschiedliche Nutzungsintensitäts-Gebiete in Bezug auf Bevölkerungswachstum und Marktzugang unterteilt. Dreizehn Dörfer aus vier unterschiedlichen Nutzungsgebieten wurden für die Interviews ausgewählt.

Bezüglich Wildleguminosen wurden 427 halbstrukturierte Interviews durchgeführt, mit Hilfe von einem Herbarium, das 55 wilde/naturalisierte Leguminosen enthielt, welche in der untersuchten Gegend gesammelt worden waren. Die Interviews wurden mit Männern und Frauen und verschiedenen ethnischen Gruppen, vor allem Hausa und Fulani, getrennt durchgeführt. Und was die kultivierten Leguminosen anbetrifft, so wurden 74 Interviews mit Männern mit Hilfe von Samenexemplaren der Augenbohne (*Vigna unguiculata*) und der Erderbse (*Vigna subterranea*) durchgeführt.

Die Interviews über Wildleguminosen enthielten Fragen zu den mundartlichen Namen, der lokalen Einteilung, dem Pflanzenumfeld, der Häufigkeit des Vorkommens der Pflanze in der Gegend, der Bodenpräferenz der Pflanze, Bodenfruchtbarkeitscharakteristika und zu traditionellen Verwendungen für Humanmedizin, für Tiermedizin, als Ernährung für den Menschen, technische Verwendungen und Verwendungen für Übernatürliches. Die Erkennungsquote der Pflanzenarten im Herbarium war groß. Die meisten Befragten konnten den lokalen Namen, Informationen zu Merkmalen der Pflanze nennen und konnten verschiedene Verwendungen aufzählen.

Wilde/naturalisierte Leguminosen wurden auf viele verschiedene Art und Weisen in der untersuchten Region von beiden Geschlechtern und ethnischen Gruppen verwendet, wobei die Verwendung für Medizin für den menschlichen Gebrauch als die wichtigste Verwendung angesehen wurde. Siebzig verschiedene Krankheiten wurden mit 45 wildwachsenden Leguminosen aus dem Herbarium behandelt. Für die Veterinärmedizin wurden 17 Pflanzenarten aus dem Herbarium benutzt, um 20 verschiedene Krankheiten zu behandeln. Acht Leguminosenarten wurden für 20 verschiedene technische Anwendungen verwendet. Sechsunddreißig Pflanzenarten wurden für übersinnliche Praktiken verwendet, in 20

verschiedenen Anwendungsformen. Fünfundreißig Pflanzenarten wurden als wertvolles Tierfutter in der Regenzeit und/oder in der Trockenzeit angesehen. Was die übernatürlichen und ethnotierärztlichen Anwendungen anbetrifft, gab es einen Unterschied zwischen dem Wissen der beiden Geschlechter und der ethnischen Gruppen. Im Allgemeinen wurde auch ein geschlechterspezifischer Unterschied im Sammeln und in der Anwendung der wildvorkommenden Leguminosenarten beobachtet.

Die Umfragen über die Augenbohne (*Vigna unguiculata*) und Erderbse (*Vigna subterranea*) enthielten Fragen bezüglich unterschiedlicher angebauter Sorten, zur genetischen Erosion von lokalen Sorten, und zum Produktionssystem, zur Saatgutlagerung und zum Saatgutverteilersystem. Es gab keine große Vielfalt in den angebauten Sorten von Augenbohnen und Erderbsen in allen untersuchten Nutzungsgebieten. Die Feldfrüchte wurden räumlich und zeitlich in das Produktionssystem eingebettet, und ihnen wurden bodenverbessernde Eigenschaften zugeschrieben. Die meisten Landwirte lagerten ihr Saatgut für die nächste Jahreszeit ein und der Austausch von Saatgut mit ihren Nachbarn und anderen Dörfern war allgemein gebräuchlich. Die Stärkung des informalen und formalen Saatgutverteilungssystems sahen die Befragten als wichtig an. Die Informationen, die in dieser Studie über die Augenbohne und die Erderbse gesammelt worden sind, zeigen eine statische genetische Erosion der traditionellen Sorten in allen Nutzungsgebieten, was folgende Ursachen hat: Persönliche Aufgabe, versehentlicher Verlust und kollektive Aufgabe.

Wenn man all die Ergebnisse in Betracht zieht, die während dieser Untersuchung gesammelt worden sind, muß hervorgehoben werden, daß die Leguminosen in der untersuchten Gegend als sehr wichtig eingeschätzt werden. Die vielen unterschiedlichen Verwendungen von Leguminosen werden anerkannt, und es gäbe die Möglichkeit, Leguminosen in das existierende Produktionssystem weiter einzubeziehen. Die Informationen, die in dieser ethnobotanischen Untersuchung über das Wissens der Bewohner ermittelt worden sind, sollten weiter in Entwicklungsprojekte eingebettet werden, die die Integration von Leguminosen ins Produktionssystem, die Pflanzenkonservierung, die Frauenbeteiligung und die Saatgutverteilung in der untersuchten Gegend fördern.