

Ethnobotanical Study among Ethnic Groups in the Shuiluo Valley, Southwest China: Local Knowledge of Ritual Plant Use



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Cover picture: Pumi woman holding the morning ritual on a flat roof, Siweng,
Sichuan, China (Büeler 2010).



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ABSTRACT

The Gami, Shuhi, Pumi, Moso, and Naxi, five different Tibeto-Burman ethnic groups, each of them maintaining its own culture and language, live in the Shuiluo Valley in the Hengduan Mountains, Southwest China. The area is characterised by biological diversity and cultural richness. Ritual plant knowledge and utilisation are widespread. The ritual plants play an important role in daily life and are mainly used either to please deities or to drive off malevolent demons.

The ritual plant knowledge among four of the ethnic groups in six villages Dulu (Gami), Xiwa (Gami/Shuhi), Lanman (Shuhi), Siweng (Pumi), Mianbang (Shuhi) and Qiubao (Naxi) in the Shuiluo Valley was documented along a north-south transect. The similarities and differences among the ethnic groups were comparatively analysed.

A total of 21 wild and 12 cultivated ritual plants belonging to 20 families were categorised in the same way by all ethnic groups living in the subtropical shrub vegetation and/or in the *Pinus yunnanensis* forests (incense plants, food-offering plants, decoration plants, ritual cleaning plants, and plants used by the Lama). The species assigned to each category may vary among the ethnic groups, depending on geographic position. Overall, ritual plant use and knowledge is homogenously distributed among the villagers in the Shuiluo Valley.

Differences were, however, evident between the ethnic groups living in the northern and southern part. The two dominant ethnic groups, the Gami in the north and the Naxi in the south, may influence the neighbouring ethnic groups.

Keywords: Ethnobotany, ritual plants, ethnic groups, Tibetan cultural area, Sichuan, China, comparative analysis.

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GLOSSARY

<i>Amchi</i>	Pumi ritual specialist.
<i>Ddaba</i>	Moso ritual specialist.
<i>Dongba</i>	Naxi ritual specialist.
<i>Dumbu</i>	Shuhi ritual specialist.
<i>Khata</i>	White greeting scarf, which is handed on as a sign of welcome.
<i>Mandala</i>	Concentric diagram with spiritual and ritual significance in Buddhism.
<i>Mantra</i>	Buddhist ritual formulas.
<i>Thanka</i>	A scroll painting with Lamas and Buddhist deities.
<i>Tsampa</i>	Roasted and then grinded cereals, mainly barley.
<i>Xieni</i>	Gami ritual specialist.
<i>Yatze</i>	Small shrine on the roof or in sacred places. Flowers and branches are placed into the upper opening. Lower lateral opening is used to insert cereals, dough figures, gold, etc.

1 INTRODUCTION

The Hengduan Mountains region, located in Southwest China, is well-known for its high-level biodiversity and cultural richness. The mountains range from less than 2000m in some valley floors to 7553m at the summit of Gongga Mountain. The steep topographic gradients result from the Mekong, Yangtze, and Salween rivers, which cut deep, north-south oriented gorges on their descent from the Tibetan Plateau (Myers et al. 2000). For several thousands of years the bioculturally rich area has been inhabited by a large number of ethnic groups with distinct languages, customs, and land management practices (Hsu 1998a).

The central issues in ethnobotanical studies involve the investigation of biocultural diversity, i.e. of the interaction between biological and cultural diversity and thus between plants and people. Foremost among these are the management of plant diversity by indigenous communities and the traditional use of medicinal plants, which are considered an important component of the world's cultural heritage (Cox 2000).

1.1 Framework of the study

The Shuiluo Valley, located in the centre of the Hengduan Mountains, is inhabited by five different Tibeto-Burman ethnic groups, i.e. the Gami, Shuhi, Moso, Pumi, and Naxi, each of them maintaining its own culture and language (Weckerle 1997; Naef 1998; Schiesser 2000). Based on collaboration between the Institute of Systematic Botany, University of Zurich, and the Kunming Institute of Botany, Chinese Academy of Sciences, ethnobotanical projects have been conducted there since 2004.¹

Previous studies were mainly conducted among the Shuhi, focusing on their daily life as well as their management of wild and cultivated plant resources (Weckerle 1997; Weckerle et al. 2005a; 2005b; 2006). Ritual plants were found to be an especially interesting category of wild collected plants. Daily life and the interaction with the environment are shaped by a continuous negotiation with various local deities. The use of ritual plants, often in the form of incense, plays an important role for human well-being, both in maintaining good relationships with the deities (and thus the environment) and in curing diseases (Weckerle et al. 2006). The lack of systematic information about ritual plant use among the other ethnic groups in the Shuiluo Valley demands further research.

¹ Research in the Shuiluo Valley started with three master theses: ethnobotanical work by Weckerle (1997) and house ethnology by Naef (1998) and Schiesser (2000).

This master thesis is embedded in the ethnobotanical research project “People and Plants in the Shuiluo Valley, Southwest China” by Caroline Weckerle at the Institute of Systematic Botany, University of Zurich. The objective of this research project is to document and analyse plant use among the different ethnic groups in the area. Besides ethnobotanical studies other ongoing research in neighbouring fields, such as linguistic research by the group of Katia Chirkova, CNRS Paris, and socio-ecological research by Franz Huber, ETH Zurich, is being conducted in the Shuiluo Valley. The purpose of this interdisciplinary work in the area is to publish a comprehensive description of the people and plants of the Shuiluo Valley in the near future.

The special focus of this master thesis is to document, analyse, and compare ritual plant use among the Gami, Shuhi, Pumi, and Naxi.² The ethnic groups were investigated in six villages Dulu (Gami), Xiwa (Gami/Shuhi), Lanman (Shuhi), Siweng (Pumi), Mianbang (Shuhi), and Qiubao (Naxi) along a north-south transect of the Valley.

1.2 Research Objectives and Questions

The research objectives and research questions addressed in the study at hand are:

Objective 1) Documentation of ritual plant use in daily life among different ethnic groups in the Shuiluo Valley.

- Which ritual plants are known, and how are they used by the different ethnic groups in the Shuiluo Valley, namely the Gami, Shuhi, Pumi, and Naxi?

Objective 2) Comparative analysis of the collected data in order to find main factors influencing ritual plant knowledge and use in the Shuiluo Valley.

- Does ritual plant knowledge and use differ among the ethnic groups in the Shuiluo Valley?
- Are there any local differences, i.e., does ritual plant knowledge and use in the northern part of the Valley differ from the southern part?
- Are the differences determined by different geographical positions or biogeographic conditions?
- Do neighbouring ethnic groups influence each other regarding ritual plant use?

² The Moso were not subject of this master thesis.

2 THEORETICAL CONCEPTS

2.1 Ethnobotany

More than 100 years ago the term ethnobotany was coined by Harshberger (1896) to describe the study of plants used by local people (Schultes & Reis 1995:21). The emerging study field crossed the boundaries of social and natural science, and scientists began to recognise the investigation of traditional biological knowledge as a separate discipline. Academics started to use the prefix ethno- to point out local peoples' view or knowledge of some subject matter in opposite to the scientific way of looking at the natural world. The prefix ethno- connotes the study of local peoples' natural history and interaction with nature (Martin 2007). The systematic analysis of data collected by ethnobotanists accomplishes a deeper understanding of local peoples' knowledge and classification systems of plants (Clément 1998). For a detailed overview of the historical development of the discipline consult Clément (1998).

Ethnobotany is deduced from ethnology, the study of people and cultures, and botany, the study of plants. It is a subdiscipline of ethnoecology, which describes local knowledge and management of ecological interactions or, as Vayda and Rappaport put it (1968:491, cit. in Müller-Böker 1995:37), "Ethnoecology aims to understand the environment in the same way as people living in this environmental context." Ethnobotany investigates the interactions between human beings and plants in different areas of life, e.g. in the field of medicine, agriculture, alimentation, among others (Balick & Cox 1996:3). The main issue of ethnobotany is the interest in foreign cultures, their understanding of plants, and the handling or exposure of these plants in the surrounding flora. Plants are an important fundament of every society and culture. The interactions between human beings and nature are manifold and a characteristic of any society, also high-technology societies (Alcorn 1995b).

According to Balick one important goal of ethnobotany is:

"... to suggest that cultures have choices, and one of these is to develop a clearer understanding of the values of traditional knowledge in contemporary times, and to integrate the lessons from it into daily life, and in that way to teach the knowledge to their children. To keep traditional knowledge and practice alive and well, along with recording it in a database or publication" (Balick 2006:244).

Passing on and acquiring knowledge, before the loss of habitat causes the loss of local knowledge, includes the plant and cultural knowledge of many generations of living with

nature (Prance 1991). The point is not only to learn the knowledge, but to learn the lessons of the knowledge.

Ethnobotany as a research field has been widely used for the documentation of local knowledge on the use of plants and for providing an inventory of useful plants from local floras in countries all over the world. Plants used for traditional herbal medicine are an important part of these ethnobotanical studies (Prance 1991).

Ethnobotanical studies about ritual plant use are rarely found in scientific literature. If ritual plants are documented, then mainly in association with hallucinogens, e.g. De Smet (1996), Furst (1972), Harner (1973). Among such plants is *ayahuasca*, used in South America, which plays a major role, e.g. Fabregas et al. (2010), MacRae (1998). Plant use in healing rituals is described by e.g. Desmarchelier et al. (1996) and Parker (1988), and Dafni (2007) documented the rituals related to sacred trees in the Middle East.

2.2 Local Knowledge

Ethnobotanical knowledge is part of local knowledge, which can be acquired by studying as well as by listening and talking to local people. The interests of ethnobotanical knowledge range from the functioning of indigenous healing systems to the use of ritual plants, or from local farming systems to wild edible plants, and many more. The output can, for example, direct to a new medicament or to the achievement of development goals, such as improving health care, well-being, livelihood, or the sustainable use of natural resources (Alcorn 1995a). Local knowledge is a universal heritage and a universal resource. It is diverse and varied. In the year 1992 the Convention on Biological Diversity (CBD) addressed the use and protection of local knowledge, related to the sustainable use of biodiversity. For the first time in history an international protocol on the issues of traditional knowledge was established (Cox 2000) and addressed the importance of protecting and sharing national biological resources.

According to recent studies in varied research fields such as Human geography, Ethnobotany, Human health, Agriculture, Ethnology, the importance of local knowledge is beyond controversy. Although researchers agree on the importance of local knowledge, a generally accepted definition of this term does not exist.

According to Agrawal (1995) and Antweiler (1998) there is an unresolved epistemological status of local knowledge. The diverse and often ambiguous terms used to describe it reflect several assumptions. As described by Antweiler (2004), each of the terms has its difficulties.

For example, “indigenous knowledge”, which is at present the dominant term, implies dichotomies, e.g. west/rest of the world, universal/particular, traditional/modern. The term “local knowledge” implies limited relevance, local and not global, whereas the term „traditional knowledge“ implies something static and homogenous.

For the purpose of this master thesis local knowledge³ refers to people who follow a traditional lifestyle in a particular geographic area that they have occupied for generations. Tradition is not understood as something static, but as a product of intelligent reflections across generations, tested in the circumstances of life (Berkes 1999:5). Local knowledge therefore covers all aspects of life and encompasses all forms of knowledge, such as beliefs, practices, skills, and technologies, which are important for a community in a specific environment. Local knowledge is stored in peoples’ memories and daily activities and is expressed in cultural values, rituals, beliefs, languages, names of plant species, taxonomy, and much more. The acquisition and modification of knowledge is a dynamic process. The diversity and dynamics of local knowledge are part of the cultural system (Antweiler 2004). New knowledge is continuously incorporated if it suits the existing practices and understandings.

2.2.1 Local Knowledge versus Scientific Knowledge

There are both similarities and differences between local and scientific knowledge. Both kinds of knowledge have the purpose of creating order out of disorder, but approaches may differ. An overview of arguments concerning the differences between local and scientific knowledge is given in Table 1. For detailed information on this dichotomy see Pasquale et al. (1998:25-30). Agrawal (1995) and other academics questioned the dichotomy and stated that the critical difference between local and scientific knowledge lies in their relationship with power and institution. Johnson (1992), however, stated that local knowledge gains legitimacy in the scientific world only when it conforms to its theory and practice.

Thus, local and scientific knowledge may in fact be closer than the dichotomy presented in Table 1 implies. However, according to Frake (1980) the accordance between local plant classification systems and scientific botanical classification systems is not that obvious, even if researchers like Hunn (1977) have discovered a clear relationship between local and scientific biological classification systems. The systems do not produce identical

³ Depending on the author a number of terms can be used interchangeably to refer to the concept of local knowledge, including indigenous knowledge, indigenous knowledge systems, and so on.

classification, nor are they independent of one another. All the categories and the coherent relations of a local plant classification system may have a counterpart in the scientific classification system. But, scientific categories and relations may not have an analogue in the local classification system (Hunn 1975). The scientific botanical classification system may thus serve as an etic grid. Berlin et al. (1974) looked at the correspondence between local plant classification and scientific botanical classification. They found out that, generally, one local species corresponds to one scientific species. However, there were few cases where two or more local species corresponded to a scientific species, or vice versa.

For ongoing debates that revolve around the coherence and similarity between local classification systems and scientific classification systems consult Hunn (1982), Berlin (1992), and Nazarea (1999).

Table 1: Distinctions between local knowledge and scientific knowledge
(from Wolfe et al. 1992; Berkes 1993:8-9; Pasquale et al. 1998:26).

Area of comparison	Local knowledge	Scientific knowledge
Mode of thinking	Intuitive, holistic Mind and matter considered together	Analytical, reductionistic Mind reduced to matter
Instruction	Action-oriented Learned through observation or hands-on experience	Theory-oriented Learned in a situation usually separated from the applied context
Data		
• Creation	• Based on personal observations, trial and error, and synthesis of facts	• Based on experimentation and systematic, deliberate accumulation of facts
• Generation	• Resource users	• Specialised researchers
• Type	• Historical, long time series in one locality • Qualitative	• Statistical, short time-series over a large area • Mostly quantitative
Communication	Oral, storytelling, singing, dance	Literate
Effectiveness	Inconclusive	Conclusive
Valuation	Not value free, moral, spiritual	Neutral, value free, hypothesis, laws
Validity	Local	Universal

3 SHUILUO VALLEY IN THE HENGUDAN MOUNTAINS, SOUTHWEST CHINA

3.1 Geographical Aspects

The Shuiluo Valley⁴ in the Province of Sichuan, Southwest China, lies in the south of the Hengduan Mountains, see Figure 1, at approximately 28°N and 101°E. It borders the Sichuan Basin in the east, the Himalaya in the west, and the Tibetan Plateau in the north. The Shuiluo Valley floor, at an elevation of ca. 2200m, is surrounded by mountains of up to 6200m altitude. The mountain ranges in the Hengduan area are cut deeply in a north-south direction by parallel rivers, such as the Yangtze, Mekong, Salween, and their numerous tributaries. The Shuiluo River itself, with a length of ca. 120km, is a tributary of the Yangtze (Wenhua 1993:3; Map series China 2008).

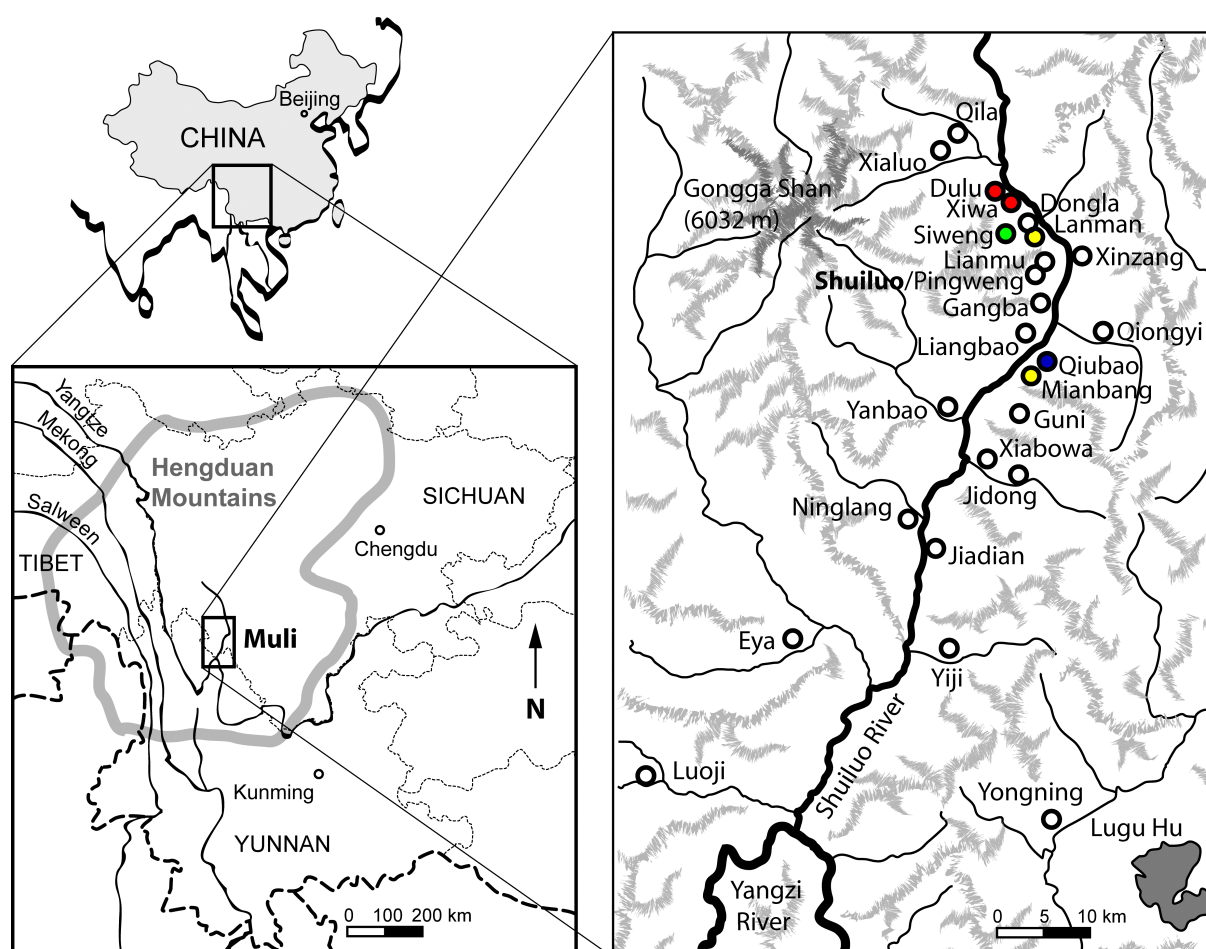


Figure 1: Location of the study area, visited villages are highlighted

Legend: ● Gami; ● Shuhi; ● Pumi; ● Naxi (from Weckerle et al. 2006, modified by Huber 2009 & Büeler 2010).

⁴ The Shuiluo Valley lies in the administrative area of the Muli Tibetan Autonomous County, Xichang Prefecture, Sichuan Province.

3.1.1 Climate

The Hengduan Mountains are influenced by Monsoon rains. The Indian-pacific wet monsoon causes precipitation from May to September. Winters are dry and in the northern part colder, because they are influenced by high-pressure weather over the Tibetan Plateau (Klötzli 2004:361). The annual precipitation decreases from east to west and from south to north (Wenhua 1993:6). In addition, local climatic conditions are dependent on geological structure and relief. Differences in altitude and multi-faced areas cause different climates within short distances (Chen 1987). For the climate of the Hengduan Mountains see Table 2.

Table 2: Climate of the Hengduan Mountains
(from Caff 1963; Yang et al. 1985; cit. in Chen 1987:224 and modified by Büeler 2010 based on Google Earth 2010).

Station	Altitude in m	Average °C			Max. °C	Min. °C	Precipitation		Relative humidity in %
		Year	July	January			Year mm	Summer %	
Xichang	1540	17	22.5	9.5	36.5	-3.4	1031.6	55.9	61
Muli	2270	11.5	16.9	4.3	32.2	-9.1	836.2	67.2	57
Lijiang	2450	12.7	17.8	6.3	30	-7.1	976.2	65.7	63.7
Zhongdian	3280	5.7	13.3	-3.4	23	-17.5	546.5	67	69

In terms of temperature, rainfall, and vegetation Qinye & Du (1990) define the Shuiluo Valley as a temperate dry valley.

3.1.2 Geology

The area of the Hengduan Mountains was covered by the sea for a long period of time (from the Devonian to the end of the Triassic). At the end of the Triassic the continent was formed, and intensive faults, folds, and tectonic uplifts began. A massif, the Hengduan Mountain Tower, arose. Since the Tertiary water erosion dominated, and above 5000m quaternary glaciers formed high mountains. Abundant deposits of limestone from the Devonian and Carboniferous dominate, accompanied by metamorphic stones (Chen 1987).

3.1.3 Vegetation

The Hengduan Mountains are characterised by a rich temperate biodiversity and high endemism, and they belong to the world’s biodiversity hotspots identified by Conservation International (Myers et al. 2000). They are the evolutionary diversity centres of many species. The rich biodiversity is a result of physiographical and historical evolutionary factors, but also due to the inaccessibility of the mountains’ environment (Wenhua 1993:25-30).

Vegetation Types in the Shuiluo Valley and the Hengduan Mountains

Based on Weckerle et al. 2006 the vegetation in the Shuiluo Valley is characterised by subtropical shrub vegetation at an altitude from 2000 to 2400m, *Pinus yunnanensis* forest from 2400 to 2800m, pine mixed forest from 2800 to 3500m, conifer mixed forest from 3500 to 4400m, and alpine shrub above 4000 to 4500m. No detailed vegetation analyses exist for the Shuiluo Valley so far. A detailed description is provided in Appendix I, based on western literature on the Hengduan Mountains in general, such as Handel-Mazzetti (1921), Messerli & Ives (1984), Chen (1987), and Jarvis & Helin (1993). For the altitudinal belt of the Hengduan Mountains see Figure 2.

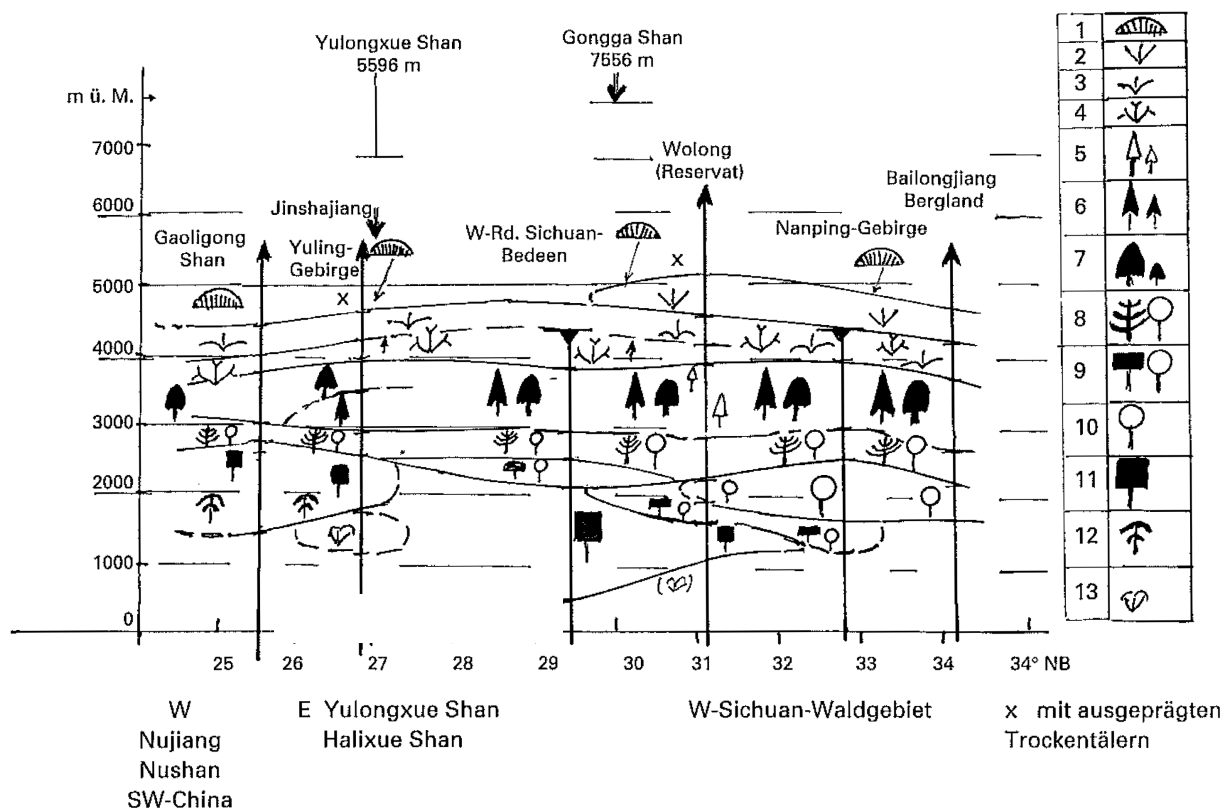


Figure 2: Hengduan Mountains altitudinal belt

Legend: 1 Nival zone with cushion plants; 2 subnival low-temperature desert; 3 alpine sward; 4 (sub-)alpine dwarf-shrub heathland; 5 larch stock (dry Valley); 6 sub-alpine spruce forest; 7 sub-

alpine fir forest; 8 upper montane coniferous-deciduous forest with fire stock; 9 montane evergreen deciduous forest; 10 hilly-montane deciduous forest; 11 hilly sub-montane deciduous forest; 12 pine forest with *Pinus yunnanensis*; 13 montane shrub semi-desert (from Klötzli 2004:362).

3.2 Population

In 1953 the national census of China announced that 6% of the population, which is over 35 million people, belonged to non-Han ethnicities. The Han are an ethnic majority group native to China. By 1959 the ethnic minorities groups (in the following referred to as ethnic groups) were officially classified into 51 groups occupying 64% of the national territory. This number of ethnic groups was enhanced to 53 in 1963, before stabilising at 55 ethnic groups in 1981 (Michaud 2009).

Five of these ethnic groups live in the Shuiluo Valley (see Photo 1), namely the Gami, Shuhi, Pumi, Naxi, and Moso. They differ in language, religion, social structures, and agriculture.

The Shuiluo Valley belongs to the so-called Tibetan cultural area (Baumer & Weber 2002:17-18), as ethnical Tibet is not confined to the political borders of the Tibet Autonomous Region (syn. Xizang Autonomous Region).

3.2.1 Languages

The languages spoken by the inhabitants of the Shuiluo Valley belong to various subgroups of the Sino-Tibetan language family, e.g. the Tibeto-Burman languages. The classification of the Tibeto-Burman languages is still in progress (Chirkova pers. comm. 2010). Classical classifications of the Sino-Tibetan languages include Benedict (1972) and Shafer (1957-1963), see also Bradley (1997) for a detailed and updated discussion of the Tibeto-Burman languages and related classification issues.

The Pumi and the Shixing⁵ languages are currently classified as members of the putative Qiangic subgroup of Tibeto-Burman (see Sun 1983, 1990, 2001; Huang 1991). This subgroup brings together highly heterogeneous languages of the Chinese southwest. Some of the Qiangic languages are spoken by groups known as Xifan, ‘Western barbarians’, in the Chinese historiographic tradition. Qiangic languages are prevalent in the Sichuan and Yunnan provinces of Southwest China (Matisoff 1991, cit. in Harrell 2001:208; LaPolla 2003). Previous linguistic research on the languages of the Shuiluo Valley includes Sun (1983),

⁵ In linguistic literature Shixing refers to the language spoken by the Shuhi people.

Huang & Renzeng (1991), Lu (2001), and more recently, Chirkova (2009), Chirkova & Michaud (2009), and Jacques (2010).

The Shixing language is spoken along the Shuiluo River by ca. 1800 natives. Pumi is the language of Muli's ethnic majority and historically also the local lingua franca. In the latter function it is currently being replaced by Mandarin Chinese (Chirkova pers. comm. 2010).

The Moso language is considered as the eastern dialect of the Naxi language in Chinese linguistic classification. In China, Naxi is classified as belonging to the Lolo-Burmese subgroup of Tibeto-Burman. Conversely, Bradley (1997) considers Naxi as transitional between Qiangic and Lolo-Burmese. The language can be classified as part of the Loloish branch or the Qiangic branch, both belonging to the Tibeto-Burman language group (Ramsey 1987:264-270). The issue of the classification of the Naxi language requires further investigation (Thurgood 2003). The Naxi-speaking population counts about 250'000 people and is concentrated in the loop of the Yangtze (Ramsey 1987:265).

Gami Tibetan belongs to the heterogeneous Kham group of Tibetan dialects (Gesang 1964, Qu & Jin 1981, a detailed description of this dialect can be found in Chirkova forthcoming); it is spoken by ca. 20'000 people in the northern part of Muli (Chirkova pers.comm. 2010).

3.2.2 Religion

The religion of the ethnic groups in the Shuiluo Valley is influenced by Tibetan Buddhism (Lamaism), but also shows animistic elements that may be related to Bon religion (Baumer 1999:182).

In the world view of the ethnic groups the world is not only inhabited by humans, animals, and plants, but also by countless beings that may be described as spirits, demons, and deities; mountaintops are inhabited by deities, and therefore the surrounding forest is considered holy. Wellens (2006:161) describes it as "the invisible dimension of the natural world". I have adopted this term in place of the term supernatural, which implies a dichotomy of the natural and the supernatural (Wellens 2006). The cosmos is in balance between divine and demoniac forces, the two affect each other reciprocally. Human beings, who entered the world after the demons and deities, have to adapt to the previous two. If a human being activates a force of the invisible dimension of the natural world by e.g. breaking a taboo, the cosmologic harmony is out of balance. The concerned person gets ill. Through conciliation by offering goods or by a ritual specialist or Lama who is able to connect with the different spheres, the previous equilibrium can be recreated, and the sick person can be cured. In this holistic worldview human beings are always part of the environment (Baumer 1999:28-29).

Until recently, traditional healers and ritual specialists played an important role in the local communities in the Shuiluo Valley. They were called *dumbu* among the Shuhi, *dongba* among the Naxi, *amchi* and *xieni* among the Pumi and Gami. However, most ritual specialists have died, and Lamas have taken on their function (Weckerle & Huber pers. comm. 2010).

3.2.3 Settlements

The rural villages are either scattered settlements (Dulu and Siweng) or clustered (Xiwa, Lanman, Mianbang, and Qiubao) and surrounded by fields. The villages are accessible by road. Street construction started in the late nineties for the principal town Shuiluo (Weckerle 1997; Schiesser 2000) and is continued until now. There is public infrastructure, such as a Hospital in the principal town and schools, and electricity is provided. Drinking water and sanitary arrangements, however, must be organised on a private basis. In Siweng, for example, the channel system allows people to tap water for drinking purposes in great quantities and with little effort (Schiesser 2000).

The typical stone houses in the Shuiluo Valley are three-storey buildings. The stony house wall is surrounded by the yard, which leads into the stable. The lavatory is outside the house wall.

The stable is situated on the ground floor. The first floor is usually a kitchen and living room with storage space. The kitchen and living room is the biggest and most important room; family and social life happens here. It is the living room, bedroom, and guestroom (Naef 1998; Ryser 1999; Schiesser 2000). In the centre of the room is the fireplace or stove situated before a wall, which is painted with a motif from Tibetan Buddhist iconography. This sacred place behind the hearth is decorated with flowers, branches, fruits, and various other motifs (Weckerle 1997; Wellens 2006). The fireplace, the physical centre of the household, also occupies a central role in the daily lives and belief systems of the occupants (Fuquan 2001). The second floor is the roof terrace, which is partly covered (Ryser 1999). A ritual burner, embedded into the wall to burn plants or food, is usually situated here. In the investigated villages most roofs are flat, but gable roofs are built in Mianbang and Qiubao. The covered part of the terrace is space for hanging up meat and plants from the baulks or storing plants in baskets. A staircase leads up to the small covered space of the terrace. On this level there are one or two *yatzes*, small shrines integrated into the house wall. The *yatze* may also be located a floor deeper (Weckerle 1997; Schiesser 2000).

The houses may have an altar room, which is often pompously arranged with pictures of Lamas, *thankas*, votive offerings (*khatas*, fruits, *tsampa*⁶ figures), Tibetan books, conch-shell trumpets, prayer wheels, and butter lamps. Religion also plays an important role when it comes to the location and the orientation of the house, the start of the construction work, etc. (Weckerle 1997; Naef 1998; Ryser 1999; Schiesser 2000).

The house is an important social unit in the Shuiluo Valley, and societies in this area may be referred to as house societies (Hsu 1998b). Instead of family names the people have so-called house names, i.e., all people living in the same house take on the name of the house. If a new house is built, a new name has to be found by a Lama or a ritual specialist (Weckerle 1997; Naef 1998; Schiesser 2000). A man or a woman marrying into a house takes the name of the house (Hsu 1998b). Apart from marriage between one man and one woman, also polyandry and polygyny is possible. The person who takes over the house is a son or the oldest child among the Pumi, Gami, and Naxi, or the oldest child among the Shuhi.

3.2.4 Agriculture and Livestock

The ethnic groups investigated in the Shuiluo Valley practice subsistence farming. They primarily maintain irrigated,⁷ but also non-irrigated terraced fields around the villages. They cultivate walnut trees (Weckerle et al. 2005a). During summer the Shuhi cultivate rice and maize, and in wintertime barley and wheat. The rice cultivation distinguishes the Shuhi from the Pumi and the Gami. The neighbouring ethnic group in the south, however, the Naxi, also cultivate rice (Weckerle et al. 2005a, Schiesser 2000). Farm animals (pigs, cows, goats, mules, horses, and yaks) are kept for self-use and as working aides, and the animals are rarely sold. The Shuhi seldom hold yaks, contrary to the Gami and the Pumi (Weckerle pers. comm. 2010).

3.2.5 Goldwashing

Gold is mined since 1970 by the state of China in the Shuiluo Valley, and since 1994 gold washing is permitted on a private basis as well. The gold washing season lasts from the beginning of October till the end of May, when the Shuiluo River carries little water. The life

⁶ *Tsampa* is made of various grains. If not otherwise mentioned it is made of barley.

⁷ The house members channel the water from the canal system of the villages to the fields. There the water is distributed to the entire field in small rills with the help of the women (Schiesser 2000).

of the local people has changed since it is possible to wash gold on a private basis. Both gold washing and trade with Chinese gold washers opens new possibilities to earn money. Till 1996 the Shuiluo Valley was untapped by streets. To assure the maintenance of the non-native gold washers a street was built to Shuiluo (Weckerle 1997).



Photo 1: Shuiluo Valley and inhabitants

A The Shuiluo Valley; B Xiwa, clustered settlement; C Lanman Shuhi women roasting barely; D Pumi man cutting a pig; E Stupa at the entrance to the village of Lanman; F Mianbang Shuhi woman recites a mantra (all by Büeler 2010).

3.3 Ritual Plant Use

Plants are used for different purposes among the people in the Shuiluo Valley; for fodder, as culinary or food plants, medicinal plants, ritual plants, fuel wood, for construction, and as ornaments. Plants used on a daily basis are ritual plants and plants used as fuel wood (see Photo 2). Ritual plant use is an important component of daily life as well as in ritual ceremonies (see Photo 3). Ritual plants are used to worship deities or to drive off demons (Weckerle et al. 2006).

An important ritual performed on a daily basis is the morning ritual (see below). Other important rituals at village level are the praying ritual on the 10th, 15th, and 25th of each month of the Tibetan calendar (Naef 1998) as well as the rituals performed during the Tibetan New Year in winter and the harvest festivals in spring and autumn (Weckerle et al. 2005a, 2005b, 2006). Various rituals are performed individually in each household.

3.3.1 Incense Plants

Incense plants used by local people are burned to please deities and ancestors and to ensure their support and protection of the household and the village. They are either used fresh (e.g. *Pinus yunnanensis* and *Pistacia weinmanniifolia*, and more rarely *Juglans regia*, *Aster lavandulifolius*, and *Quercus guajavifolia*) or dried (e.g. *Cupressus funebris* and *Juniperus* spp.). While the fresh ones are usually burned in a ritual burner or in the hearth, an incense bowl is almost always used for the dried ones.

The following example explains the use of incense plants during the morning ritual, which is held on the flat roof of the house before the day's activities begin: The morning ritual is preferably accomplished by the oldest household member (female or male).⁸ All adult house members are however qualified to hold the morning ritual, should the oldest household member be absent. One or several plants, usually *Pistacia weinmanniifolia* and *Pinus yunnanensis* (rarely *Quercus guajavifolia* as a substitute) are burned in the ritual burner, according to the needs of the house. A burning piece of wood taken from the hearth is used to set fire to the fresh branches. White smoke rises, which is appreciated by deities and detested by malevolent spirits. A mixture based on *tsampa*, as the main component, and *Tagetes erecta* is added. Dried incense plants (see below) are mixed according to one's personal view of "what deities like the most". Other, mostly liquid compounds are added to the morning-ritual mixtures, which differ from house to house. The ritual mixture is spread over the burning

⁸ According to 60 observations, 50% were held by female and 50% by male house members.

branches. A burning piece of wood is taken out of the ritual burner and blown out. The smoking piece of wood is moved over the fire three times. Liquid is poured over the burning plants. The liquid consists of barley wine, diluted with water or milk, according to house preference. A conch-shell trumpet is blown three times in one or three directions. Following this, the names of holy mountains, water sources, lakes, and monasteries are recited. The purpose of the morning ritual is to communicate with the surrounding environment and its deities to assure their support and protection of the household and the village (Weckerle et al. 2005a, 2006; Weckerle pers. comm.; pers. observation).

3.3.2 Decoration Plants

Holy places inside and outside the house wall, e.g. the holy place behind the hearth, the pillars in the living room, the house altar, *yatze*, the door, and outside places such as the water-god sites, are decorated with different plants to invite and please deities and ancestors. Branches of *Pinus yunnanensis*, *Pistacia weinmanniifolia*, *Cornus oblonga*, *Phyllostachys* sp., and *Tagetes erecta* flowers are used. Apart from *Tagetes erecta* all other decoration plants are evergreen, which is appreciated by the deities. The decoration plants are renewed during important festivities, and special rituals performed by individual households (Weckerle et al. 2006). During the harvest festival in spring, for example, when the barley harvest is celebrated, the house is decorated with *Juglans regia* branches, *Tagetes erecta*, *Punica granatum* flowers, and old barley products like *tsampa* and barley wine have to be used up before they are replaced with new ones (Weckerle et al. 2005b).

3.3.3 Ritual Cleaning Plants

An important ritual cleaning plant used by local people and ritual specialists is *Rhododendron decorum*. Before each ritual the room or environment where the ritual is to take place is cleaned by the smoke of burning *Rhododendron decorum* leaves. According to legends, the leaves also help the ritual specialist to remember the chanting text (Weckerle et al. 2006).

3.3.4 Uses by Ritual Specialists

Against demons

Ritual plants that are mainly used by the ritual specialists are e.g. *Mahonia bracteolata*, *Rhamnus gilgiana*, and *Sageretia pycnophylla*. Thorny branches or leaves are typical for these types of plants, which are used to drive malevolent spirits off. The ritual specialist uses them

actively to e.g. batter a person, to drive bad ghosts out of the body and the house, or the ritual plants are put on the ground outside the house wall or under the village gate and burdened with a stone to keep malevolent spirits away (Weckerle et al. 2006).

Dough Figures made of Tsampa

During rituals the ritual specialist or Lama forms dough figures prepared of *tsampa* for healing or religious activities. The figures allegorise important deities, demons, family members, or animals. These figures are differently shaped, may be colored, and butter mouldings may be impressed. The purposes of dough figures are manifold; either they are offered to the environment of the deities, burned, thrown away to ward off demons, presented to the demons as a substitute for a sick person, or they might be offered to the involved person as a strengthening for the body and the spirit (Weckerle et al. 2005b).

The ritual use of dough figures is widespread in the Tibetan cultural area. In ancient times Bon priests sacrificed animals. Under Buddhist influence this sacrifice was abandoned, and dough figures as a substitute are now offered (De Nebesky-Wojkowitz 1956:427). The use of dough figures during rituals is also documented among the *dongba* priests of the Naxi and the *ddaba* priests among the Moso (Mathieu 1998; He & He 1998).

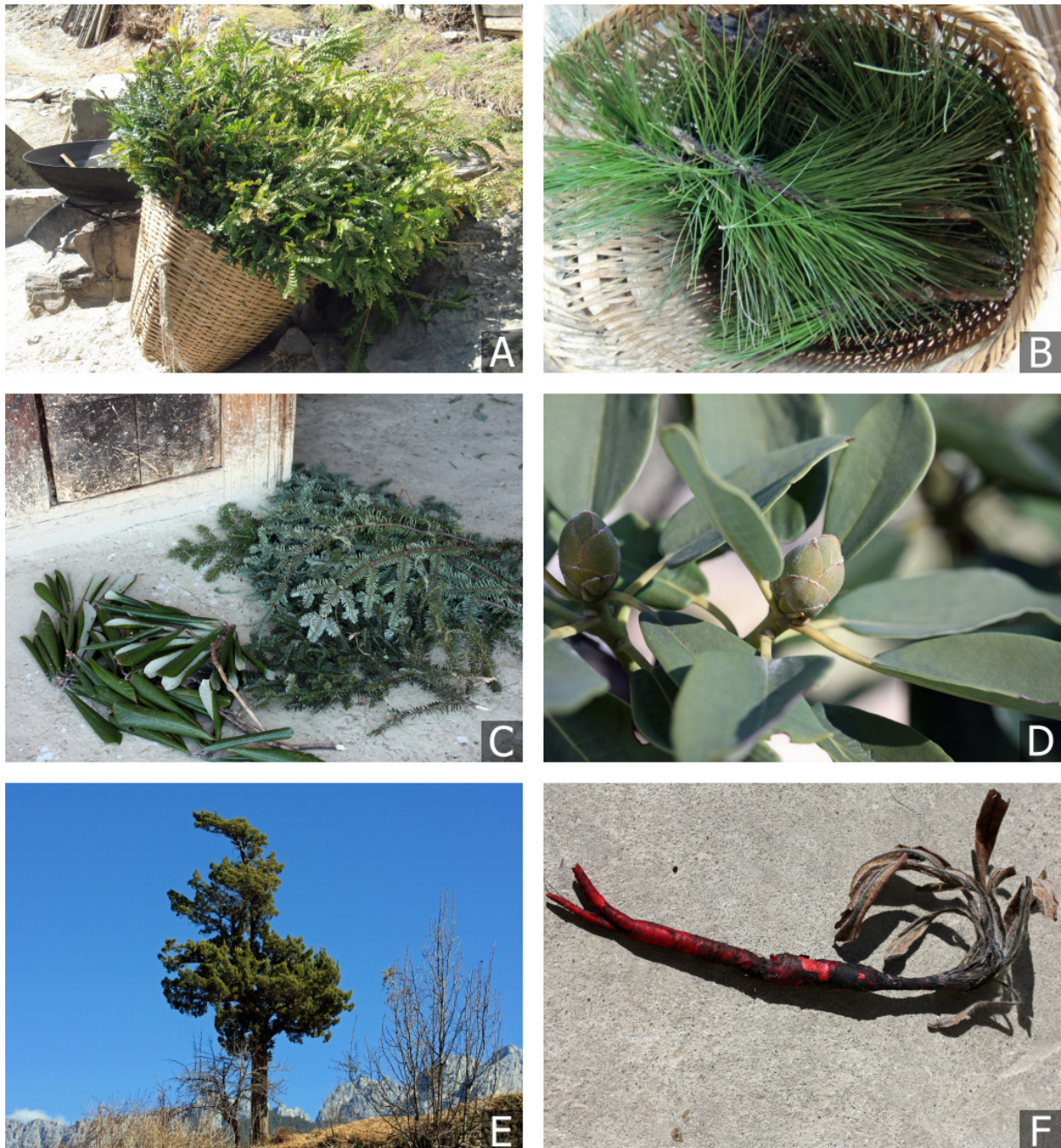


Photo 2: Ritual plants

A *Pistacia weinmanniifolia* in a basket, fresh incense plant; B *Pinus yunnanensis* in a basket, fresh incense plant; C *Rhododendron* sp. (left) and *Pseudotsuga forrestii* (right), ritual cleaning plants; D *Rhododendron decorum*, ritual cleaning plant; E *Juniperus squamata* aff. tree, dried incense plant; F *Lithospermum erythrorhizon* root, plant used by Lama (all by Büeler 2010).



Photo 3: Rituals

A Pumi man holding the morning ritual on the flat roof; B *Cupressus funebris* wood smoked in the incense bowl; C Evergreen decoration plants and trident inserted in *yatze* on the roof. Prayer flags are tied to the evergreen plants; D Coloured and plain *tsampa* figures with impressed butter mouldings; E Cleaning the environment with *Rhododendron decorum* and *Pseudotsuga forrestii* aff.; F The holy place behind the hearth is decorated with *Cornus oblonga*, *Citrus sinensis*, cookies, rice crackers, salt, tea leaves, butter blocks, yak cheese, rice cakes, pic lard (from left to right); (all by Büeler 2010).

4 RESEARCH METHODOLOGY

4.1 Data Collection

To document ritual plant use in everyday life among the different ethnic groups in the Shuiluo Valley semi-structured interviews, pile sorts, ranking and participatory observation were used. Herbarium specimens were prepared for plant documentation. All methods used are described in detail below.

4.1.1 CBD and Prior Informed Consent

Research was conducted in accordance with the Convention of Biological Diversity (CBD), especially the Bonn guidelines on Access and Benefit Sharing (ABS), and based on free prior informed consent. Before starting field research with interviews, the authorisation of the village chief was asked as well as the consent of every interviewed person.

The necessary research and collecting permissions were organised via the Kunming Institute of Botany, Chinese Academy of Sciences.

4.1.2 Access to the Field

Field research was initially conducted in collaboration with Franz Huber, who is familiar with the area from previous research and has the necessary contacts with local people and local officials. Research started in Siweng, and the Gami house provided the accommodation. Additionally, we were permitted to use the house as our base between visits to the other villages.⁹

When necessary, transportation of our luggage to the villages was arranged with local people. All the villages were accessible in a day's walking distance. The luggage was transported by motorbike or horse, depending on distance, availability of the natives, and accessibility.

4.1.3 Selection of the Villages, Households, and Experts

Research was conducted from January to March 2010 (Tibetan New Year was held at the end of January 2010) in six villages: Dulu (Gami), Xiwa (Gami/Shuhi), Lanman (Shuhi), Siweng

⁹ In Lanman accommodation was provided by the Dangzu house, in Dulu by the Toonla house, in Xiwa by the Atschi house, and in Mianbang by the Dazurr house. It was a half-hour walk from Mianbang to Qiubao, no translocation was needed.

(Pumi), Mianbang (Shuhi), and Qiubao (Naxi; see Figure 1). The villages were chosen based on the following criteria: ethnic affiliation, geographic position, and biogeographic condition, and a north south transect was aspired. For the ethnic affiliation and geographic position of the villages visited in the Shuiluo Valley see Table 3.

Visitation of one half of all households per village was aimed at.

Table 3: Ethnic affiliation and geographic position of the villages visited in the Shuiluo Valley

Village	Altitude in m	Accuracy in m	Ethnic groups	Vegetation zone
Dulu	2237 - 2736	ca. 3 – 4	Gami	Subtropical shrub vegetation / <i>Pinus yunnanensis</i> forest
Xiwa	2190 - 2483	ca. 4	Gami / Shuhi	Subtropical shrub vegetation
Lanman	2181 - 2243	ca. 4	Shuhi	Subtropical shrub vegetation
Siweng	2528 - 2909	ca. 4	Pumi	<i>Pinus yunnanensis</i> forest
Mianbang	2199 - 2257	ca. 3 – 4	Shuhi	Subtropical shrub vegetation
Qiubao	2136 - 2192	ca. 4	Naxi	Subtropical shrub vegetation

Usually, snowball sampling was used to select households, i.e., people were asked to identify households with broad ritual plant knowledge. Table 4 gives an overview of the household interviews as well as age and sex of the interviewees. Experts were chosen based on broad ritual plant knowledge and identified during the household interview.

Table 4: Detailed information about the household interviews

Villages	Number of Interviews (total households)	Women / Men	Informants Age from to	Average Age
Dulu	23 (41)	12 / 11	16 - 80	42
Xiwa	18 (35)	8 / 5	14 - 73	41
Lanman	23 (45)	9 / 9	19 - 65	44
Siweng	13 (25)	10 / 13	18 - 84	46
Mianbang	7 (14)	4 / 3	42 - 59	49
Oiubao	10 (21)	6 / 4	38 - 71	55
TOTAL	94 (181)	49 / 45	14 - 84	46

4.1.4 Interviews

Semi-structured interviews composed the frame of the research process. Two interview guides were used in a flexible manner, and interview situations were always designed openly. One interview guide was used for the household interviews and one for the expert interviews. The interpreter Chen Yulin is familiar with the area from previous research with Caroline Weckerle and Franz Huber and translated from Chinese to English; the interviews were thus not conducted in the local ethnic language. Plant names and groups in the different ethnic languages were, however, picked up quickly by the research team.

Household Interviews

The interviews took place at the informants' homes, either inside the house, on the roof, or in the yard. Generally, one main informant was interviewed, and help was provided by other knowledgeable persons in the household. The duration of the interviews varied from one to two hours, depending on the informant's time schedule and interest. Every informant was willing to answer questions about ritual plant use, as time availability during this time of the year was high.

Expert Interviews

A total of seven expert interviews were conducted with knowledgeable members of different ethnic groups:

- Monk (Gami) of Dulu monastery, man 18 years
- Village doctor (Gami) of Dulu, woman 36 years
- Former teacher (Shuhi) of Lanman, member of the Dangzu house, man 60 years
- Former village chief (Pumi) of Siweng member of the Gami house, man 54 years
- Teacher (Pumi) of Siweng member of the Ali house, man 60 years
- Former monk (Pumi) member of the Gala Dasu house in Siweng, man 44 years
- Former teacher (Shuhi) member of the Dazurr house in Mianbang, man 57 years

The expert interviews lasted from around two to four hours, depending on the knowledge of the informant.¹⁰ Interviewees were, with one exception, men, and no Naxi people were involved in the expert interviews.¹¹

4.1.5 Pile Sorts and Ranking or “Cultural Domain Analysis”

The cultural domain analysis comprises a set of structured interviewing methods, such as pile sorts and rankings. These methods are used in social psychology and cognitive anthropology and are applied in Ethnobotany to study cultural domains from an emic perspective (Borgatti 1994). A cultural domain is a category containing several items, e.g. plants, animals, occupations, symptoms of illness, etc. (Weller & Romney 1988:9). An item has a physical reality, and the perception and interpretation of this reality may differ among different cultures (Bernard 2000:264-265). The cultural domain is a circumscribed aspect of cultures, such as ritual plant use, perception of disease, and so on (Borgatti 1994). Domains and their items are learned as people grow up in a society and are necessary for perceiving, interpreting, and communicating the experiences with the world and the people in it. The cultural domain analysis is applied to understand how people in a society define their world.

Pile Sorts

Based on Weckerle et al. 2006 a set of fresh or dried ritual plants was used for the pile sorts and enlarged during field research.¹² With the help of Franz Huber and a member of the Gami house in Siweng the necessary plants were collected.¹³ Ritual plants used by the Shuhi ritual specialists, the *dumbu*, were not collected, since they represent special knowledge among Shuhi *dumbus*. Due to the valuable input of one member of the Gami house fruits and grains were added to the plant set. Fresh and dried plants, fruits, wood in plastic bags, and pictures of two plants were used as items.¹⁴ The plant set was placed in front of the informant. To

¹⁰ During this time of the year informants had time to spend on interviews, since there was not much work to do in the fields – compared to other seasons (e.g. sowing or harvesting time). The interview partners were very interested in the subject and were always motivated and willing to answer my questions in detailed manner.

¹¹ During the interview days in Qiubao the village was quite busy; young men were being sent to search for gold for several days. The women were absorbed by the children and their Chinese language abilities were limited.

¹² Generally, the introduced plants were collected together with the informant. In two cases (*Lithospermum erythrorhizon* and *Rhododendron* sp.) the informant gathered the plants for me.

¹³ Information on general characteristics and distribution as well as ritual and medicinal use, if available, is recorded in Appendix II.

¹⁴ Pictures were used for *Juglans regia* and *Osyris quadripartita* branches.

begin with, the informant generally took a close look at the different specimens and mumbled the ethnic plant name. This was a good opportunity to crosscheck the specimen's identification. If a plant for some reason was not recognisable, the informant did not hesitate to ask. I then requested the informant to "please make groups". No further help was provided, nor instruction given as to what criteria to apply. The informants were invited to continue and divide the groups into subgroups until no more division was possible. No restrictions as to the number of groups or items in a group were imposed. Also, an item could be placed in more than one pile, so that information would not be cut off. Questions about specimens (e.g., What do you use this plant for?, Is it used under other circumstances as well?, etc.) were asked continuously. When the piles were formed, specific questions about the piles were asked (e.g., What do the specimens in the same pile have in common?, Is there a specific name for this group?, What is the difference between two separate piles?, etc.). All questions about the piles were asked at the end of the pile sorting, so that the informants did not change their way of grouping. This technique worked very well. The participants were highly interested in the subject, took an active part in the pile-sorting method, and pointed out missing plants in categories or groups.

The ethnic names of the specimens used in the pile sorts were recorded. Two participants among the Gami and the Naxi and one among the Pumi were asked to speak the specimens names for recording on tape. The Shuhi plant names were already published by Weckerle et al. 2006 and therefore not specifically recorded again. The group names were translated from Chinese to English. In this master thesis, however, the ethnical plant names are not transcribed because of ongoing linguistic research. The ethnic names taped during field research will be double-checked by the linguist Katia Chirkova,¹⁵ who is planning to conduct field research in the Shuiluo Valley in December 2010.

For linguistic methods used in ethnobotanical field research consult Martin (1995:201-221).

Ranking

After finishing the pile sorts, the informants were asked to rank the plants within the maintained piles. The task addressed to the participant was "please order the plants from most important to least important plant". Dense ranking¹⁶ was possible. During the ranking

¹⁵ Katia Chirkova from the Centre de Recherches Linguistiques sur l'Asie Orientale (C.N.R.S.) in Paris.

¹⁶ Items that compare equal receive the same ranking number. The followed item received the immediately next ranking number.

questions were asked, e.g., why is a specimen more important than another. Following Martin (1995:123), data from the ranking activity was cross-checked with the interview data. The informants remarkably often mentioned the importance of a specimen before the ranking activity.

4.1.6 Participatory Observation

Another approach to generate data is qualitative participatory observation. The researcher's aim is to understand how people act in different socio-cultural contexts and to attempt a social reality that is not her or his own (Reuber & Pfaffenbach 2005:123-124). The observation places the researcher where the action occurs. The complex situation, which would be difficult to simulate in an interview, can be experienced by looking, hearing, smelling, and feeling (Spittler 2001). The value of participatory observation as a research method depends on the ability of the researcher to notice details and nuances.

In this study a participatory, open, and non-systematic observation of plant use and ritual habits in everyday life was conducted. For more information on observation consult Atteslander (2003:77-116). Observations were not planned or arranged; they occurred by chance or incident and were documented. Living close together with the house members evoked many chances to observe plant use. Field research conducted in wintertime, when the most important Tibetan festival, the Tibetan New Year, takes place, opened additional opportunities for observation. Typically, interview partners, household members, their neighbours, and also the community inhabitants were in the focus of the observation. However, the interviewer and also the interpreter formed a part of the observed situation and therefore also influenced the settings. According to Flick (2007a:284), the influence of researchers on the actions and behavior of local people remains unclear.

4.1.7 Plant Specimens

Specimens were prepared to document the plants. For details on the preparation of specimens see Forman & Bridson (1989) and Heinrich (2001:32-33). All specimens collected were cross-checked or identified at the herbarium of the Kunming Institute of Botany (KUN), Chinese Academy of Sciences, when necessary with the help of a specialist. All voucher specimens were sent to the herbarium of the Institute of Systematic Botany of the University of Zurich (Z), where they are now deposited.

4.2 Data Analysis

In order to find the main factors influencing ritual plant knowledge and use in the Shuiluo Valley, the collected data was comparatively analysed with the following methods.

4.2.1 Interviews and Observation Data

The information gained during field research was recorded in field books and subsequently organised with the support of Microsoft Word 2000. The information gathered during interviews was sorted, e.g. according to specimen, group, ritual, ethnic name, etc. This sorted information served as basis for the data analysis and subsequent interpretation.

4.2.2 Consensus Analysis of Pile Sorts

The data generated from the pile sorts was analysed with the program PAUP, Phylogenetic Analysis using Parsimony, Version 4.0, to analyse self-consistency regarding the pile sorting and to visualise the piles with a cladogram.

PAUP is a program used in biology for inferring phylogenies using Parsimony, a principal in the cladistic approach to evolutionary biology. In the context of evolutionary interference, the idea is to minimise the amount of change (Felsenstein 1984). Less frequently, the cladistic approach is used in linguistic research, e.g. Searls (2003), Cann (2000), Rusell & Fiana (2000). In ethnobotanical research the cladistic approach was only found once in literature (Hart & Cox 2000), but it seems an interesting approach for the analysis of ethnobotanical pile-sorts data.

To analyse the pile-sorts data two consensus algorithms were used: the Majority-rule consensus and the Adams consensus (see cladograms of the visited villages in Appendix III, Figure 7-18). Consensus methods are means of summarising congruence and incongruence between two or more cladograms. Based on the cladograms of individual records, it is the intention to find non-contradictory components. If contradiction among the groups (e.g. branches and consecutive branchlets) is recognised, the resolution is reduced. Polytomies result from the deletion of the branches that are responsible for contrasting groups (Kitching et al. 1998:139).

The Majority-rule consensus tree operates on a majority-rule basis. It is specified to retain those taxa¹⁷ that are shared by at least 50% of the cladograms.¹⁸ A group may be preserved in the consensus even if there are some trees that support conflicting groups (Margush & McMorris 1981).

Adams' consensus trees are designed to give the highest resolution possible between two or more trees. They are deduced by transferring the plants that occur in conflicting positions. This means plants appearing on fundamentally differing trees even if the percentage of the occurrence in the Majority-rule consensus is over 50%. Adams' trees are useful for summarising plants that show very different positions in the cladograms. Adams dissolves discrepancies between the trees (Kitching et al. 1998:147), therefore these trees show more resolution, "but must be interpreted carefully" (Swofford & Begle 1993:58). For more information on the consensus methods, Swofford (1991) and Wiley et al. (1991) may be consulted. Trees in either algorithm generated by PAUP can be rooted or unrooted. If the tree is rooted, basal carination will be arranged.

The program Tree View, Version 1.6.6, was used to illustrate and label the trees.

Compared to other programmes used in ethnobotanical data analysis, such as NTSYSpc¹⁹ or Anthropac, PAUP has the advantages of not only visualizing the cladograms, but to also showing the frequency of occurrence in one step under the algorithm major rules.

4.2.3 Ranking Data

The ranks obtained in the ranking activity were summed up for all respondents, and the average rank was calculated with the help of Microsoft Excel 2000. For the graphs, the values were rounded.

¹⁷ The taxa in the grouping data are corresponding to plants. In the following thesis, it is spoken about plants.

¹⁸ In some phylogenetic literature the terms cladogram and tree are used differently. Certain authors favour to distinguish between cladogram as a branching diagram describing a model of character distribution and a tree as a hierarchical statement. This difference is terminological. PAUP may be run to create either cladograms or trees (Swofford & Begle 1993:1). In this thesis tree and cladogram are used synonymic.

¹⁹ NTSYSpc and Anthropac programs have been used during the data analysis process but were neglect, which is not subject of this master thesis.

4.3 Data Reliability and Validity

According to Bernard (2000:46-47) “validity refers to the accuracy and trustworthiness of instruments, data, and findings in research” and “reliability refers to whether or not you get the same answer by using an instrument to measure something more than once”. To achieve this, triangulation can help. According to Flick triangulation implies taking on different angles and points of view when answering research questions. These perspectives can be concretised by using different qualitative and quantitative methods (Flick 2007b:11).

In this study semi-structured interviews were combined with pile sorts and ranking.

Participatory observation was applied as an additional method.

5 LOCAL KNOWLEDGE ON RITUAL PLANT USE IN THE SHUILUO VALLEY

5.1 Ritual Plants and their Uses

A total of 33 ritual plant species was investigated as to their uses, among them 21 wild plants and 12 cultivated plants, which belong to 20 different plant families. The wild plant species are typically shrubs (12 spp.), trees (7 spp.), or herbs (2 spp.), of which mostly the branches (20 spp.) and more rarely the fruits (1 sp.), wood (1 sp.), or roots (1 sp.) are used. The cultivated species are typically herbs (6 spp.), trees (5 spp.), or shrubs (1 sp.), of which the grains (6 spp.), fruits (5 spp.), or flowers (1 sp.) are used.

Compared to Weckerle (1997), Weckerle et al. (2005a, 2005b, 2006) and Weckerle & Huber (2007) the following additional plants or uses were documented: The fresh branches of *Quercus guajavifolia* are used as incense plants for weather-making purposes. The fresh branches of *Pseudotsuga forrestii* aff. and *Rhododendron* sp. are used as fumigating plants during ritual cleanings, as sometimes those of *Quercus gilliana* aff. The fruits of *Citrus sinensis*, *Prunus persica*, *Punica granatum*, and *Pyrus pyrifolia* are used as food offerings and decoration plants. *Panicum* sp. and *Zea mays* can be used to worship deities, and *Hordeum vulgare* var. 1, *Zea mays*, *Diospyros dumetorum*, and *Fagopyrum dibotrys* can be used to drive demons off.

Juniperus species are difficult to identify. The *Juniperus* spp. documented in Weckerle et al. 2006, are likely the same as *Juniperus indica* aff. and *Juniperus squamata* aff., which are used as dried incense plants.

All the investigated wild and cultivated plants and their documented uses are shown in Table 5.

Table 5: Wild and cultivated plants used by the ethnic groups in the Shuiluo Valley, Southwest China.

Scientific name and botanical family	Specimen number ^a	English name	Parts used	Uses recorded	Documented in
<i>Aster lavandulifolius</i> Hand.-Mazz. (Asteraceae)	100115_8	-	Branches	Fresh branches used as incense. Medicine, decoction of leaves against fever and cold.	Du, Xi, La, Si, Mi, Qi
Bambuseae sp.1 (Poaceae)	100115_9	Bamboo	Branches	Decoration of altars and sacred places to invite deities.	Si
Bambuseae sp.2 (Poaceae)	100121_1	Bamboo	Branches	Decoration of altars and sacred places to invite deities.	La, Mi, Qi
Bambuseae sp.3 (Poaceae)	100224_1	Bamboo	Branches	Decoration of altars and sacred places to invite deities.	Du, Xi

Table 5 (continued)

Scientific name and botanical family	Specimen number ^a	English name	Parts used	Uses recorded	Documented in
<i>Citrus sinensis</i> (L.) Osbeck (Rutaceae)	100301_5 ^f	Orange	Fruits	Decoration to invite deities and food offering. Worship deities. Offered to guests. Aliment.	^c
<i>Cornus oblonga</i> Wall. (Cornaceae)	100115_7	-	Branches	Decoration of altars and sacred places to invite deities. Fresh branches used as incense. Used as incense only during Tibetan New Year ^b .	^c Du, Xi, Mi, Qi Si
<i>Cupressus funebris</i> Endl. (Cupressaceae)	100115_23	-	Branches	Decoration to invite deities during Spring Festival, wedding. Rarely used as incense. Plant surrounded by legend.	^c
	100115_22	-	Wood	Dry wood used as incense to worship deities. Smoke cures sickness.	^c
<i>Diospyros dumetorum</i> W.W.Smith (Ebenaceae)	100123_1	-	Branches	Used to drive out demons.	La
				Fruits edible. Useless.	La, Mi, Qi Du, Xi, Si
<i>Hordeum vulgare</i> var.1 L. (Poaceae)	100115_12	Highland barley	Grains	Used to drive out demons or to worship deities. Aliment.	Mi, Qi
				Used to worship deities. Aliment	Du, Xi, La, Si
<i>Hordeum vulgare</i> var.2 L. (Poaceae)	100115_11	Barley	Grains Tsampa ^g	Used to worship deities. Aliment.	^c
				Used to worship deities. Aliment	^c
<i>Juglans regia</i> L. (Juglandaceae)	100301_4 ^f	Walnut	Fruits	Decoration to invite deities and food offering (altars and sacred places). Worship deities. Offered to guests. Aliment.	^c
	100301_6 ^f	Walnut	Branches	Decoration to invite deities. Used as incense during festivals. Useless.	Xi, La, Si Du, Mi, Qi
<i>Juniperus indica</i> aff. Bertoloni (Cupressaceae)	100115_1	-	Branches	Dried branches used as incense.	^c
				Component of the mixtures used during morning ritual.	^c
<i>Juniperus squamata</i> aff. Buchanan-Hamilton ex D.Don (Cupressaceae)	100115_10	-	Branches	Dried branches used as incense.	^c
				Component of the mixtures used during morning ritual.	^c
<i>Lithospermum erythrorhizon</i> Sieb. et Zucc. (Boraginaceae)	210210_1	-	Root	Lama uses powder of the root to dye dough figures during ritual.	^c
<i>Mahonia bracteolata</i> Takeda (Berberidaceae)	100115_1	-	Branches	Used to drive out demons.	^c
			Roots	Decoction of roots against diarrhoea.	^c
<i>Myrsine africana</i> L. (Myrsinaceae)	100117_1	-	Branches	Used for cleaning (broom). Used to drive out demons.	^c Mi, Qi
<i>Oryza sativa</i> L. (Poaceae)	100115_13	Rice	Grains	Used to worship deities. Aliment.	^c
<i>Osyris quadripartita</i> Salzm. ex Decne. (Santalaceae)	050402_1/1 ^d	-	Branches	Fresh branches used as incense. Especially burnt for gold washers.	Xi, Mi, Qi
				Useless.	Du, La, Si
<i>Panicum</i> sp. (Poaceae)	100115_14	Millet	Grains	Used to drive out demons. Aliment.	Du, Xi, La, Si
				Used to worship deities. Aliment.	Mi
				Useless.	Qi
<i>Phaseolus vulgaris</i> L. var. vulgaris (Fabaceae)	100115_15	Common beans	Beans	Used to drive out demons. Aliment and fodder.	^c
<i>Pinus yunnanensis</i> Franch. (Pinaceae)	100115_6	Pine	Branches	Fresh branches used as incense. Decoration of altars and sacred places. Stuck in the field for good growth of the crops.	^c
				Rotten root ground to powder and burned to drive out demons ^b .	Qi
<i>Pistacia weinmanniifolia</i> Poiss. ex Franch. (Anacardiaceae)	100115_2	-	Branches	Fresh branches used as incense. Decoration of altars and sacred places. Stuck in the field for good growth.	^c

Table 5 (continued)

Scientific name and botanical family	Specimen number ^a	English name	Parts used	Uses recorded	Documented in
<i>Prunus persica</i> (L.) Batsch (Rosaceae)	100301_1 ^f	Peach	Fruits	Decoration to invite deities and food offering. Worship deities. Aliment. Seeds used as medicine.	^c Si
<i>Pseudotsuga forrestii</i> aff. Craib. (Pinaceae)	100207_1	-	Branches	Fresh branches used as incense for ritual cleaning.	^c
<i>Punica granatum</i> L. (Punicaceae)	100301_3 ^f	Pomegranate	Fruits	Decoration to invite deities and food offering. Worship deities. Aliment. Store in storage room for abundant food. Store in storage room for abundant food.	^c ^c
<i>Pyrus pyrifolia</i> (Burm.) Nakai (Rosaceae)	100301_2 ^f	Asian pear	Fruits	Decoration to invite deities and food offering. Worship deities. Aliment.	^c
<i>Quercus guajavifolia</i> H.Lév. (Fagaceae)	100115_5	-	Branches	Fresh branches used as incense, if no other plants are available. Inserted only in mountain yatze ^g . Legend around burning leaves in combination with rain.	^c
<i>Quercus gilliana</i> aff. Rehd. et Wils. (Fagaceae) ^c	100209_1	-	Branches	Used as fertilizer. Rarely, fresh branches used as incense.	Du, Xi, Mi, Qi Du
<i>Rhamnus gilgiana</i> Heppeler (Rhamnaceae)	100121_1	-	Branches	Used to drive out demons. Fruits edible. Useless.	La Du, Xi, Mi, Qi Si
<i>Rhododendron decorum</i> Franch. (Ericaceae)	100115_4	-	Branches	Fresh branches used as incense for ritual cleaning. Lama can remember chanting text with help of the leaves.	^c La, Mi
<i>Rhododendron trichostomum</i> Franch. (Ericaceae)	100115_20	-	Branches	Dried branches used as incense. Component of the mixtures used during morning ritual.	^c
<i>Rhododendron</i> sp. (Ericaceae)	100115_19	-	Branches	Fresh branches used as incense for ritual cleaning.	^c
<i>Sageretia pycnophylla</i> C.K.Schneid. (Rhamnaceae)	100115_21	-	Branches	Used to drive out demons. Useless.	La Du, Xi, Si, Mi, Qi
<i>Tagetes erecta</i> L. (Asteraceae)	100115_18	Marigold	Flowering plant	Decoration of altars and sacred places to invite deities. Component of the mixtures used during morning ritual.	^c
<i>Triticum aestivum</i> L. (Poaceae)	100115_16	Wheat	Grains	Used to worship deities. Used as bedding layer in a cup for decoration of other plants on altars. Aliment.	^c
<i>Zea mays</i> L. (Poaceae)	100115_17	Maize	Grains	Used to drive out demons. Aliment. Used to worship deities. Aliment. Used to drive out demons or to worship deities. Aliment	Du, Xi, Si La Mi, Qi

^a The specimens were collected by Büeler F., Huber F.K., and members of the Gami house in Siweng.

^b Use mentioned by less than four informants.

^c If no specific location is mentioned, the use was recorded in all villages.

^d Specimen collected by Weckerle C.S., Huber F.K., and Gao F.

^e *Quercus gilliana* not asked for in Siweng and Lanman.

^f Only pictures are available.

^g See glossary

– no clear English name found.

Abbreviations of village names: Du: Dulu; Xi: Xiwa; La: Lanman; Si: Siweng; Mi: Mianbang; Qi: Qiubao.

5.2 Ritual Plant Categories among the Villagers

Ritual plant use in Dulu is described in detail. The other villages' specialities and differences are taken up. The Tibetan New Year was observed in Lanman and Siweng and is therefore explained particularly with reference to these villages.

5.2.1 Dulu Village

Dulu, inhabited by Gami, is the most northern of the visited villages. It is surrounded by subtropical shrub vegetation and *Pinus yunnanensis* forest. Table 6 shows the categories revealed by the analysis of the pile sorts.

Table 6: Ritual plant categories and consent ratio of informants in Dulu

Plant categories ^a	Assigned species	Plant parts used	Consent ratio of informants in % ^b
Ritual plants:			
Incense plants			
Fresh incense plants	<i>Pinus yunnanensis</i> , <i>Pistacia weinmanniifolia</i> , <i>Aster lavandulifolius</i> , <i>Cornus oblonga</i> , <i>Quercus guajavifolia</i>	Branches	52
Dried incense plants	<i>Cupressus funebris</i> , <i>Rhododendron trichostomum</i> , <i>Juniperus indica</i> aff., <i>Juniperus squamata</i> aff.	Branches / Wood	100
Food offerings and decoration			
Yatze plants	<i>Cornus oblonga</i> , <i>Pinus yunnanensis</i> , <i>Pistacia weinmanniifolia</i> , <i>Bambuseae</i> sp.3, <i>Tagetes erecta</i>	Branches / Flowers	100
Decoration	<i>Cupressus funebris</i>	Branches	100
Fruit offerings	<i>Juglans regia</i> , <i>Punica granatum</i> , <i>Prunus persica</i> , <i>Pyrus pyrifolia</i> , <i>Citrus sinensis</i>	Fruits	100
Grain offerings	<i>Hordeum vulgare</i> var.1 and var.2, <i>Triticum aestivum</i> , <i>Oryza sativa</i>	Grains ^c	70
Ritual cleaning plants			
Fumigating plants	<i>Rhododendron decorum</i> , <i>Rhododendron</i> sp., <i>Pseudotsuga forrestii</i> aff.	Branches	70
- ^d	<i>Mahonia bracteolata</i>	Branches	100
Ritual cleaning grains	<i>Panicum</i> sp., <i>Zea mays</i> , <i>Fagopyrum dibotrys</i> , <i>Phaseolus vulgaris</i>	Grains	70
Used by Lama			
<i>Tsampa</i> figures	<i>Lithospermum erythrorhizon</i>	Root	100
Other plants:			
Broom	<i>Myrsine africana</i>	Branches	100
Useless plants:			
- ^d	<i>Rhamnus gilgiana</i> , <i>Sageretia pycnophylla</i> , <i>Juglans regia</i>	Branches	100

Plants appearing in different categories

^d	<i>Osyris quadripartite</i> , <i>Diospyros dumetorum</i> , <i>Quercus gilliana</i>	Branches	-
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^aThe English names of the ritual plant categories are approximations to the meaning of local category names.

^bThe consent ratio of informants is based on majority-rule consensus calculations and modified according to additional data.

^c *Hordeum vulgare* var.2 was used in the form of grains or *tsampa*.

^d No specific name for the category was mentioned.

Fresh Incense Plants

According to the interviews fresh incense plants are burned either in the ritual burner on the flat roof of the house, in the hearth, or outside at holy sites to please the deities. Usually, the ritual burner is directed towards the most important mountain gods, the three Gongga brothers.

The morning ritual, which was observed daily only in the Toonla house, is preferably accomplished by the oldest female, or more rarely by a female or male of the second generation.²⁰

Most of the interviewees explained that *Quercus guajavifolia* is used as a substitutional plant. The Toonla house members had visited the Dulu monastery. On the way to the monastery they collected *Quercus guajavifolia*, which was burned in the ritual burner of the monastery by a Lama. On the way home *Quercus guajavifolia* was again gathered and burned the same evening in the hearth and the next morning during the morning ritual. A house member mentioned that the species burned at the monastery must be burned at home to ensure the support of the deities.

According to the interviews²¹ *Quercus guajavifolia* is also burned to prevent or to send rainfall. In Tibetan cultural areas weather influencing rituals are widespread. It is believed that deities and demons are able to take considerable influence on the weather (lightning, hailstorms, thunder, clouds, rainfall, and frost). The sound of instruments is used to attract or to scare away spirits. Food and beverages, such as rice, cooked meat, water, beer, etc. are offered to obtain the desired weather (De Nebesky-Wojkowitz 1956:467-473; Wellens 2006). In the upper part of Dulu village there is a holy *Quercus* forest. A streamlet flows through it. At the source of the streamlet lies the water-god site of three families. One informant mentioned that the trees of the forest cannot be cut down because of the holy water-god site.

²⁰ The morning ritual was accomplished six times by females (four times by the oldest female and two times by the second generation female) and three times by a male (once by the oldest male and two times by the second-generation male).

²¹ The use of *Quercus guajavifolia* as a weather maker was mentioned in all villages.

On Chinese New Year²² (14th February 2010) the water-god place was visited and *Pinus yunnanensis* was burned as incense.

Although *Osyris quadripartita* was not categorised among the incense plants, 44% of the villagers mentioned burning the fresh branches when they go gold washing. A woman explained:

The cave entrance close to the white river²³ is surrounded with *acr*.²⁴ In ancient times, gold yield was high close by the cave. It is told that if we burn *acr* before we go gold washing, we will be lucky (Dulu, Gami woman, 24 years).

Dry Incense Plants

According to the interviews and to observations the dried incense plants are usually burned in an incense bowl. In addition to the morning ritual another ceremony was held in the Toonla house every morning: Deities were worshiped by spreading the aromatic scent of *Cupressus funebris*. The fumigated wood in the incense bowl was carried from the altar room to the window facing the holy water source, to the storage room, the water basin, and the window facing the holy village mountains while the carrier chanted. The burning incense bowl was placed in the holy space behind the hearth. Afterwards, butter tea was made, and a splash was poured over the incense bowl to worship deities.²⁵

Dried plants are reportedly also used for well-being. If a house member returns from or leaves for a journey, the smoke is inhaled, and also the means of transportation are fumigated for a safe trip.²⁶ In case of the unexpected, the room is smoked with dried plants, e.g., when a person does not return from a journey as expected, a positive ending is asked for. The species used on the above mentioned occasion were collected close by the Gongga Mountain, and a Lama had chanted on them.

It was mentioned that *Juniperus indica* aff. and *Juniperus squamata* aff. are additionally used to cure colds and mental malaise. In Nepal the use of *Juniperus indica* as an incense and a

²² It was mentioned only in the Toonla house that Chinese New Year is a special festival.

²³ It is unclear whether the woman was talking about the Shuiluo River or a tributary of the Shuiluo River more in the north.

²⁴ *Osyris quadripartita* is *acr* in Gami language.

²⁵ With slight variations, the ceremony held in the house was observed in Xiwa, Lanman, Siweng, and Mianbang.

²⁶ This was also observed in Xiwa, Lanman, Siweng and Mianbang.

medicinal plant was also described by Pohle (1990), Manandhar (2004), and Bhattarai et al. (2006).

Food Offerings and Decoration Plants

According to observations mature fruits²⁷ are often used as food offerings at holy places in and outside of the house. It was mentioned that *Punica granatum* fruits are also placed in the storage room. Because of its many seeds this fruit is a symbol of fertility and believed to ensure that the storage room will be abundant with food in the future. Grains of *Hordeum vulgare* var.1 and var.2, *Triticum aestivum*, and *Oryza sativa* as well as *tsampa* were also mentioned as food offerings. The use of these species was, however, rarely observed. During special ceremonies outside the house the grains are offered to deities by throwing them into the air. *Tsampa* (as main component), *Tagetes erecta*, *Hordeum vulgare* var.2, and *Triticum aestivum* were added to the fresh incense plants burned in the hearth after the monastery visit and during the Chinese New Year.

According to observations²⁸ evergreen plants are often used to decorate holy places and invite deities. Prayer flags – a cord of white, red, orange, green, yellow, and blue flags printed with *mantras* and symbols – are fastened to the evergreen decoration plants in the *yatze*. The prayer flags are spanned from one *yatze* to a tree outside the house, to another *yatze* on the roof, or just to a stick fastened to the roof. It is believed that the wind takes the mantras to the sky and that they thus get fulfilled.

Most interviewees mentioned other occasions throughout the year, such as harvest festivals, when fresh branches are fastened to the *yatze*.

One Bambuseae species (sp.3 in Table 6) was mentioned to be used exclusively for the decoration of the *yatze*. Other Bambuseae spp., however, are used to manufacture baskets, brooms, etc.²⁹

The monks³⁰ from Dulu monastery³¹ mentioned that all fresh incense plants can be inserted into the *yatze*. Only *Aster lavandulifolius* was observed, however, and not *Quercus*

²⁷ Mature fruits of *Prunus persica* are only available in summer, and they are not nonperishable. To avoid the problem of having to use overripe and bad looking fruit a plastic fruit is used instead. This was observed in all visited villages.

²⁸ This kind of decoration was observed in all visited villages.

²⁹ This was mentioned in all visited villages.

³⁰ Two interviews were conducted with monks from Dulu monastery.

³¹ Dulu monastery was visited three times.

guajavifolia.³² Local people mentioned that *Quercus guajavifolia* may be inserted into the mountain *yatze*, when people worship the deities of the mountains.

According to observations *Pinus yunnanensis*, *Pistacia weinmanniifolia*, and *Cornus oblonga* are used in the middle of the cereal fields.³³ The species are placed there for the entire year; either in the middle of the field after the sowing or on occasion of the first irrigation. The purposes of the species vary among the informants. The plants are however either used for protection against varmints, good yield, and to worship the water god³⁴ or the earth god.³⁵

On the flat roof of the house or, rarely, outside the house faded *mandalas* were observed.³⁶ It was mentioned that on the occasion of the Tibetan New Year *mandalas* are made by a high Lama of coloured sand (red, blue, green yellow, and white), grains (barley, wheat, rice, millet, common beans), and *Cupressus funebris* wood. The *mandala* is directed towards the east, according to the Lama's advice. The purpose of the ritual is to assure the support of the deities for a successful year for family and animals. Additional plant species and food are added according to the high Lama's instructions. The species categorised under incense plants are burned. According to the informants the incense plants are burned on the *mandala* or beside the *mandala*. This ritual was not observed, but the faded *mandalas* were found. Common beans, a black crop, is only accepted as an offering species for deities if a high Lama is holding the ritual.

Ritual Cleaning Plants

The interviewees mentioned that fresh branches of *Rhododendron decorum*, *Rhododendron* sp., and *Pseudotsuga forrestii* aff. are burned on special occasions, e.g. spring festival, visit of a Lama, or in case of illness or a conflict of a house member, with the intention of clarifying the invisible dimension with the smoke of the mentioned plants. For this purpose one or several plants are put on a flat iron pan and inflamed. Some interviewees also mentioned the use of *Quercus gilliana* as a ritual cleaning plant.

³² One monk mentioned *Osyris quadripartita* also in the fresh incense plant category, and therefore also in the *yatze* plants category. *Osyris quadripartita* was, however, not observed to be inserted into the *yatze*.

³³ The use of the species was also observed in Xiwa, Siweng, Mianbang.

³⁴ According to one informant the water god is worshipped every time the field is watered.

³⁵ According to the informant earth deities are worshipped because the soil makes that plants grow, which in turn provides people with food.

³⁶ Three faded *mandalas* were observed in Dulu, and one in Xiwa.

Some interviewees explained that malevolent spirits are ubiquitous. To prevent demons from overtaking people and space they need to be pacified. One way is to offer them food. Millet, maize,³⁷ buckwheat, and common beans, cooked or uncooked, are spread outside the house wall to feed wrathful demons.³⁸

During gold-washing activities, as mentioned a couple times, *Mahonia bracteolata* is burned at the site of the gold search to clean the place and to drive malevolent spirits away. The instruments and the body of the gold washer are battered for the same purpose.³⁹

Mahonia bracteolata is preliminarily used as a species to drive off demons. The decoction of the root was mentioned to be used against diarrhoea and stomach problems.⁴⁰

Plants used by the Lama

The root of *Lithospermum erythrorhizon* is used by the Lama during ritual ceremonies⁴¹ to colour *tsampa* figures red. Butter is added to grained root powder and cooked. After the mixture is heated, the Lama paints the dough figures with the head of the *Tagetes erecta* flower. The purposes of the dough figures are manifold; either they are offered to the environment of the deities, e.g. the water god, the home god (in the *yatze*), burned or thrown away to keep demons distant, or offered to them in the name of a sick person.

According to an interviewee a bouquet of *Pinus yunnanensis*⁴² with one to several cones,⁴³ *Cornus oblonga*, *Rhododendron trichostomum*, and some pheasant feathers are attached to a pillar in the living room. The bouquet is filled with gold and silver. Before the bouquet is mounted, a Lama is invited to the house and chants for the long life of the expected child. The bouquet is bound to the pillar before the first child of the childbearing woman of the house is born. A male relative of the woman,⁴⁴ dressed with new clothes, spends one day in the mountains to collect the species and carries them to the valley on his back, the same way a small child is carried. The bouquet is attached to the pillar until it falls down by itself.

³⁷ *Tsampa*, made of *Zea mays*, cannot be offered to deities.

³⁸ This ritual was mentioned in all villages, the species varied, however.

³⁹ Three people mentioned this use with respect to *Mahonia bracteolata*.

⁴⁰ This additional use was mentioned in all observed villages.

⁴¹ I was able to attend three ritual ceremonies held by a Lama. Two took place due to the illness of a Gami house member in Dulu, and one was held after the Tibetan New Year in a Pumi house in Siweng and lasted two days.

⁴² Observed four times in Dulu, two times in Xiwa, one time in Lanman, and two times in Siweng.

⁴³ According to one informant every cone symbolizes a wish. It is nice if a cone is in the bouquet, but it is not obligatory.

⁴⁴ The brother or the father of the child's mother.

5.2.2 Xiwa Village

The Gami, inhabitants of Xiwa live in the vegetation zone of subtropical shrub vegetation in the northern part of the Shuiluo Valley. The Gami of Dulu are their neighbours. Based on Weckerle et al. 2006 the Xiwa villagers once belonged to the ethnic group of Shuhi. During the field research, however, the Xiwa, speaking the Gami language, considered themselves to be Gami.⁴⁵ Table 7 shows the categories revealed by the analysis of the pile sorts.

Table 7: Ritual plant categories and consent ratio of informants in Xiwa

Plant categories ^a	Assigned species	Plant parts used	Consent ratio of informants in % ^b
<u>Ritual plants:</u>			
Incense plants			
Fresh incense plants	<i>Pinus yunnanensis</i> , <i>Pistacia weinmanniifolia</i> , <i>Aster lavandulifolius</i> , <i>Cornus oblonga</i> , <i>Quercus guajavifolia</i> , <i>Osyris quadripartita</i>	Branches	100
Dried incense plants	<i>Cupressus funebris</i> , <i>Rhododendron trichostomum</i> , <i>Juniperus indica</i> aff., <i>Juniperus squamata</i> aff.	Branches / Wood	100
Food offerings and decoration			
Yatze plants	<i>Cornus oblonga</i> , <i>Pinus yunnanensis</i> , <i>Pistacia weinmanniifolia</i> , <i>Bambuseae</i> sp.3, <i>Tagetes erecta</i>	Branches / Flowers	100
Decoration	<i>Juglans regia</i> , <i>Cupressus funebris</i>	Branches	100
Fruit offerings	<i>Juglans regia</i> , <i>Punica granatum</i> , <i>Prunus persica</i> , <i>Pyrus pyrifolia</i> , <i>Citrus sinensis</i>	Fruits	100
Grain offerings	<i>Hordeum vulgare</i> var.1 and var.2, <i>Triticum aestivum</i> , <i>Oryza sativa</i>	Grains ^c	77
Ritual cleaning plants			
Fumigating plants	<i>Rhododendron decorum</i> , <i>Rhododendron</i> sp., <i>Pseudotsuga forrestii</i> aff.	Branches	62
- ^d	<i>Mahonia bracteolata</i>	Branches	100
Ritual cleaning grains	<i>Panicum</i> sp., <i>Zea mays</i> , <i>Fagopyrum dibotrys</i> , <i>Phaseolus vulgaris</i>	Grains	77
Used by Lama			
Tsampa figures	<i>Lithospermum erythrorhizon</i>	Root	100
<u>Other plants:</u>			
Broom	<i>Myrsine africana</i>	Branches	100
<u>Useless plants:</u>			
- ^d	<i>Rhamnus gilgiana</i> , <i>Sageretia pycnophylla</i> , <i>Diospyros dumetorum</i>	Branches	62
Plants appearing in different categories			
- ^d	<i>Quercus gilliana</i>	Branches	-

⁴⁵ The question of ethnic affiliation led to discussions during the interviews. However, the members of the oldest generation considered themselves to be Shuhi.

^aThe English names of the ritual plant categories are approximations to the meaning of local category names.

^bThe consent ratio of informants is based on majority-rule consensus calculations and modified according to additional data.

^c *Hordeum vulgare* var.2 was used in the form of grains or *tsampa*.

^d No specific name for the category was mentioned.

Incense Plants

The morning ritual was mainly attended in the Atschi house, although the procedure was also observed in some neighbouring houses of the clustered settlement. This ritual is preferably accomplished by a female.⁴⁶

Reportedly, during gold-washing activities *Osyris quadripartita* is burned during the morning ritual for good gold yield. The species is also burned at gold-searching sites and after gold has been found. *Osyris quadripartita* was mentioned as especially appreciated by “gold deities”.

Food Offerings and Decoration Plants

According to the interviewees the species used in the middle of the cereal field are the same species as observed in Dulu, and is placed there before the field is ploughed in order to worship earth deities. Water deities are reportedly not worshiped under these circumstances. The offering of common beans to deities was mentioned several times in the context of *mandalas* made by Lamas, which was described under 5.2.1 (Food Offerings and Decoration Plants).

Ritual Cleaning

Several informants mentioned that dirty clothes should be fumigated. This also goes for clothes that have been worn by other people, to drive bad spirits out of the clothes.

Plants used by the Lama

According to one observation *Pistacia weinmanniifolia* is an additional species⁴⁷ added to the bouquet attached to a pillar in the living room.

⁴⁶ The morning ritual was accomplished four times by a female and two times by a male. However, in the Atschi house it was accomplished three times by the female of the second generation and one time by the male of the third generation.

⁴⁷ Among the species mentioned under 5.2.1 (Plants used by Lama).

5.2.3 Lanman Village

The Shuhi inhabitants of Lanman Village live in the subtropical shrub vegetation. Table 8 shows the categories revealed by the analysis of the pile sorts. At the time of pile-sorts activity *Quercus gilliana* did not figure in the plant set.

Table 8: Ritual plant categories and consent ratio of informants in Lanman

Plant categories ^a	Assigned species	Plant parts used	Consent ratio of informants in % ^b
Ritual plants:			
Incense plants			
Fresh incense plants	<i>Pinus yunnanensis</i> , <i>Pistacia weinmanniifolia</i> , <i>Aster lavandulifolius</i> , <i>Quercus guajavifolia</i>	Branches	56
Dried incense plants	<i>Cupressus funebris</i> , <i>Rhododendron trichostomum</i> , <i>Juniperus indica</i> aff., <i>Juniperus squamata</i> aff.	Branches / Wood	100
Food offerings and decoration			
Yatze plants	<i>Cornus oblonga</i> , <i>Pinus yunnanensis</i> , <i>Pistacia weinmanniifolia</i> , <i>Bambuseae</i> sp.2, <i>Tagetes erecta</i>	Branches / Flowers	100
Decoration	<i>Juglans regia</i> , <i>Cupressus funebris</i>	Branches	100
Fruit offerings	<i>Juglans regia</i> , <i>Punica granatum</i> , <i>Prunus persica</i> , <i>Pyrus pyrifolia</i> , <i>Citrus sinensis</i>	Fruits	100
Grain offerings	<i>Hordeum vulgare</i> var.1 and var.2, <i>Triticum aestivum</i> , <i>Zea mays</i> , <i>Oryza sativa</i>	Grains ^c	100
Ritual cleaning plants			
Fumigating plants	<i>Rhododendron decorum</i> , <i>Rhododendron</i> sp., <i>Pseudotsuga forrestii</i> aff.	Branches	100
- ^d	<i>Mahonia bracteolata</i> , <i>Rhamnus gilgiana</i> , <i>Sageretia pycnophylla</i> , <i>Diospyros dumetorum</i>	Branches	94
Ritual cleaning grains	<i>Panicum</i> sp., <i>Fagopyrum dibotrys</i> , <i>Phaseolus vulgaris</i>	Grains	100
Used by Lama <i>Tsampa</i> figures	<i>Lithospermum erythrorhizon</i>	Root	100
Other plants:			
- ^d	<i>Myrsine africana</i>	Branches	100
Plants appearing in different categories			
- ^d	<i>Osyris quadripartita</i>	Branches	-

^aThe English names of the ritual plant categories are approximations to the meaning of local category names.

^bThe consent ratio of informants is based on majority-rule consensus calculations and modified according to additional data.

^c *Hordeum vulgare* var.2 was used in the form of grains or *tsampa*.

^d No specific name for the category was mentioned.

Incense Plants

The morning ritual was mainly attended in the Dangzu house, although the procedure was also observed in some neighbouring houses of the clustered settlement. In the Dangzu house it was accomplished by a male.⁴⁸

Osyris quadripartita was assigned to different categories, 39% of all interviewees, however, mentioned its use as a fresh incense plant during gold-washing activities.

Food Offerings and Decoration Plants

On the day before the Tibetan New Year in Lanman *tsampa*, *Citrus sinensis*, *Oryza sativa*, and *Hordeum vulgare* var.2 were filled into the newly decorated *yatze*.

The pillars in the living room were decorated with fresh *Pinus yunnanensis*, *khatas*, and prayer flags. During festivities the same species that were used to fill the *yatze* were offered at the water-god site. The *Citrus sinensis* was placed in the *yatze* at the water-god site, and a mixture of grains and *tsampa* was thrown into the air to worship the water god.

Lanman is the only village in the Shuiluo Valley that uses *Zea mays* as a food offering plant. It is appreciated by the deities because of its bright colour. It is unclear, however, why the deities do not appreciate the bright colour of *Panicum* sp., which is used as a ritual cleaning plant.

It was once observed that *Punica granatum* was placed in the storage room,⁴⁹ bedded on *Hordeum vulgare* sp.2 and *Triticum aestivum*. Deities are said to appreciate offers bedded on the two grains.

Ritual Cleaning Plants

The fresh branches of *Rhododendron decorum*, *Rhododendron* sp., and *Pseudotsuga forrestii* aff. are burned for ritual cleaning. During an observation on the day before the Tibetan New Year *Rhododendron decorum* was burned in an iron pan. The purification started in the living room (house altar site, along the wall, windows, cupboards), progressed to the roof, and the ritual burner was cleaned by fumigation of *Rhododendron decorum*. At the end of the purification, which was performed in a clockwise manner, the water-god site was cleaned.

⁴⁸ The morning ritual was accomplished 13 times by male. However in the Dangzu house it was five times accomplished by the oldest male.

⁴⁹ With the same purpose as described under 5.2.1 (Food Offerings and Decoration Plants).

The branches were laid out on the ground some distance from the water god place, with the tips of the leaves pointing away.

In Lanman several people mentioned the use of *Rhododendron decorum* branches in addition to the purification; they help the Lama to remember the chanting text. Legends in different variations are wound around *Rhododendron decorum* leaves,⁵⁰ as described by a young Shuhi man:

“Three brothers, one of them a Lama, were on a long journey together. After days without food the two brothers got hungry. The only edible thing they had was an ox skin inscribed with chanting versions in Shuhi characters. Their hunger was so big that they decided to eat the ox skin while the Lama was sleeping. One of the brothers did not bear the ox skin very well, and he got ill. Therefore, the chanting version on the ox skin was lost. The sick brother asked his Lama brother to cure him by chanting, but the Lama could not remember the chanting version, because it had been eaten. By chance, the Lama saw the beginning of the chanting version on a *moggi*⁵¹ leaf, and so he remembered the whole chanting version and cured his brother.” (Lanman, Shuhi man, 19 years)

It was mentioned that *Mahonia bracteolata*, *Rhamnus gilgiana*, *Sageretia pycnophylla*, and *Diospyros dumetorum* are used frequently to drive off bad ghosts by means of battering the person or the room. Lanman is the only village in the Shuiluo Valley to hold this knowledge about the ritual cleaning plants.

⁵⁰ Weckerle & Huber 2007 reported a similar legend. Instead of a Lama, the *dumbu* remembered the chanting text.

⁵¹ *Moggi* is the Shuhi name of *Rhododendron decorum*.

5.2.4 Siweng Village

The Pumi of Siweng Village live in the *Pinus yunnanensis* forest vegetation zone at higher altitudes than the neighbouring ethnic group in Lanman and the inhabitants of Xiwa, Mianbang, and Qiubao. Table 9 shows the categories revealed by the analysis of the pile sorts. At time of the pile-sorts activity *Quercus gilliana* did not figure in the plant set.

Table 9: Ritual plant categories and consent ratio of informants in Siweng

Plant categories ^a	Assigned species	Plant parts used	Consent ratio of informants in % ^b
<u>Ritual plants:</u>			
Incense plants			
Fresh incense plants	<i>Pinus yunnanensis</i> , <i>Pistacia weinmanniifolia</i> , <i>Aster lavandulifolius</i> , <i>Quercus guajavifolia</i>	Branches	83
Dried incense plants	<i>Cupressus funebris</i> , <i>Rhododendron trichostomum</i> , <i>Juniperus indica</i> aff., <i>Juniperus squamata</i> aff.	Branches / Wood	100
Food offerings and decoration			
Yatze plants	<i>Cornus oblonga</i> , <i>Pinus yunnanensis</i> , <i>Pistacia weinmanniifolia</i> , Bambuseae sp.1, <i>Tagetes erecta</i>	Branches / Flowers	100
Decoration	<i>Juglans regia</i> , <i>Cupressus funebris</i>	Branches	65
Fruit offerings	<i>Juglans regia</i> , <i>Punica granatum</i> , <i>Prunus persica</i> , <i>Pyrus pyrifolia</i> , <i>Citrus sinensis</i>	Fruits	100
Grain offerings	<i>Hordeum vulgare</i> var.1 and var.2, <i>Triticum aestivum</i> , <i>Oryza sativa</i>	Grains ^c	74
Ritual cleaning plants			
Fumigating plants	<i>Rhododendron decorum</i> , <i>Rhododendron</i> sp., <i>Pseudotsuga forrestii</i> aff.	Branches	100
- ^d	<i>Mahonia bracteolata</i>	Branches	100
Ritual cleaning grains	<i>Panicum</i> sp., <i>Fagopyrum dibotrys</i> , <i>Phaseolus vulgaris</i> , <i>Zea mays</i>	Grains	74
Used by Lama			
<i>Tsampa</i> figures	<i>Lithospermum erythrorhizon</i>	Root	100
<u>Other plants:</u>			
- ^d	<i>Myrsine africana</i>	Branches	100
<u>Useless plants:</u>			
- ^d	<i>Osyris quadripartita</i> , <i>Rhamnus gilgiana</i> , <i>Sageretia pycnophylla</i> , <i>Diospyros dumetorum</i>	Branches	91
Plants appearing in different categories			
- ^d	-	-	-

^aThe English names of the ritual plant categories are approximations to the meaning of local category names.

^bThe consent ratio of informants is based on majority-rule consensus calculations and modified according to additional data.

^c *Hordeum vulgare* var.2 was used in the form of grains or *tsampa*.

^d No specific name for the category was mentioned.

Incense Plants

The morning ritual, which was mainly observed in the Gami house, is preferably accomplished by a female.⁵²

On the Tibetan New Year *Pinus yunnanensis*, *Pistacia weinmanniifolia*, and *Cornus oblonga* are burned in the ritual burner at the first crow of the cock. The same species are burned during the morning ritual.⁵³ The informant mentioned that they used to be burned three times in the past; a first time at the first crow of the cock, a second time at the second crow of the cock, and a last time during morning ritual.

The water-god worshipping during Tibetan New Year was attended by most of the inhabitants of the Gami house. The people were dressed traditionally; the leader of the ceremony carried an incense bowl with a piece of burning *Cupressus funebris* wood. The other people carried many offerings on plates (*Citrus sinensis*, *Pyrus pyrifolia*, cooked rice, butter, cheese, rice crackers, cakes, and lard) to the house of the water-god place. *Pinus yunnanensis*, *Pistacia weinmanniifolia*, and *Cornus oblonga* were burned on the ground before the water god place. *Hordeum vulgare* var.2 was thrown into the air, the corn-shell trumpet was blown, and *mantras* were recited. Afterward, the water-god place, which is shared by several families of the village, was worshipped by burning *Pinus yunnanensis* and *Pistacia weinmanniifolia*.

The people in Siweng mentioned that the ritual ceremony always takes place before butter tea is made. However, observations in the Gami house showed that the additional morning ceremony was not always conducted in this fashion; depending on the circumstances, it was held during or after the making of butter tea.

Food Offerings and Decoration Plants

The members of the Gami house use evergreen decoration plants at the animal deities' site.⁵⁴ This is the place, situated above the Gami house, where animal deities are served. During the Tibetan New Year the *yatze* plants are renewed, and *Pinus yunnanensis* and *Rhododendron*

⁵² The morning ritual was accomplished 11 times by females (nine times by the female of the second generation from the Gami house and two times by the oldest generation of the Tschinschi house), and four times by males (three times by the male of the second generation from the Gami house and one time by the oldest generation of the Tschinschi house).

⁵³ The informant mentioned that *Cornus oblonga* is burned only on the occasion of the Tibetan New Year. According to the tradition of his father, who was Gami, *Cornus oblonga* is burned.

⁵⁴ The animal deities' place was only visited with Gami house members.

decorum are burned on the ground in front of the animal deities' place. While the branches are burning, the participants eat a lot of meat, lard, and rice cakes, and they drink barley wine. At the end of the gathering the conch-shell trumpet is blown, and chanting texts are recited by some participants. All attendees then leave the site together, and the leader of the procession carries an incense bowl with fumigated *Cupressus funebris* wood. Left-overs are left behind at the animal deities' place. If crows come quietly and take the leftovers away, it is a good sign, which signifies that the deities have recognised that the people have worshipped them. An informant mentioned that the birds per se are not targeted, however, in this situation it is different.

It was often mentioned that during special festivities *Cupressus funebris* and *Juglans regia* branches are used for decoration to invite deities. During the Tibetan New Year fresh *Cupressus funebris* leaves were used to decorate tables and the holy space behind the hearth. Several legends are wound around the *Cupressus funebris*, for example:

“As it was common in old days, a woman before her delivery made a journey to her hometown. Buddha's mother was in expectation of Buddha. On the long journey to her family she made a pause under a *zendi*⁵⁵ tree. Suddenly, the labor pains started. The woman bedded on *zendi* branches gave birth to Buddha.” (Siweng, Pumi man, 41 years)⁵⁶

“A long time ago, a living Buddha invited a Lama to his temple to discuss an important issue. The two sat on *shoese*⁵⁷ branches, which they used as pillows. The conversation lasted very long. At the end of the Lama's visit the leaves were flat and had a bad smell on them.” (Qiubao, Naxi man, 53 years)

The legends around the *Cupressus funebris* tree are manifold and reflect the differences between the wood and the branches. An important incident occurred under the tree: Buddha was born. The wood is considered clean, compared to the branches, which serve as pillows in different situations. The strong green of the leaves symbolises the birth of the New Year, according to several informants.

Seldom, the leaves are used as incense; according to legend, they are not as pure and fragrant as the wood.

⁵⁵ *Zendi* is the Pumi name for *Cupressus funebris*.

⁵⁶ For a similar legend told in Buddhism see Koewn 2000: 27-29. In both legends Buddha was born under a tree, but the species differ. The *Cupressus funebris* tree of the Pumi legend replaced by a *Shorea sal* tree in the Koewn legend.

⁵⁷ *Shoese* is the Naxi name for *Cupressus funebris*.

Ritual Cleaning

On the day before the Tibetan New Year the rooms inside the Gami house⁵⁸ wall (except the stable), the flat roof, and the environment of the upcoming ritual were fumigated by passing through them clockwise. *Rhododendron decorum*, *Rhododendron* sp., and *Pseudotsuga forrestii* aff. were burned. An informant said:

“We clean the house and the holy water-god place to take the old year out, so that new year is welcome and can arrive.” (Siweng, Pumi man, 54 years old)

After the purification the branches are thrown away and blown out a good distance from the house wall or the cleaned environment. The tips of the branches are pointed away from the object, so that the contamination can flow away.

On the second day of the Tibetan New Year *Rhododendron decorum*, *Rhododendron* sp., and *Pseudotsuga forrestii* were burned in a pan outside the house. The saddle and harness were held over the pan, to clean them. Several male members of the Gami house went to the mountain-god place, which is situated half an hour’s horse ride up the mountain, to worship mountain deities with other male members of the village. Most of the houses of the village have a small *yatze* at the site and gathered plants for the Tibetan New Year mountain-god worship.⁵⁹ The *yatze* was decorated with *Pinus yunnanensis*, *Pistacia weinmanniifolia*, *Cornus oblonga*, and *Bambuseae* sp.1. *Pinus yunnanensis* was burned and food (*Citrus cinensis*, *Pyrus pyrifolia*, cooked rice balls, cheese, rice crackers, cakes, and lard) was offered to the deities. *Tsampa*, *Hordeum vulgare* var.2, *Oryza sativa* were thrown into the air, and the conch-shell trumpet was blown. While the branches of *Pinus yunnanensis* were burned, the participants ate and drank while sitting on *Rhododendron decorum* leaves. According to an informant the leaves have no other purpose than to serve as sitting cushions. Toward the end of the ritual the participants rode around the inlined *yatzes* three times, before they headed for the site where the women were gathering.

Used by Lama

During the ritual held after the Tibetan New Year festival by a Lama in the Gami house, dough figures were offered to all involved as a strengthening for body and spirit. The offered *tsampa* figures were neither painted red with the *Lithospermum erythrorhizon* root, nor were

⁵⁸ Before the Tibetan New Year the whole house and household are cleaned. For example, carbon black pans were scoured until they were shiny.

⁵⁹ Every house sends at least one male member to the mountain-god place to worship the mountain god. The women gather at another place and are later joined by the men.

they decorated with butter mouldings. At the rituals attended in Dulu for the purpose of healing a sick person, however, *tsampa* figures were not offered to the participants.

5.2.5 Mianbang Village

Mianbang, the most southern village observed, is inhabited by Shuhi. The village is situated in the vegetation zone of subtropical shrub vegetation. The Naxi of Qiubao are neighbours.

Table 10 shows the categories revealed by the analysis of the pile sorts.

Table 10: Ritual plant categories and consent ratio of informants in Mianbang

Plant categories ^a	Assigned species	Plant parts used	Consent ratio of informants in % ^b
<u>Ritual plants:</u>			
Incense plants			
Fresh incense plants	<i>Pinus yunnanensis</i> , <i>Pistacia weinmanniifolia</i> , <i>Cornus oblonga</i> , <i>Osyris quadripartia</i> , <i>Quercus guajavifolia</i>	Branches	86
Dried incense plants	<i>Cupressus funebris</i> , <i>Rhododendron trichostomum</i> , <i>Juniperus indica</i> aff., <i>Juniperus squamata</i> aff.	Branches / Wood	100
Food offerings and decoration			
Yatze plants	<i>Cornus oblonga</i> , <i>Pinus yunnanensis</i> , <i>Pistacia weinmanniifolia</i> , <i>Bambuseae</i> sp.2, <i>Tagetes erecta</i>	Branches / Flowers	100
Decoration	<i>Cupressus funebris</i>	Branches	71
Fruit offerings	<i>Juglans regia</i> , <i>Punica granatum</i> , <i>Prunus persica</i> , <i>Pyrus pyrifolia</i> , <i>Citrus sinensis</i>	Fruits	100
Grain offerings	<i>Hordeum vulgare</i> var.2, <i>Panicum</i> sp., <i>Triticum aestivum</i> , <i>Oryza sativa</i>	Grains ^c	<50
Ritual cleaning plants			
Fumigating plants	<i>Rhododendron decorum</i> , <i>Rhododendron</i> sp., <i>Pseudotsuga forrestii</i> aff., <i>Myrsine africana</i>	Branches	57
- ^d	<i>Mahonia bracteolata</i>	Branches	100
Ritual cleaning grains	<i>Fagopyrum dibotrys</i> , <i>Phaseolus vulgaris</i>	Grains	<50
Used by Lama			
<i>Tsampa</i> figures	<i>Lithospermum erythrorhizon</i>	Root	100
<u>Useless plants:</u>			
- ^d	<i>Rhamnus gilgiana</i> , <i>Sageretia pycnophylla</i> , <i>Diospyros dumetorum</i> , <i>Juglans regia</i>	Branches	71
Plants appearing in different categories			
- ^d	<i>Aster lavandulifolius</i> , <i>Hordeum vulgare</i> var.1, <i>Zea mays</i> , <i>Quercus gilliana</i>	Branches	-

^aThe English names of the ritual plant categories are approximations to the meaning of local category names.

^bThe consent ratio of informants is based on majority-rule consensus calculations and modified according to additional data.

^c *Hordeum vulgare* var.2 was used in the form of grains or *tsampa*.

^d No specific name for the category was mentioned.

Incense Plants

The morning ritual was mainly attended in the Dazurr house. Depending on the settlement, however, also neighbouring houses were observed. It is preferably accomplished by male.⁶⁰

The morning ritual was held every morning on the roof. With reference to the mixture added to the fresh burning plant, an informant said:

“The mixture added during the morning ritual is like a flavouring, it makes the food tastier for the deities.” (Mianbang, Shuhi woman, 54 years)

During the morning ritual the conch-shell trumpet was blown twice for three times. Several interviewees mentioned that it is better heard by the deities when the trumpet is blown twice for three times instead of only once for three times.

The ritual burner on the flat roof points in different directions. It was explained by the interviewees that it had been built according to advice from neighbours or Lamas and has no fixed direction.

According to some interviewees *Osyris quadripartita* is mainly used as incense for good gold yield during gold-washing activities as well as for pure monetary purposes. According to observations it was burned during the morning ritual with *Pistacia weinmanniifolia* before a male member of the Dazurr house went to wash gold.

Cupressus funebris wood not only has the function of pleasing deities, the incense is used for medicinal purposes as well; the fumigated wood in the incense bowl is held in front of the eyes or nose to cure pain or heal eye problems and respiratory diseases.

Food Offerings and Decoration Plants

The Bambuseae sp.2 inserted into the yatze is only used for the mentioned purposes. Other Bambuseae spp. are, however, used to manufacture tools for gold washing.

Ritual Cleaning Plants

Besides *Rhododendron decorum* *Rhododendron* sp. and *Pseudotsuga forrestii* aff. *Myrsine africana* are used as ritual cleaning plants. According to informants and observations, however, *Myrsine africana* is also used as a broom inside the house and, in rarer cases, outside the house.

Plants figuring in different Categories

⁶⁰ The morning ritual was accomplished ten times by males and three times by females. However, in the Dazurr house it was accomplished by the second-generation male seven times.

Several interviewees mentioned the use of *Aster lavandulifolius* as an incense plant, while some claimed it to be useless. It was mentioned several times, however, that the decoction of the branches is useful against cold and fever.⁶¹

According to observations during a praying meeting (and afterwards dancing) *Zea mays* grains are used to count the number of *mantras* recited.

⁶¹ The same use was mentioned in Qiubao.

5.2.6 Qiubao Village

The Naxi village Qiubao in the southern part of the Shuiluo Valley lies in the subtropical shrub vegetation. Table 11 shows the categories revealed by the analysis of the pile sorts.

Table 11: Ritual plant categories and consent ratio of informants in Qiubao

Plant categories ^a	Assigned species	Plant parts used	Consent ratio of informants in % ^b
Ritual plants:			
Incense plants			
Fresh incense plants	<i>Pinus yunnanensis</i> , <i>Pistacia weinmanniifolia</i> , <i>Cornus oblonga</i> , <i>Osyris quadripartita</i> , <i>Quercus guajavifolia</i>	Branches	100
Dried incense plants	<i>Cupressus funebris</i> , <i>Rhododendron trichostomum</i> , <i>Juniperus indica</i> aff., <i>Juniperus squamata</i> aff.	Branches / Wood	100
Food offerings and decoration			
Yatze plants	<i>Cornus oblonga</i> , <i>Pinus yunnanensis</i> , <i>Pistacia weinmanniifolia</i> , Bambuseae sp.2, <i>Tagetes erecta</i>	Branches / Flowers	100
Decoration	<i>Cupressus funebris</i>	Branches	100
Fruit offerings	<i>Juglans regia</i> , <i>Punica granatum</i> , <i>Prunus persica</i> , <i>Pyrus pyrifolia</i> , <i>Citrus sinensis</i>	Fruits	100
Grain offerings	<i>Hordeum vulgare</i> var.2, <i>Triticum aestivum</i> , <i>Oryza sativa</i>	Grains ^c	<50
Ritual cleaning plants			
Fumigating plants	<i>Rhododendron decorum</i> , <i>Rhododendron</i> sp., <i>Pseudotsuga forrestii</i> aff., <i>Myrsine africana</i>	Branches	100
- ^d	<i>Mahonia bracteolata</i>	Branches	100
Ritual cleaning grains	<i>Fagopyrum dibotrys</i> , <i>Phaseolus vulgaris</i>	Grains	<50
Used by Lama			
<i>Tsampa</i> figures	<i>Lithospermum erythrorhizon</i>	Root	100
Useless plants:			
- ^d	<i>Rhamnus gilgiana</i> , <i>Sageretia pycnophylla</i> , <i>Diospyros dumetorum</i> , <i>Juglans regia</i> , <i>Quercus gilliana</i>	Branches	90
Plants categorized in different categories			
- ^d	<i>Aster lavandulifolius</i> , <i>Hordeum vulgare</i> var.1, <i>Zea mays</i> , <i>Panicum</i> sp.	Branches	-

^a The English names of the ritual plant categories are approximations to the meaning of local category names.

^b The consent ratio of informants is based on majority-rule consensus calculations and modified according to additional data.

^c *Hordeum vulgare* var.2 was used as grains and *tsampa*.

^d No clear description of category was noted.

Food Offerings and Decoration Plants

At several occasions *Pinus yunnanensis* with cone, *Quercus guajavifolia*, and *Juniperus* spp. were used in the *yatze*.

5.3 Comparative Analysis of Ritual Plant Use in the Shuiluo Valley

All ethnic groups in the Shuiluo Valley established the same number and types of ritual plant categories. The species assigned to the categories varied among the informants, see Table 12. In Mianbang and Qiubao, however, the same two categories (the food offering and decoration category with grains and the ritual cleaning category with grains) had a consent ratio of informants of less than 50%. This points to the fact that there is knowledge about the above-mentioned categories among the ethnic groups, that the consent between the villagers, however, is low.

All the ethnic groups used the same categories when grouping the ritual plants, but the species associated with these categories varied among the informants.

The categories were ranked according to the interviewees' assumption of the importance of a species. Some categories like *yatze* plants, grains for food offerings and decoration, and grains for ritual cleaning were, however, all ranked the same; no figure was therefore produced.

Categories containing mostly only one species (*Cupressus funebris* and *Juglans regia* branches as decoration plants during special festivities, *Mahonia bracteolata*, *Lithospermum erythrorhizon*) were not ranked.

Table 12: Consent ratio of the villages in the Shuiluo Valley

Plant categories ^a	Assigned species ^b	Dulu ^c	Xiwa ^c	Lanman ^c	Siweng ^c	Mianbang ^c	Qiubao ^c
Ritual plants:							
Incense plants							
Fresh incense plants	<i>P. yunnanensis</i> , <i>P. weinmanniifolia</i> , <i>Q. guajavifolia</i> (<i>A. lavandulifolius</i> , <i>C. oblunga</i> , <i>O. quadripartita</i>)	52	100	56	83	86	100
Dried incense plants	<i>C. funebris</i> , <i>R. trichostomum</i> , <i>J. indica</i> aff., <i>J. squamata</i> aff.	100	100	100	100	100	100
Food offerings and decoration							
Yatze plants	<i>P. yunnanensis</i> , <i>P. weinmanniifolia</i> , <i>C. oblonga</i> , <i>Bambuseae</i> spp., <i>Tagetes erecta</i>	100	100	100	100	100	100
Decoration	<i>C. funebris</i> (<i>J. regia</i> branches)	100	100	100	65	71	100
Fruit offerings	<i>J. regia</i> , <i>P. granatum</i> , <i>P. persica</i> , <i>P. pyrifolia</i> , <i>C. sinensis</i>	100	100	100	100	100	100
Grain offerings	<i>H. vulgare</i> var.2, <i>T. aestivum</i> , <i>O. sativa</i> (<i>H. vulgare</i> var.1, <i>Z. mays</i> , <i>Panicum</i> sp.)	70	77	100	74	<50	<50
Ritual cleaning							
Fumigating plants	<i>R. decorum</i> , <i>Rhododendron</i> sp., <i>P. forrestii</i> (<i>M. africana</i>)	70	62	100	100	100	100
- ^d	<i>M. bracteolata</i> (<i>R. gilgiana</i> , <i>S. pycnophylla</i> , <i>D. dumetorum</i>)	100	100	94	100	57	100
Ritual cleaning grains	<i>F. dibtorys</i> , <i>P. vulgaris</i> (<i>Z. mays</i> , <i>Panicum</i> sp.)	70	77	100	74	<50	<50
Used by Lama							
<i>Tsampa</i> figures	<i>L. erythrorhizon</i>	100	100	100	100	100	100
Other plants:							
Broom	(<i>M. africana</i>)	100	100	100	100	^e	^e
Useless plants:							
- ^d	(<i>R. gilgiana</i> , <i>S. pycnophylla</i> , <i>D. dumetorum</i> , <i>O. quadripartita</i> , <i>J. regia</i> branches)	100	62	^e	91	71	90
Plants appearing in different categories							
- ^d	(<i>A. lavandulifolius</i> , <i>Q. gilliana</i> , <i>O. quadripartita</i> , <i>D. dumetorum</i> , <i>H. vulgare</i> var.1, <i>Z. mays</i> , <i>Panicum</i> sp.)	-	-	-	-	-	-

^aThe English names of the ritual plant category are approximations to the meaning of local category names.^bSpecies in brackets were not assigned to the referred category in all the villages.^cConsent ratio of informants in %. The consent ratio of informants is based on majority-rule consensus calculations and modified according to additional data.^dNo clear description of the category was noted.^eNo species was placed in this category.

5.3.1 Fresh Incense Plants

In the northern villages (Dulu, Xiwa, Lanman, and Siweng) *Pinus yunnanensis* is considered the most important fresh incense plant (see Figure 3). Pine trees grow at relatively high elevations in the *Pinus yunnanensis* forest, close by the deities that dwell the mountains. Plants collected at high elevations are considered to be cleaner and are therefore more appreciated. Observations unveiled that *Pinus yunnanensis* was burned daily where the pine trees grow close to the settlements in Siweng, but, due to convenience, *Pistacia weinmanniifolia* was favoured over *Pinus yunnanensis* in daily life in the other northern villages. As well as in the north, *Pinus yunnanensis* was ranked high in the south. *Osyris quadripartita* was ranked higher than *Pinus yunnanensis*. As described under 5.2.2 (Incense Plants) *Osyris quadripartita* is a plant burned during gold-washing activities. It is burned in Xiwa, Mianbang, and Qiubao during the morning ritual or on site, when one is looking for gold. At the time of the field research the gold washing activities were high, and this may have influenced the high ranking of *Osyris quadripartita*. In Mianbang *Pistacia weinmanniifolia* was burned during the morning ritual together with *Osyris quadripartita*. Thus burning both plants takes place to ensure good luck for the gold washing members of the house, preferably middle-aged men, but also the well-being of the house members staying at home. The villages where *Osyris quadripartita* was burned, are situated close to the Shuiluo River. It is unclear, however, why the plant is considered useless by the Shuhi of Lanman, who also live near the Shuiluo River, to which they have easy access. This fact could be in relation to the ongoing changes concerning gold-washing issues.⁶² Dulu, and in particular Siweng, are situated at rather distant from the Shuiluo River, the gold source of the Shuiluo Valley. Therefore, other plants like *Pinus yunnanensis* or *Pistacia weinmanniifolia* may replace *Osyris quadripartita* during gold-washing activities.

The importance of *Quercus guajavifolia* as a fresh burning plant is marginal in all villages, due to its use as a substitutional plant. Its additional use for rainmaking or stopping may not be ranked important, since sparsity or surplus of water is not an issue. Every village has a beck and enough water flowing in it. It appears that no flood or water damage occurs even during the rainy season.

Aster lavandulifolius is only used as an incense plant in the northern part of the Shuiluo Valley. In the southern part the leaves are used as a decoction against fever and cold.

⁶² Inhabitants of different villages with fields close to the Shuiluo River receive financial compensation from the government in case of landslides.

Cornus oblonga, used as a fresh burning plant in the villages, is not considered preferable. It was mentioned that *Cornus oblonga* is more valuable as a decoration plant. It is unclear, whether this is due to the rather dark smoke, as some informants mentioned. It was, however, grouped under the fresh burning plants during the pile-sort activity. *Cornus oblonga* is used among the Gami in the northern part of the valley. Among the families under Gami influence in Siweng, however, *Cornus oblonga* is used during special festivities.⁶³ Weckerle et al. 2006, who investigated the Shuhi in the northern and southern part of the Shuiluo Valley (inter alia Xiwa, Lanman, and Mianbang), did not explicitly mention the use of *Cornus oblonga* as an incense plant. Among the Xiwa inhabitants, however, a shift towards the ethnic group of the Gami took place, including culture and language, for which *Cornus oblonga* may be an example. This implies that the use of *Cornus oblonga* as an incense plant can be traced back to Gami knowledge. In the southern part of the Shuiluo Valley the Shuhi of Mianbang use *Cornus oblonga* as an incense plant, seemingly due to the influence of the neighbouring Naxi ethnic groups; the Shuhi in Lanman surrounded by Shuhi ethnic groups do not use *Cornus oblonga* as an incense plant, nor do the Pumi.

The consent ratio of informants with reference to fresh incense plants averages 73% in the northern villages and 93% in the southern villages. In the north only the Siweng, Pumi, and the Lanman Shuhi placed the same species in the incense plant category. The inhabitants of the southern villages all placed exactly the same species in this category. The knowledge about fresh incense plants is distributed very homogeneously among the Naxi and the Shuhi in the south. Among the northern ethnic groups, however, it is distributed in a more diverse manner.

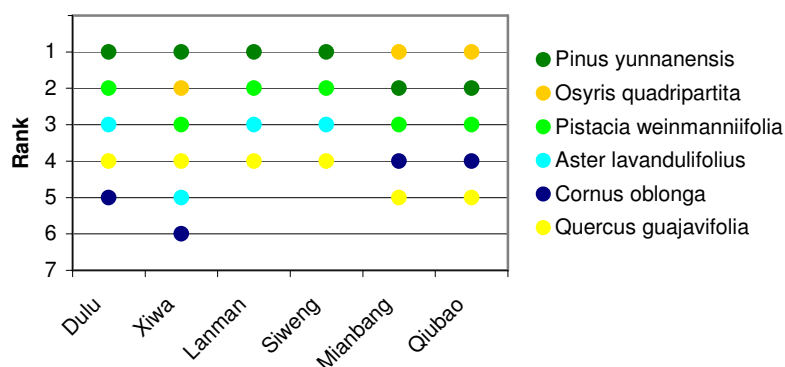


Figure 3: Ranking data of fresh incense plants from rank 1 “most preferred plant” to rank 6 “least preferred plant”.

⁶³ This information is based on the informants in Siweng with Gami influence in the family (three of 23 informants).

5.3.2 Dried Incense Plants

The most preferred dried incense plant in all villages is *Cupressus funebris*, which is used daily (see Figure 4). It is used on the same occasions in the northern and southern villages. It grows at high altitudes, in close proximity to the mountain deities. The inhabitants of the Shuiluo Valley also agreed in the ranking of the second most preferred dried incense plant *Juniperus indica* aff., again because it grows at high altitudes. The species used as dried incense plants are identical among all the ethnic groups. The consent ratio of the informants in the villages was 100%, and the villagers ranked the first two species identically. This points to the strong binding to the greater Tibetan culture, rather than an orientation determined by local ethnical groups, geographical position, or biogeographic conditions.

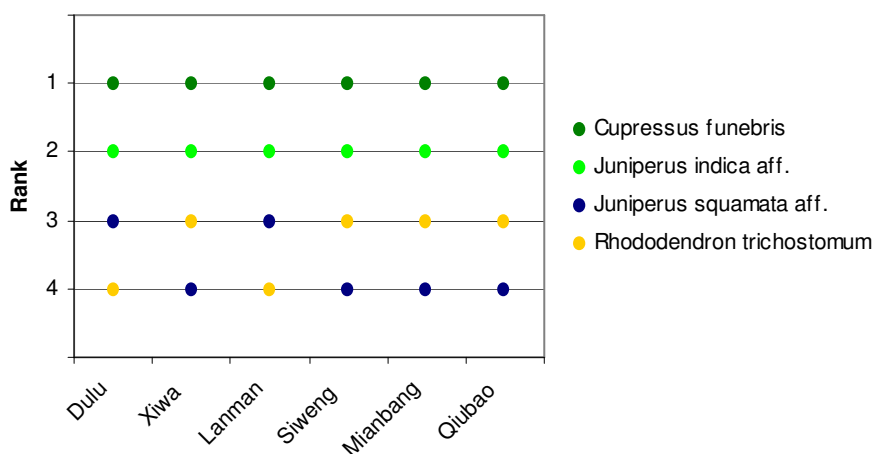


Figure 4: Ranking data of dried incense plants from rank 1 “most preferred plant” to rank 4 “least preferred plant”.

5.3.3 Food Offering and Decoration

Fruit Offerings and Decoration

In the northern and southern part of the valley *Citrus sinensis* is the fruit most preferred by all the ethnic groups to worship deities (see Figure 5) because of its nice, shiny colour and its taste.⁶⁴ The second most preferred fruit is *Punica granatum*, which, in contrast, has an unimpressive colour but contains many seeds. Among the decoration fruits, whose general purpose is to worship deities, *Juglans regia* has recently been experiencing a change. As mentioned, walnuts are no longer used to worship the water god in the northern villages. The

⁶⁴ The attribute orange colour was also mentioned with reference to the flower of *Tagetes erecta*.

reason for this change was a Lama's advice several years ago – with unclear reasoning, however.

Thus, there are two criteria for the selection of decoration fruits: their appearance (the nice colour) and their content (the tastiness of the flesh or the number of seeds). The purpose of fruits serves both food offerings for deities and the decoration of holy places to invite deities. The fruits used as food offerings and for decoration are identical among all the ethnic groups. The consent ratio of informants was 100% in all villages, and the villagers ranked the first two species identically. This implies a strong bond with the greater Tibetan culture, rather than the determination by local ethnical groups, geographical position, or biogeographic conditions.

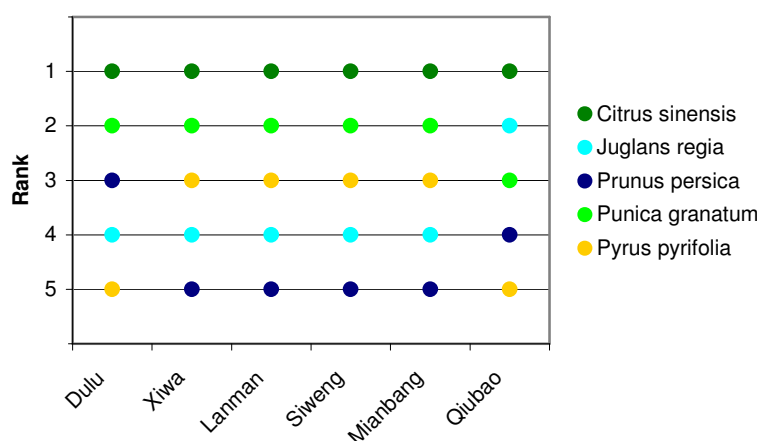


Figure 5: Ranking data of fruit as food offerings and for decoration from rank 1 “most preferred plant” to rank 5 “least preferred plant”.

Yatze Plants

The plants inserted in the *yatze* are the same species in all villages, and they received the same ranking. However, the species that are also used as incense plants are for the most part grouped in the incense category. This multiple occurrence was possible due to the methodological approach during pile sorts, which served to prevent the cut-off of information. It therefore seems that their use as incense plants is predominate, due to their daily use. Bambuseae spp. is not an incense plant and is only used for decoration or as a food offering outside the house, compared to the other *yatze* plants, which are also used inside the house. No preference was observed among the evergreen branches and the *Tagetes erecta* flower. The species inserted into the *yatze* are identical among the ethnic groups. The consent ratio of informants in every village was 100%. This points to the strong binding to greater Tibetan

culture, rather than determination by local ethnical groups, geographical position, or biogeographic conditions.

Decoration during special Festivities

Species used for decoration on special occasions are *Cupressus funebris* branches (used in all villages) and *Juglans regia* branches (used in Xiwa, Lanman, and Siweng). *Juglans regia* branches are also burned as incense during these special occasions. All ethnic groups mentioned that these species are a sub-group of the above mentioned *yatze* plants.

The consent ratio of informants in the northern part of the Shuiluo Valley was 92% and 86% in the southern part of the Shuiluo Valley. The use of *Juglans regia* branches is limited to the northern part of the Valley among all the ethnic groups. However, considering that the Xiwa villagers went through a shift regarding ethnic affiliation, the use of *Juglans regia* branches may be based on Pumi and Shuhi knowledge from the northern part of the Shuiluo Valley.

Grains and Tsampa Offerings and Decoration

Hordeum vulgare var.2, *Triticum aestivum*, and *Oryza sativa* are used as food offers during special festivities in all villages by throwing grains or *tsampa* into the air. *Triticum aestivum* and, rarely, *Hordeum vulgare* var.2 are also used as bedding layers or arranged in cups to decorate other plants on altars. According to the informants the use of these species is based on the colour (white, rather than black or darkly coloured), and they are used as food for humans (not for animals). It seems that the use of this decoration and food-offering species follows the colour and human-food attribute on a large scale, however, in special cases the use of these plants follows personal view and experience, and the mentioned colour and food attributes remain in the background.

The consent ratio of informants in the northern villages was 70 to 100%, and in the southern villages it was below 50%. It seems that the grains and *tsampa* used as food offerings during special festivities are not very anchored in the Naxi and Shuhi culture in the southern part of the Shuiluo Valley, due to low accordance among the people. The Gami and the Pumi of the northern part of the Shuiluo Valley use the same species for food offerings and decoration, and the Shuhi use *Zea mays*, which is used among the other ethnic groups in the northern part of the Shuiluo Valley to drive off demons.

The food-offering fruits and grains were preliminarily noticed as aliment plants. Representing important food plants, however, they have to be shared with deities.

5.3.4 Ritual Cleaning Plants

Fumigation with Ritual Cleaning Plants

Fresh branches of *Rhododendron decorum*, *Rhododendron sp.*, and *Pseudotsuga forrestii* aff. are used for fumigation purposes in all villages on special occasions, in order to clean the invisible dimension of the natural world. They are thus not used daily. The preference among the ethnic groups in the northern part of the Shuiluo Valley varies. The Shuhi and the Naxi in the southern part of the Shuiluo Valley, however, prefer *Rhododendron decorum* and *Pseudotsuga forrestii* aff. (see Figure 6), *Rhododendron decorum* grows close to the villages and is therefore easy to collect. In contrast, *Pseudotsuga forrestii* aff. grows in the highland, close to the deities that dwell in the mountains; its collection is therefore more time-consuming. It was mentioned that the species is a better cleaning plant. In the southern villages of the Shuiluo Valley *Myrsine africana* is fumigated for the same purpose and also used as a broom for dust cleaning. In the northern villages *Myrsine africana* is used exclusively as a broom. The Shuhi and the Naxi in the southern part of the Shuiluo Valley understand the use of cleaning plants in a broader sense, and their concept differs from the cleaning concept of the northern villages in the Shuiluo Valley. For the villagers of the northern part of the Shuiluo Valley there is a clear distinction between cleaning plants for the natural world, which are grouped under Other Plants, and ritual cleaning plants for the invisible dimension of the natural world, which are grouped under Ritual Plants.

The consent ratio of informants in the northern part of the Shuiluo Valley was 83% and 79% in the southern part. In the north, the most preferred dried fumigated plant among the Xiwa Gami, the Shuhi, and the Pumi is *Pseudotsuga forrestii* aff. Among the Gami of Dulu *Pseudotsuga forrestii* aff. is the least preferred species. The preference of *Pseudotsuga forrestii* aff. may be based on the Shuhi (living in the northern part) and Pumi preference, as the Xiwa villagers recently went through a shift regarding ethnic affiliation. In the southern part of the valley the Naxi and the Shuhi have the same understanding of ritual cleaning plants. However, among the Naxi the consent ratio of informants is 100%, which suggests a strong binding to their culture – in contrast to the consent ratio of 57% among the informants of the Shuhi. It seems that dried incense plants are less strongly embedded among the Shuhi, compared to the Naxi from the southern part of the valley.

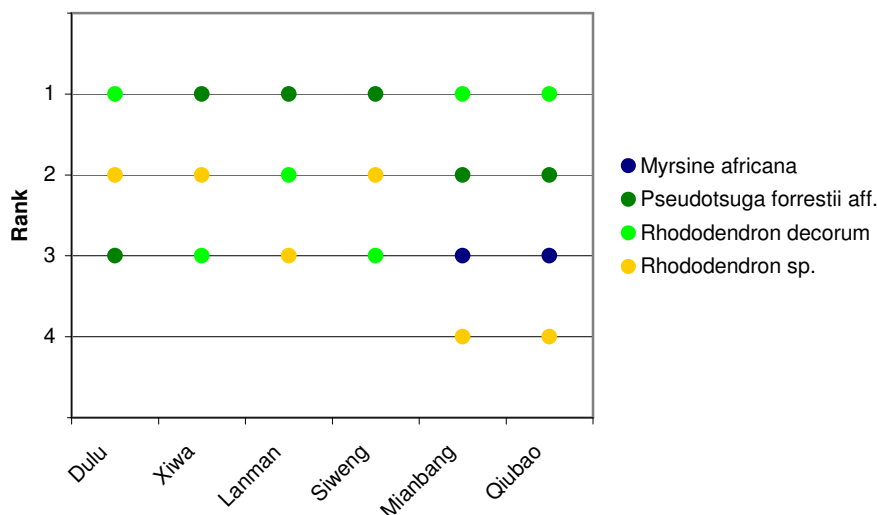


Figure 6: Ranking data of ritual cleaning plants from rank 1 “most preferred plant” to rank 4 “least preferred” plant.

Driving off Demons

Mahonia bracteolata branches with spiny leaves are used in all observed villages to drive demons out of people (also dead bodies) and space. In Lanman *Rhamnus gilgiana*, *Sageretia pycnophylla*, and *Diospyros dumetorum* are used for the same purpose. Based on Weckerle et al. 2006 *Mahonia bracteolata*, *Rhamnus gilgiana*, and *Sageretia pycnophylla* are used only by ritual specialists; due to the dying out of traditional healers the mentioned plants are meanwhile used by local people. However, it seems that local knowledge is incorporated by the Lanman Shuhi and not transmitted to the neighbouring villages, as it was, until recently, *dumbu* knowledge. Except for *Diospyros dumetorum*, the mentioned plants are thorny. The consent ratio of informants in Lanman was 94%, in the other villages it was 100%. The use of *Mahonia bracteolata* is distributed among all ethnic groups living in the northern and southern part of the Shuiluo Valley. The Lanman Shuhi are the only ethnic group also using the above mentioned plants to drive off demons.

Grains to drive off Demons

Fagopyrum dibotrys and *Phaseolus vulgaris* are used as cleaning plants in all villages. According to informants, black coloured plants cannot be offered to the deities due to their colour as much as to their use as fodder; they are therefore used to feed the demons. This has been similarly documented in the Tibetan cultural area, where blackish and unpleasant tasting edibles are offered to demons (De Nebesky-Wojkowitz 1956:346). The attributes

black and fodder correspond to *Fagopyrum dibotrys* and *Phaseolus vulgaris*. However, in certain northern villages of the Shuiluo Valley *Zea mays* and *Panicum* sp. (both whitish) are used as food for demons.

Hordeum vulgare var.1, containing blackish and whitish grains, is used in the northern villages of the Shuiluo Valley to please the deities. In the southern part it is used either as food for demons or deities. Deities must to be offered food in order to become aware of people and to visit them. Malevolent spirits need to be fed in order to keep them from searching for food in the houses, which may then be possessed by them.

The consent ratio of informants among the northern villages in the Shuiluo Valley was 80% and under 50% among the southern villages. In the northern villages the ethnic groups used identical species – with the exception of Lanman, where the villagers do not use *Zea mays* as a grain to drive off demons. It seems that the grains used for this purpose are not very anchored in the Naxi and Shuhi culture in the southern part of the Shuiluo Valley, due to low accordance among the people.

5.3.5 Plants used by the Lama

The grained *Lithospermum erythrorhizon* root is used in all villages for dying dough figures during local rituals. Among the ethnic groups in the Shuiluo Valley the Lama forms the *tsampa* figures. Based on Weckerle et al. 2006 *dumbus* and Lamas mould the dough figures. Since the death of the ritual priest only the Lama leads this kind of ceremony.

The dough figures are an important component of local rituals. The consent ratio of informants in every village was 100%; this indicates a strong binding to the greater Tibetan culture, rather than being determined by local ethnical groups, geographical position, or biogeographic conditions.

5.3.6 Comparative Analysis among the northern and the southern Villages in the Shuiluo Valley

In the northern and the southern part of the Shuiluo Valley, in the categories dried incense plants, *yatze* plants, fruit offerings, and plants used by Lama, the ethnic groups assign the associated category to identical species with a consent ratio of informants of 100%. This shows the same cultural understanding of these specific ritual plants, which is neither based on ethnic affiliation nor on geographic position (elevation and vegetation zone).

However, some differences among the northern and southern villages are evident: *Myrsine africana* is used as a broom in the north and the south and also for fumigation on the occasion of ritual cleanings in the south. *Aster lavandulifolius* is exclusively used as a fresh incense plant in the north, whereas *Osyris quadripartita* is mainly burned in the south.

The Lanman Shuhi of the north are the only community who grouped *Rhamnus gilgiana*, *Sageretia pycnophylla*, and *Diospyros dumetorum* in the same category with *Mahonia bracteolata*.

The Gami of the north and the Shuhi and Naxi in the south use *Cornus oblonga* as a fresh incense plant. The Pumi and the Shuhi in the northern part of the valley use this species only in combination with the *yatze*. Differences regarding plant use and knowledge between the Pumi of the *Pinus yunnanensis* forest vegetation zone and neighbouring ethnic groups in the subtropical shrub zone were not observed.

The Shuhi and the Naxi in the southern part of the valley use the ritual plants very similarly, only *Panicum* sp. was grouped in different categories.

The use of grains either to worship deities or to drive off demons varies among the households in the Shuiluo Valley due to the low consent ratio of informants. Of *Hordeum vulgare* var. 2, *Triticum aestivum*, and *Oryza sativa*, however, the white grains are used for food offerings and decoration by all ethnic groups – as are the black coloured grains *Fagopyrum dibotrys* and *Phaseolus vulgaris* (for ritual cleaning).

6 RITUAL PLANTS IN THE SHUILUO VALLEY: CONCLUSION

Ritual plants play an important role in daily lives of the inhabitants of the Shuiluo Valley and are used for communication with deities and demons, for ritual healings, and for well-being. The knowledge about ritual plant use is widespread and homogeneously distributed among old and young, female and male.

This study indicates that the local communities of the Shuiluo Valley have a homogeneous understanding of ritual plant use, and geographic position of the villages and ethnic affiliation have only little influence. Traditional beliefs and practices seem to be influenced by Tibetan Buddhism. With little variation, the same plant species are known and used in all villages. Also, the same pattern of ritual plant categories was documented for all villages, which shows the same general cultural understanding of ritual plant use. Among the species assigned to the categories, however, there are slight differences between households and also between villages. Generally speaking, the people living in the northern part of the Shuiluo Valley grouped the species less consistently among each other than the people living in the southern part of the Shuiluo Valley (apart from ethnic affiliation). Hence a fine distinction between north and south is visible. E.g., the people living in the northern part burn *Aster lavandulifolius* as a fresh incense plant, and *Myrsine africana* is used only as a broom – in contrast to the southern villages, where the species is additionally burned as a ritual cleaning plant.

Ritual plant knowledge based on ethnic affiliation was rarely evident; e.g. *Zea mays* as a grain to drive off demons is only used among the Gami and the Pumi. It seems that ritual plant use and knowledge are not based on ethnic affiliation.

An influence of the two dominant ethnic groups, the Naxi in the south and Gami in the north, was observed: The Shuhi in the south assigned the species in the ritual plant categories more similarly to the Naxi than to the Shuhi in the north. For example, they use e.g. *Myrsine africana* like the Naxi, but not like the Shuhi living in the northern part of the valley. In the northern part, the Gami have a strong influence. E.g., the inhabitants of Xiwa recently shifted from the Shuhi to Gami language. However, based on ritual plant use only, it is difficult to determine where the influence comes from.

A high influence of Tibetan Buddhism in the Shuiluo Valley was observed, and the dying out of local ritual specialists such as the *dumbu* may accelerate this process. Buddhist monks and Lamas are now the dominant ritual specialists. Some of the plants formerly used exclusively by the *dumbus* are now also used by local people. In general, however, the knowledge and practices of the *dumbus* have completely disappeared.

The overall cultural understanding of ritual plant use among the ethnic groups throughout the Shuiluo Valley is neither mainly dependent on ethnic affiliation, nor on the vegetation zone the ethnic group is living in. The knowledge about ritual plants has to be understood in a broader context, beyond the Shuiluo Valley, and it seems to a large extent influenced by the Tibetan culture.

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Google Earth 2010. Arial view of Xichang, Muli, Lijiang and Zhongdian, Southwest China. Mapabc.com Image, Terra Metrics and NFGIS.

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APPENDIX

Appendix I: Vegetation of the Hengduan Mountains

Subtropical savannah forest, subtropical zone approx. 2000 to 2400m.

The average annual air temperature is about 15-20°C.

Shrub vegetation predominates with the vegetation form of subtropical savannah forest. The savannah plants bear drought, and their adaptive characters are spiny, pubescent, microphyllous, carnosae. Important shrub types are *Pistacia weinmanniifolia*, *Euphorbia royleana* Boiss., *Sophora viciifolia* Salisb., etc. The trees are not very tall and stay separate. Typical are *Quercus* spp., *Phyllanthus emblica* L., and *Acer paxii* Franch (Handel-Mazzetti 1921:586, Chen 1987). Towards the upper part of the subtropical savannah forest evergreen broadleaf forest with *Quercus* spp., *Machilus yunnanensis* Lecomte, *Schima argentea* E. Pritz., etc. (Chen 1987). Typically, understorey is not dense (Jarvis & Helin 1993).

Lanman (2181 to 2243m) and Mianbang (2199 to 2257m), both Shuhi villages, and Qiubao (2136 to 2192m), a Naxi village, lie in this vegetation zone. The lower part of Dulu (2237 to 2736m), a Gami village, also lies in the subtropical savannah forest.

***Pinus yunnanensis* forest**, warm temperate zone approx. 2400 to 2900m.

The passage of the evergreen broadleaf forest of the subtropical savannah forest to the *Pinus yunnanensis* forest is fluent. The predominant vegetation form in this zone is *Pinus yunnanensis* forest with steppe and shrub understorey, which consists of *Rhododendron* spp., *Cotoneaster* spp., etc. (Handel-Mazzetti 1921:587; Jarvis & Helin 1993).

The upper part of Dulu lies in the *Pinus yunnanensis* forest, like the Pumi village Siweng, which is located between 2528 and 2909m.

Xerophilous picea, Quercus forest, and mesophilic mixed forest, temperate zone approx. 2900 to 3800m.

The vegetation in this zone can be classified into two subgroups. The first subgroup is xerophilous *Picea* and *Quercus* forest. Through the entire zone *Picea* and *Quercus* forest with heather-meadow understorey. Typical plants are *Pinus yunnanensis*, *Quercus dentata* Thunb., in Murray and *Tsuga dumosa* (D. Don) Eichler. In the heather-meadow understorey *Polygonum paleaceum* Wall. ex J. D. Hooker, *Anemone coelestina* Franch., *Lysimachia*

congestiflora Hemsl., etc., and sparse low poales, such as *Carex divisa* Huds. and *Cyperus sieberianus* Spreng (Handel-Mazzetti 1921:587-589; Jarvis & Helin 1993).

The second subgroup is mesophilic mixed forest. Tall-growing and dense trees grow in this zone. Widespread and dominant are *Picea*. *Picea likiangensis* (Franch.) E. Pritz. prevails, occasional *Picea balfouriana* Rehder et E.H. Wilson, *Abies forrestii* Coltm. Rog., *Abies fabri* (Mast.) Craib, *Abies ernestii* Rehder, etc. Shrubs like *Salix* spp., *Ribes* spp., *Philadelphus* spp., etc. occur (Chen 1987).

Fluent passage from the xerophilous *Picea* and *Quercus* forest to the mesophilic mixed forest (Handel-Mazzetti 1921:589-590; Chen 1987).

Abies delavayi forest, cold temperate zone, approx. 3800 to 4500m.

Snow falls from October to May. In summer abundant precipitation with strong wind. The lowest temperature noted during vegetation time is 6°C (Handel-Manzzetti 1921:590).

The zone is dominated by *Abies* species, such as *A. delavayi* Franch., *A. georgei* Orr, and *A. forrestii*. The *Abies delavayi* forest with *Abies* and *Sorbus* is predominant. Additional trees are *Larix potaninii* Batalin and *Sorbus vilmorinii* C.K. Schneid. The *Abies* are populated with moss and lichen. The height of the trees decreases, the higher the altitude. The timberline is located above 4500m.

Shrubs in this zone are *Rhododendron* spp., *Gentiana stylophora* C.B. Clarke, *Pediicularis vialii* Franch., etc.(Handel-Mazzetti 1921:590; Chen 1987).

Alpine dwarf-shrub and meadow, high mountain zone approx. 4500 to 5000m.

Dwarf-shrubs are found as far as 4800m, but with increasing altitude the vegetation becomes increasingly sparse (Messerli & Ives 1984).

Shrub layer is composed of *Juniperus squamata*, *Potentilla fruticosa* L., and *Rhododendron* spp. Alpine meadow consisting of *Carex* sp., *Bobresia* sp., *Anemone* sp., *Festuca* sp., *Pao* sp., etc. (Handel-Mazzetti 1921:592; Chen 1987).

Nival zone, above 5000m.

This area is covered with snow throughout the year. No detailed research on plant life exists (Handel-Mazzetti 1921:593).

Appendix II: Wild and Cultivated Plants Contained in the Plant Set

***Aster lavandulifolius* Hand.-Mazz.**

Description: Shrub, intensely branched. Branches very thin, yellow-brownish with white pubescence covered. Leaf blade entire, margin involute. Flowers yellow. Achene cylindrical with longitudinal rib, covered with close, fine hair. Flowering June to August and fruiting August to September (Ling et al. 1985).

Distribution: Grows in mountains on scree slopes in West and Southwest Sichuan at an elevation from 2000 to 2900m (Ling et al. 1985).

Application by the Shuhi in the Shuiluo Valley: The fresh branches can be used as incense (Weckerle et al. 2006).

Bambuseae

sp.1 to sp.3

Description: Fast-growing woody plant with small, perennial, and often solitary culm. A variety of culm characters and two types of rhizome. Infrequent flowering cycle of up to 150 years (eFlora 2010a).

Distribution: Bambuseae grow on all continents except Europe and Antarctic. About 88 genera identified worldwide with most species in China. Several bamboos described are only known as cultivated form (eFlora 2010a).

In China's history Bambuseae have been an important natural resource. Providing food, textile, and raw material for construction and manufacturing. Cultivation of Chinese bamboo is possible and widely practised (eFlora 2010a).

Application by the Shuhi in the Shuiluo Valley: Bambuseae is used in various kinds of rituals as decoration to invite deities (Weckerle et al. 2006).

Application in different cultures:

- Chinese Medicine: Allays Nausea

Drug: Bambuseae caulis in taeniam (Zhuru)

Effect: bamboo shavings allay nausea (Hempen & Fischer 2007:84).

- Chinese Medicine: Mucus transforming medicine

Drug: Bambuseae concretio silicea (Tianzhuhuang)

Effect: Siliceous secretions of bamboo release mucus and convulsion (Hempen & Fischer 2007:656).

Symbolic character: The Chinese character for bamboo is竹 or zhu. In wordplay zhu signifies “pray, ask, and desire”. Zhu spoken in a different tone means “to live”. In China bamboo emblematises desirable living (Beuchert 2007). Symbolic meanings of bamboo are not only common in China, but also in other Asiatic countries, such as Japan.

***Citrus sinensis* (L.) Osbeck**

Description: Evergreen shrubs or small evergreen trees with spines at axils. Leaf blade leathery with fragrant oil dots. White flowers solitary or in small fascicles and fragrant. Fruits coloured orange and pulp edible. Disk with nectary glands (eFlora 2010a).

Distribution: Native in China. Many cultivated species widely naturalised in sub tropic and tropic countries (eFlora 2010a).

Application in different cultures:

- Chinese Medicine: Life energy (Qi) regulation medicine.

Drug: Citri reticulatae pericarpium viride (Qing Pi). The dried young fruits of *Citrus aurantium* L. and the cultivated variation of *Citrus sinensis*.

Effect: Mucus accumulation and Qi blockade dissolving (Köfers & Sun 2009:440).

- The orange peels are burned to repel mosquitoes and used in Sierra Leone and Ghana (Aikins et al. 1994).

Symbolic character: *Citrus sinensis* as an evergreen tree bears flowers or fruits with numerous seeds all year round. The flowers and the fruits are symbols of fertility (De Cleene & Lejeune 2003:202).

***Cornus oblonga* Wall.**

Description: Evergreen tree. Leaf blade narrowly elliptic. Flowering from September to January. From April to June ripe black fruits (eFlora 2010a).

Distribution: Grows on the south border of the Himalayan region between 800 and 3700 m (eFlora 2010a).

Application by the Shuhi in the Shuiluo Valley: Used in different rituals as decoration to invite deities (Weckerle et al. 2006).

Application in different cultures: The fruits used to produce industrial oil and the bark for oil for folk remedies. *Cornus oblonga* fruits used as medicinal substitute of *Cornus officinalis* Sieb. et Zucc. and *Cornus chinensis* Wangerin (eFlora 2010a).

***Cupressus funebris* Endl.**

Description: Conifer tree with height of up to 35m. Branchlets green, slender, and flattened. Leaf apex sharply pointed. Seed cones dark brown when ripe and seeds light brown, obovate-rhombic. Seed maturity from May to June (eFlora 2010a).

Distribution: Native in China. Cultivable, mostly in South China (eFlora 2010a).

Application by the Shuhi in the Shuiluo Valley: *Cupressus funebris*' dried wood is burned as incense in an incense bowl. Rarely, the branches are used as incense (Weckerle et al. 2006).

Application in different cultures:

- American Indian cense *Cupressus* spp. resin for deities, their holy places, their own homes, and sick persons. It is used as a substitute for *Protium copal* Engl., which grows only in the tropical lowland (Rätsch 2009:19). Branches of *Cupressus* spp. are burned as incense for protection or benediction (Rätsch 2009:189-190).
- In Europe *Cupressus* spp. wood is used as a component of medical incense (Rätsch 2009:189-190).

***Diospyros dumetorum* W.W. Smith**

Description: Trees maximum of 14m tall. Branchlets pale brown to white tomentose. Winter bud tomentose. Leaf blade elliptic to narrowly oblong, papery to thinly leathery, both surfaces densely pubescent to tomentose. Flowering from April to May. Fruiting from October to February, berries purplish-black, ovoid (eFlora 2010a).

Distribution: Southwest Guizhou, Sichuan, Yunnan, and Thailand on thickets on slopes between 700 and 2700m (eFlora 2010a).

Application by the Shuhi in the Shuiluo Valley: Fruits edible (Weckerle et al. 2006).

***Fagopyrum dibotrys* (D.Don) Hara**

Description: Perennial herb. Culm erected up to 100cm tall, green or brownish. Leaf blade triangular and apex acuminate. Fruiting from May to November (eFlora 2010a).

Distribution: Widely distributed in China, Bhutan, India, Kashmir, Myanmar, Nepal, Sikkim, and Vietnam. Grows at altitudes from 300 to 3200m in valleys and on grassy slopes.

Fagopyrum dibotrys is used medicinally (eFlora 2010a).

Application in different cultures:

- In North and Northeast India tender sprouts are cooked and used as aliment (Kayang 2007; Jaiswal 2010).

Application by the Shuhi in the Shuiluo Valley: Aerial parts collected for animal fodder (Weckerle et al. 2006).

Hordeum vulgare var.1 and var.2 L.

Description: Annual plant. Culm erected up to 100cm tall. Leaf sheath glabrous. Spike dense. Fruiting from June to August (eFlora 2010a).

Distribution: Worldwide cultivation in non-tropical countries and in montane regions of tropics. Conventionally cultivated as aliment or fodder plant (eFlora 2010a). Cultivated at elevations of approx. up to 4000m (Chandola 1999:7).

Application by the Shuhi in the Shuiluo Valley: *Tsampa* and barley wine is used in ritual ceremonies and as staple food (Weckerle et al. 2005b). During the morning ritual *tsampa* is mixed with marigold flowers, and barley wine is offered to the deities (Weckerle et al. 2005a).

Application in different cultures:

- Chinese Medicine: Digestion-supporting medicine.

Drug: Hordei fructus germinatus (Maiya).

Effect: Barley sprout encourages digestion and strengthens stomach (Hempfen & Fischer 2007:698).

- Tibetan Medicine: barley functions as a cool, heavy force.

Effect: Barley has a curative effect on the urinary passage, grippe, and asthma. Roasted barley supports cure of respiratory tract, heart activity, and sensory perception disease (Gyamtso & Kölliker 2007:137).

- In Martinique *Hordeum vulgare* seeds used as decoction against inflammation (Longuefosse & Nossin 1996).

Juglans regia L.

Description: Tree up to 25m tall. Leaves without glandular hair. Fruiting October, spike with one to three nuts. Walnuts have a long life span, deep root system, and are highly adaptable (Wenhua 1993:112).

Distribution: Widely distributed in China, Southwest Asia and Southeast Europe. Grows at altitudes from 500 to approx. 4000m on mountain slopes (Wenhua 1993:112; eFlora 2010a). Long history of cultivation (eFlora 2010a). A multi-purpose tree providing oil, food, and timber (Wenhua 1993:112).

Application in different cultures:

- Chinese Medicine: Digestion-supporting medicine.

Drug: Juglandis semen (Hutaoren).

Effect: Walnut fruit reduces loin and knee pain. Helps against back pain and chronic cough (Hempfen & Fischer 2007:772).

- Tibetan Medicine:

In a four-step process of cleaning mercury the second step includes walnut juice, which is added to prevent mercury from activating impurity (Gyamtso & Kölliker 2007:149).

Application in the Shuiluo Valley: During the morning ritual on religious important days *Juglans regia* branches are burned as incense. Walnuts can be offered to deities. The wood of walnut trees is not used for timber, because walnut trees are mostly planted around holy water sources, where the water god is worshipped (Weckerle et al 2005a).

Symbolic character: In varied cultures walnut has a symbolic meaning. In general, walnuts are a symbol of fertility, but this may vary from marriage, protection, brain, to trinity (Beuchert 1995:329; De Cleene & Leujeune 2003:708-710).

Juniperus indica aff.

Description: Tree or shrub with two kinds of leaves: scale-like and needle-like (eFlora 2010a).

Distribution: Southwest China and South Asia. Forests or thickets on mountain slopes at elevations of 2600 to 5100m (eFlora 2010a).

Application in the Shuhi in the Shuiluo Valley: Dried branches are burned as incense in an incense bowl (Weckerle et al. 2006).

Application in different cultures:

- In Nepal leaves, bark, and fruits used to cure fever and headache. Handling by community members or traditional Tibetan healers (Bhattarai et al. 2006). Dried laves and small branchlets are used as incense to worship (Pohle 1990; Manandhar 2004).

Juniperus squamata aff.

Description: Shrub or small tree with height of up to 12m. Needle-like leaves with white stomatal bands adaxially. Seed cone bluish-black to black (eFlora 2010a).

Distribution: China and South Asia in mountain areas with an elevation of 1600 to 4500m (eFlora 2010a).

Application in the Shuiluo Valley: Dried branches are burned as incense in an incense bowl (Weckerle et al. 2006).

Application in different cultures:

- Bathing with plant powder against skin disease in Manang district of Nepal (Manandhar 1987). Dried leaves and small branchlets are used as incense for religious purposes or room cleaning (Manandhar 2004).

Lithospermum erythrorhizon Sieb. et Zucc.

Description: Perennial herb up to 90cm tall. Root dark with purple dye. Leaves lanceolate. Flowering and fruiting from June to September (eFlora 2010a).

Distribution: China, Japan, Korea, and East Russia. Grows on meadows and slopes (eFlora 2010a).

Application in different cultures:

- Chinese Medicine: Clears internal heat.

Drug: Arnebia Radix arnebia.

Effect: Allays itching caused by psoriasis. The herb effects blood cooling, strengthens blood circulation, and detoxifies pathogens in the body (Tse 2003).

- In Japan the root is used as colouring matter for textiles and also as medicinal plant in traditional Japanese medicine as decoction and salve against wound burn and eczema (Möhr-Buxtorf 2009).

Mahonia bracteolata Takeda

Description: Shrub. Leaf blade ovoid and oppositely divided. Leaflets coriaceous, oval, with spiky needle. Lower parts of leaflets with 2 to 3 saw teeth, upper part with 4 to 11 saw teeth. Flowering August to November and fruiting from September to January (Ying & Chen 2001).

Distribution: Yunnan and Sichuan on mountain slopes in dense shrubs and thick undergrowth exposed to the sun. Grows at elevations of 1900 to 2500m (Ying & Chen 2001).

Application by the Shuhi in the Shuiluo Valley: Branches are used to drive off demons, solely by ritual specialists (Weckerle et al. 2006).

Myrsine africana L.

Description: Shrubs up to 100cm tall. Leaves leathery. Flowers light yellow to white, flowering from February to June. Globose fruits red or purple black, fruiting from November to January (eFlora 2010a).

Distribution: China, India, Azores, Africa, and Southwest Asia. Grows on varied habitat at elevations between 1000 and 3000m, such as sparse mixed forests, open mountain slopes, sunny dry places, etc. (eFlora 2010a).

Application by the Shuhi in the Shuiluo Valley: Used as broom for dust cleaning (Weckerle et al. 2006).

Application in different cultures:

- The Batemi in North-central Tanzania use the fruits and roots as decoction or added to food to relieve body pain (Johns et al. 1995).
- The Samburu in Northern Kenya use *Myrsine africana* against tuberculosis and against worms or other intestinal parasites (Bussmann 2006). The use of the seeds of *Myrsine africana* was also mentioned among the Samburu in Northern Kenya as a cure against intestinal worms (Nanyingi et al. 2008).

***Oryza sativa* L.**

Description: Annual aquatic plant. Culms erect. Spikelets oblong. Caryopsis whitish-yellow to brown or blackish (eFlora 2010a).

Distribution: Mainly cultivated in flooded fields in tropical and warm temperate regions (eFlora 2010a).

Application in different cultures:

- Chinese Medicine: Digestion-supporting medicine.

Drug: *Oryzae fructus germinatus* (Guya).

Effect: Rice sprout activates digestion and appetite (Hempen & Fischer 2007:702).

- In North Pakistan *Oryza sativa* is used with *Triticum aestivum*, *Hordeum vulgare*, *Cicer arietinum* L., and *Daucus carota* L. The components are grounded and processed into bread. Bread consumption supports diabetes control (Ahmad et al. 2009).

***Osyris quadripartita* Salzm. ex Decne.**

Description: Plant 2 to 3m tall. Leaf leathery, occasionally rugose on both sides. Leaf blade greyish-green. Female flowers solitary. Male inflorescences 2 to 4, flowered and yellow to green. Bisexual flowers with fertile stamens equivalent to female. Drupe orange to red. Flowering April to June and fruiting in October (eFlora 2010a).

Distribution: South to Southwest China, South Asia to Southeast Asia, Africa, and South Europe. At elevations of 600 to 2700m in thickets (eFlora 2010a).

Application by the Shuhi in the Shuiluo Valley: Fresh branches can be used as incense (Weckerle et al. 2006).

Application in different cultures:

- In South Ethiopia the Borana women cleanse themselves in a sauna-like chamber with *Osyris quadripartita* smoke (Gemedo-Dalle et al. 2005).
- In Nepal a leaf infusion is used because of its emetic functions. The paste from stem bark is applied in case of fractures and sprains (Kunwar & Adhikari 2005).

Panicum sp.

Description: Annual or perennial erect culms. Leaves basal or cauline, leaf blades linear to lanceolate, usually flat. Inflorescence is a panicle with symmetrical spikelets (eFlora 2010a).

Distribution: Pantropical, extending into temperate regions of North America, overall 500 species. 21 species in China (eFlora 2010a).

Phaseolus vulgaris L. var.

Description: Annual herb. Leaflets ovate. Flower has different colours as well as seeds.

Flowering from April to July. 4 to 10 oblong seeds (eFlora 2010a).

Distribution: Native in tropical America. Cultivated throughout China and worldwide. Used as vegetable (eFlora 2010a).

Application in different cultures:

- Chinese Medicine: Liquid-egesting medicine.

Drug: Phaseoli semen (Chixiaodou)

Effect: Dark red little bean hinders formation of abscesses and furuncles (Hempfen & Fischer 2007:332).

Pinus yunnanensis Franch.

Description: Evergreen tree with height of up to 32m. 3 needles per bundle, stomata lines present on all sides. Seed cones green and when maturing brown. Grows slowly in the first few years. After five years faster growth. (Wenhua 1993:66-69; eFlora 2010a).

Distribution: Southwest China and Guangxi. Pine grows in mountains and on dry and sunny slopes (eFlora 2010a). Shade-intolerant species; growing under a closed canopy is difficult. Altitudinal range from approx. 400 m to 3200 m. In the Hengdguan Mountains distribution between 2400 to 3000m. Forest-forming tree (Wenhua 1993:66-69, eFlora 2010a).

Application by the Shuhi in the Shuiluo Valley: Fresh branches are burned as incense or used as decoration to invite deities. To protect the field from vermin, branches are wrapped with prayer flags and stuck into the field (Weckerle et al. 2006).

Application in different cultures:

- Local medicine of Sichuan

Drug: (Chang mao song)

Effect: Application against rheumatism, toothache, and contusion (Xiezuobianxiezhu 180, cit. in Weckerle 1997:64).

- In China pine tree has various utilisations: timber for furniture or for construction etc., trunk as source for resin, roots for fungi cultivation, and bark for tannin production (eFlora 2010a).

***Pistacia weinmanniifolia* Poiss. ex Franch.**

Description: 2 to 8m tall evergreen shrubs or trees, dioecious. Leaves paripinnately, with 8 to 18 opposite leaflets. Leaves leathery with lateral veins. Inflorescence axillary among leaves. Flowering from March to May and fruiting from June to August (eFlora 2010a).

Distribution: Southwest China and Guangxi on hills and in mountain forests or thickets. Grows at elevations from 500 to 2700m (eFlora 2010a).

Application by the Shuhi in the Shuiluo Valley: Fresh branches are burned as incense or used to decorate altars and sacred places. To protect the fields from vermin, branches are wrapped with prayer flags and stuck into the field (Weckerle et al. 2006).

Application in different cultures:

- In China incense is made of leaf extract. Resin used with medicinal intention (eFlora 2010a).

***Prunus persica* (L.) Batsch**

Description: Deciduous trees or shrubs. Leaves simple and alternate. Flowering before leaves come up. Fruit a drupe. Mesocarp fleshy. Flowering spring, fruiting summer (eFlora 2010a).

Distribution: Asia, Europe, North America. Worldwide 30 species. Plant is cultivated for its edible fruit (eFlora 2010a).

Application in different cultures:

- Chinese Medicine: Blood-flow regulation medicine

Drug: Persicae semen (Taoren)

Effect: To promote blood circulation, to eliminate phlegm, and to relax the bowels. To allay menorrhoea pain and haemorrhoids.

Action: To promote blood circulation, to eliminate phlegm, and to relax the bowels.

Indications: Mass formation in the abdomen, traumatic injuries, and constipation (Hempfen & Fischer 2007:574).

Symbolic character: The fruit of *Prunus persica* is deeply positioned in Chinese mythology and symbolises long life. The flowers open during equinox, and this makes the peach a symbol for the sun, and hence a symbol for red, and red is the colour of good luck in China (Beuchert 1995:267). According to De Cleene & Lejeune (2003:523) the peach tree protects against ill impact and evil spirits.

***Pseudotsuga forrestii* aff. *Craib*.**

Description: Evergreen tree up to 40m tall. Bark dark brown to grey and rough. Branchlets initially pale yellow or greenish-yellow, becoming reddish-brown when dry. Leaves pectinately arranged. Seed cones ovoid and mature in October (eFlora 2010a).

Distribution: In mountain area in Yunnan and Sichuan at elevations from 2400 to 3300m (eFlora 2010a).

***Punica granatum* L.**

Description: Small trees or shrubs to 2 to 3m tall. Branches 4-angled, with age they become terete. Leaf blade adaxially shiny. Floral tube red-orange. Flowering March to July. Fruit globose with leathery berries in various colours (eFlora 2010a).

Distribution: Introduced to China 200 BCE.⁶⁵ Today naturalised in West China and widely cultivated in China. Cultivated for its nice flower and edible fruit (eFlora 2010a).

Application by the Shuhi in the Shuiluo Valley: During the barley harvest festival in May the house and house altar are decorated with pomegranate flowers (Weckerle et al. 2005b).

Application in different cultures:

- Chinese Medicine: Astringent medicine

Drug: Granati Pericarpium (Shiliupi)

Effect: Pomegranate pod astringes bowel and relieves diarrhoea. Based on astringent and blood-stopping effects it is used in the case of anal and vaginal bleedings. In combination with other ingredients pomegranate is applied against worms (Hempen & Fischer 2007:842-843; Kalg 2009:68-70).

- In the state of Rio de Janeiro (Brazil) pomegranate is used as medicine for not specified purposes (Figueiredo et al. 1993).
- In Ladakh pomegranate is used as medicine against cold, cough, and fever in combination with native or other exotic plants (Ballabh 2007).

⁶⁵ BCE = Before common era

Symbolic character: The pomegranate is a symbol of fecundity for people as well as for fields and gardens, life, longevity, health, femininity, knowledge, morality, immortality, and spirituality, if not Divinity (Mahdihassan 1984, De Cleene & Lejeune 2003:583).

Pomegranate and peach count as fruits of opulence; no lack of them at wedding ceremonies. The pomegranate counts as a sensual and alluring fruit, therefore it is not used for oblation ceremonies (Beuchert 1995:124).

Pyrus pyrifolia (Burm.) Nakai

Description: Trees up to 7 to 15m tall. Terete, yellow-brownish branchlets when young, brownish when old. White flower in April. Fruiting in August, pome brownish, round, with pale dots (eFlora 2010a).

Distribution: China, Laos, Vietnam. In warm rainy regions *Pyrus pyrifolia* grows between 100 and 1400m altitude. Different varieties of pears cultivated (eFlora 2010a).

- Chinese Medicine: Allays expulsion

Drug: Pyri Fructus (Li)

Effect: Allays cough and thirst. Applied for mental problems and agitated melancholia (Kalg 2009:358-362).

Symbolic character:

Pyrus spp. is the symbolic tree for long life beside *Pinus* spp., because of their long life span. The Chinese word *li* (pear) spoken in another tone means “separation”. Spring in China is short, especially in the northern part winter converts seamlessly into summer. The flowering of the pear thus passes fast. Expeditious caducity made the flower a symbol of farewell and dolour (Beuchert 1995:42).

Quercus guajavifolia H.Lév.

Description: Evergreen shrub or tree up to 15m tall. Branchlets red to brown. Leaf blade oblong, elliptic, ovate, and abaxially haired. Lower leaf surface yellowish. Female inflorescence (ament) 2 to 6cm long. Nut ovoid to subglobose. Flowering from May to July and fruiting September to November of the following year (eFlora 2010a).

Distribution: Sichuan, Yunnan, and Guizhou in montane forests from 2500 to 4000m in sub-alpine scrub (eFlora 2010a).

Application by the Shuhi in the Shuiluo Valley: The fresh branches can be used as incense (Weckerle et al. 2006).

Quercus gilliana* aff. *Rehd. Et Wils.

Description: Evergreen shrub or small tree up to 6m tall. Branchlets purplish-brown. Leaves oval to obovate and spiny pointed. 2 to 4 fruits together, ripening in one season. Scales enclosing half of the nut (Chun 1921).

Distribution: West Sichuan (Chun 1921:103).

***Rhamnus gilgiana* Heppeler**

Description: Shrub 1 to 2m tall. Spiny. Leaves opposite. Leaf blade abaxially pale green, turns black and elliptic when dry. Flowering from April to May, flowers yellow-greenish, turn black when dry. Fruiting June to August, drupe brown with 2 to 3 stones (eFlora 2010a).

Distribution: Southwest Sichuan and Northwest Yunnan in understory of mixed forest and thicket at an elevation of 2200 to 2700m (eFlora 2010a).

Application by the Shuhi in the Shuiluo Valley: The branches are used by ritual specialists to drive off demons. Fruits edible (Weckerle et al. 2006).

***Rhododendron decorum* Franch.**

Description: Evergreen shrub or small tree 1 to 6m tall. Young shoots greenish. Leaf blade thickly leathery, oblong. Flowering from April to June, inflorescence 8 to 10 flowers. Fruiting from September to October, capsule oblong (eFlora 2010a).

Distribution: West Guizhou, Southwest Sichuan, Southeast Tibet, Yunnan, and Myanmar in forests and thickets at an elevation of 1000 to 3300m (eFlora 2010a).

Application by the Shuhi in the Shuiluo Valley: Branches used for ritual cleaning. The traditional healer uses the leaves to remember chanting texts (Wecker et al. 2006).

***Rhododendron trichostomum* Franch.**

Description: Evergreen shrub up to 1.5m tall. Leaf blade linear, oblong, and aromatic. Flowering May to July, inflorescence 6 to 10 white, pink, or rose flowers. Fruiting from August to September, capsule ovate to cylindric (eFlora 2010a).

Distribution: South Qinghai, West Sichuan, Southeast Tibet, and Northwest Yunnan in forests, thickets, and rocky alpine meadows at elevations from 2700 to 4600m (eFlora 2010a).

Application by the Shuhi in the Shuiluo Valley: Dried branches used as incense (Weckerle et al. 2006).

Rhododendron sp.

An informant handed me this plant, which I was able to identify as *Rhododendron sp.* Specimen used during Tibetan New Year in Siweng, collected approx. in 3500m. Personally, I never saw the living plant. No identification on species level is possible.

Sagretia pychnophylla C.K. Schneid.

Description: Evergreen shrub up to 2m tall. Spiny. Branchlets opposite and brownish. Leaves alternate, distichously arranged. Leaf blade adaxially and oblong, leathery. Flowering from July to October, flowers white. Fruiting in the following year May to June, drupe blackish-purple at maturity (eFlora 2010a).

Distribution: South Gansu, Shaanxi, Southwest, and West Sichuan in sparse forests, thickets, and open slopes at elevations from 700 to 2800m (eFlora 2010a).

Application by the Shuhi in the Shuiluo Valley: Branches used solely by traditional healers to drive off demons. Fruits edible (Weckerle et al. 2006).

Tagetes erecta L.

Description: Annual plant 10 to 120cm tall. (eFlora 2010b).

Distribution: Originally from Mexico. *Tagetes erecta* is widely cultivated as garden plant or for commercial purposes (eFlora 2010b).

Application by the Shuhi in the Shuiluo Valley: Marigold flowers are used for decorating the house and the house altar (Weckerle et al. 2005b; Weckerle et al. 2006). During the morning ritual *tsampa* mixed with marigold flowers and barley wine is offered to the deities (Weckerle et al. 2005a).

Triticum aestivum L.

Description: Annual culm 60 to 150cm tall. Leaf blade flat. Spike with up to 29 spikelets with 4 to 9 florets. Caryopsis fruiting from April to August, contemporaneously flowering (eFlora 2010a).

Distribution: Cultivated worldwide below 3500m (eFlora 2010a).

Application in different cultures:

- Chinese Medicine: Drop and sedating medicine.

Drug: Tritici fructus (Xiaomai).

Effect: Strengthens heart function. Eliminates insomnia and agitated conditions (Hempfen & Fischer 2007:452).

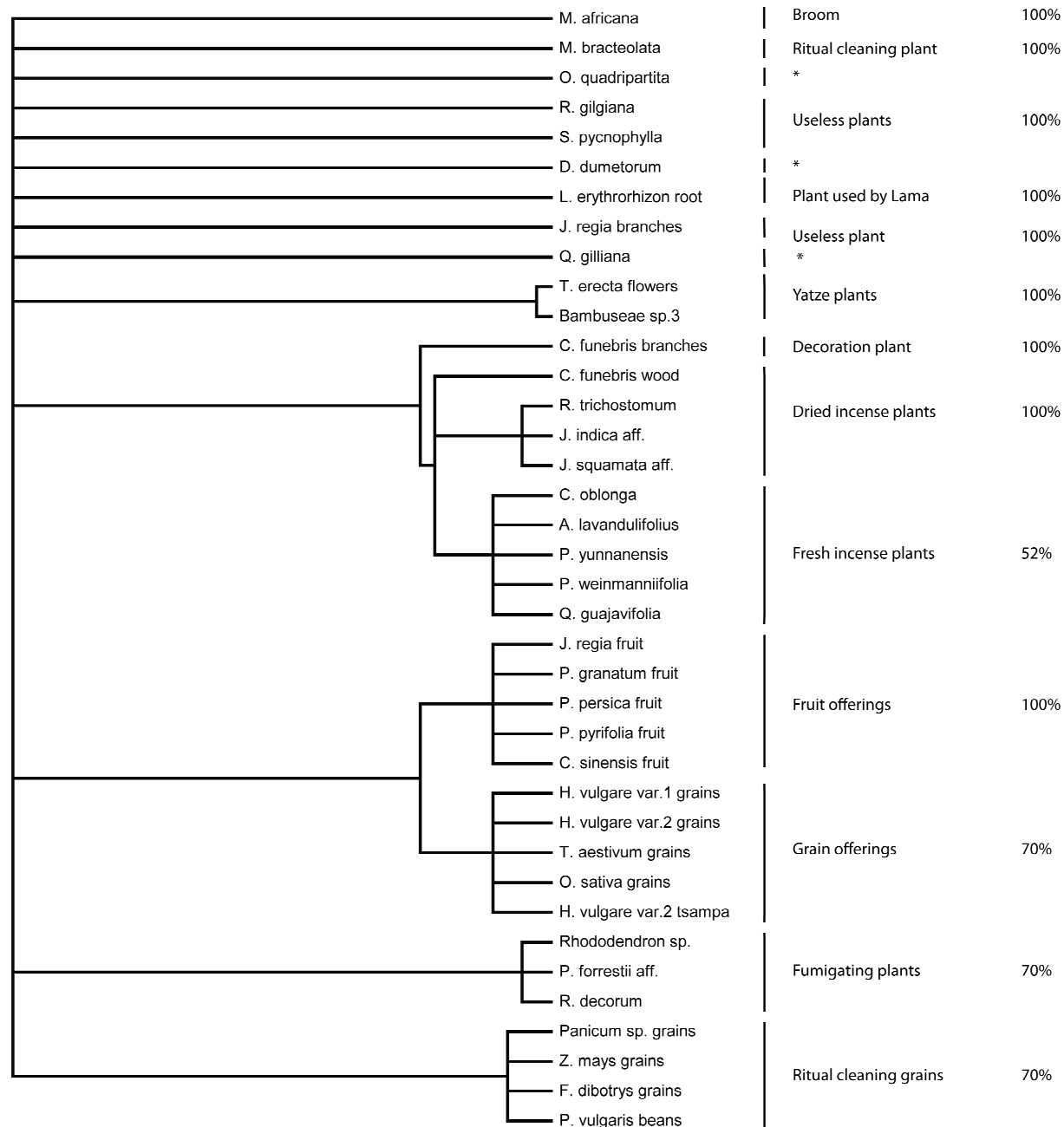
Zea mays L.

Description: Annual culm up to 4m tall. Leaf sheaths with transversal veinlets. Female inflorescence axillary cob, male inflorescence terminal panicle with tassel. Flowering and fruiting summer to autumn (eFlora 2010a).

Distribution: Originally from Central America, cultivated worldwide, also in China. *Zea mays* is grown for cereal, animal feed, or as source for oil and alcohol (eFlora 2010a).

Appendix III: Cladograms of the Villages in the Shuiluo Valley

Dulu



* Plants appearing in different categories

Figure 7: Dulu, Majority-rule consensus, rooted

Dulu

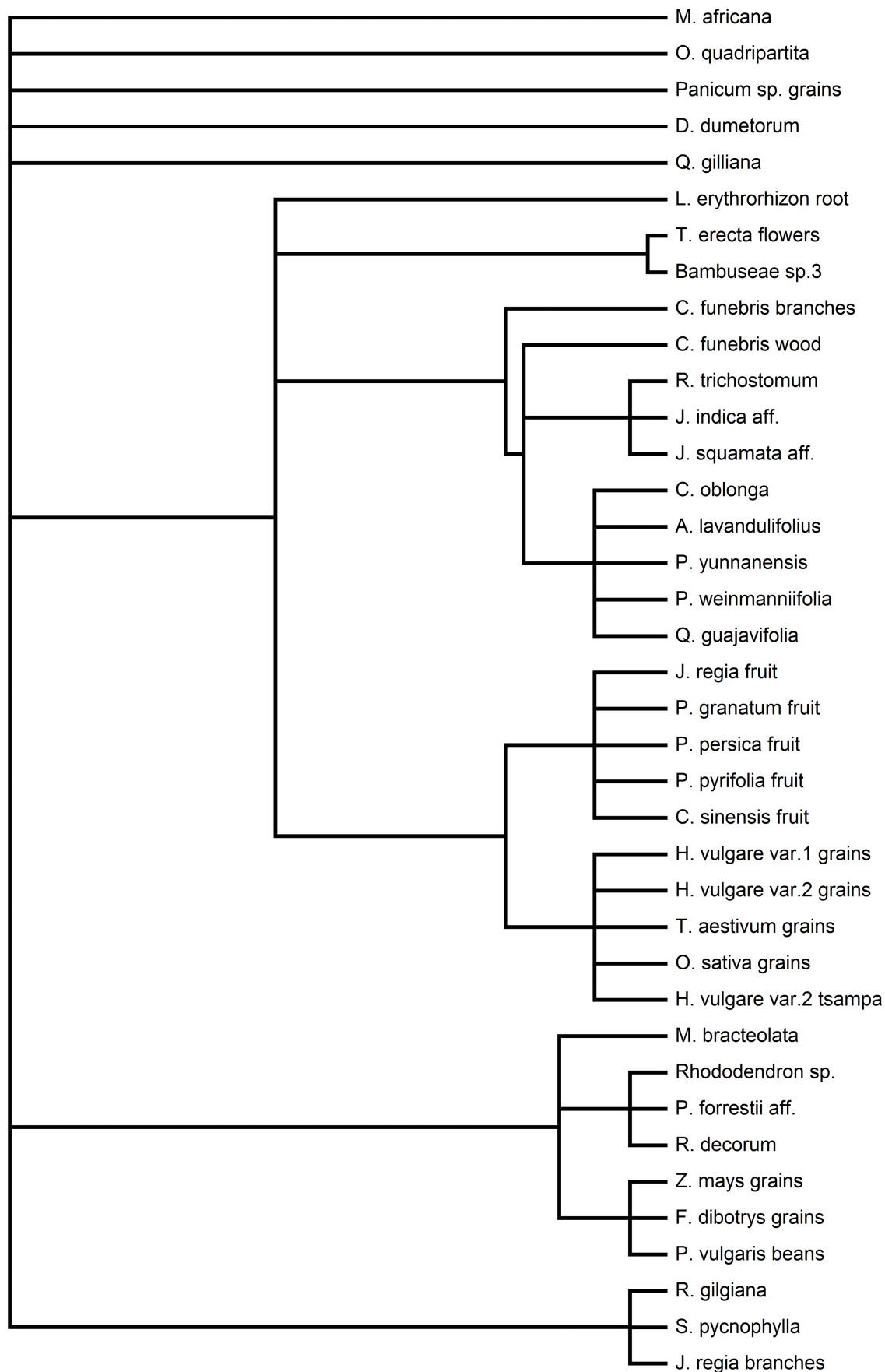
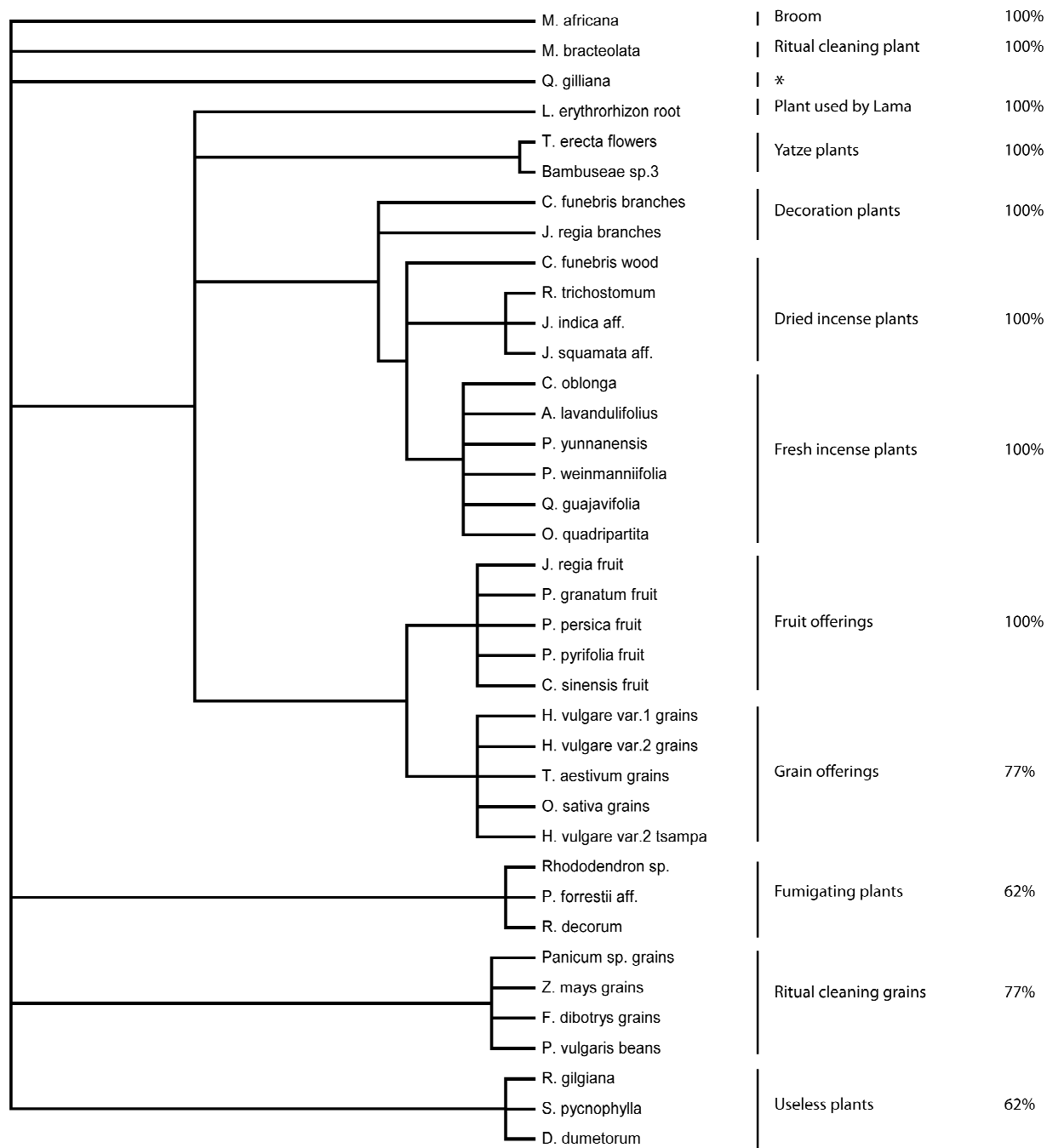


Figure 8: Dulu, Adams consensus, rooted

Xiwa

* Plants appearing in different categories

Figure 9: Xiwa, Majority-rule consensus, rooted

Xiwa

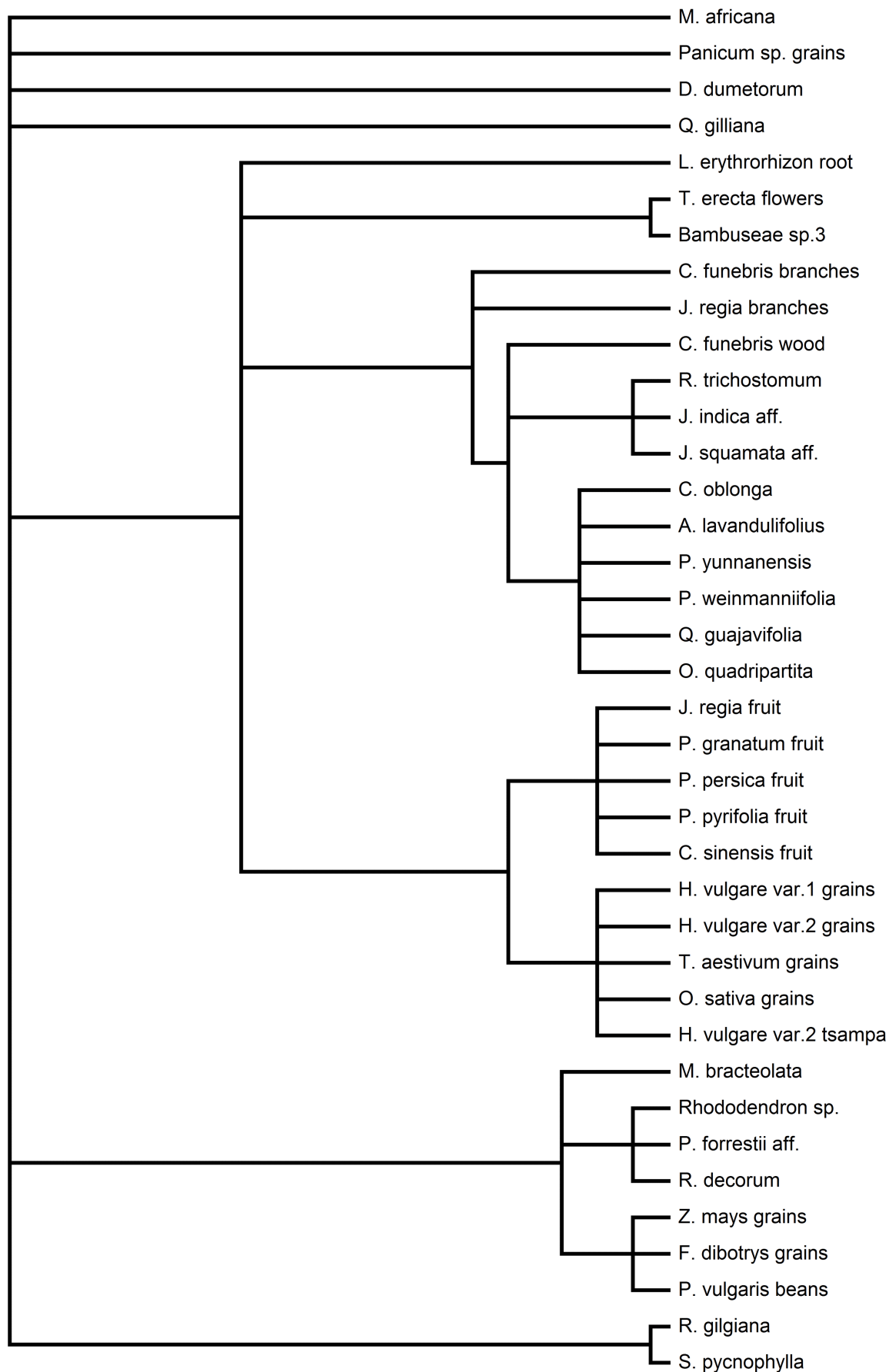
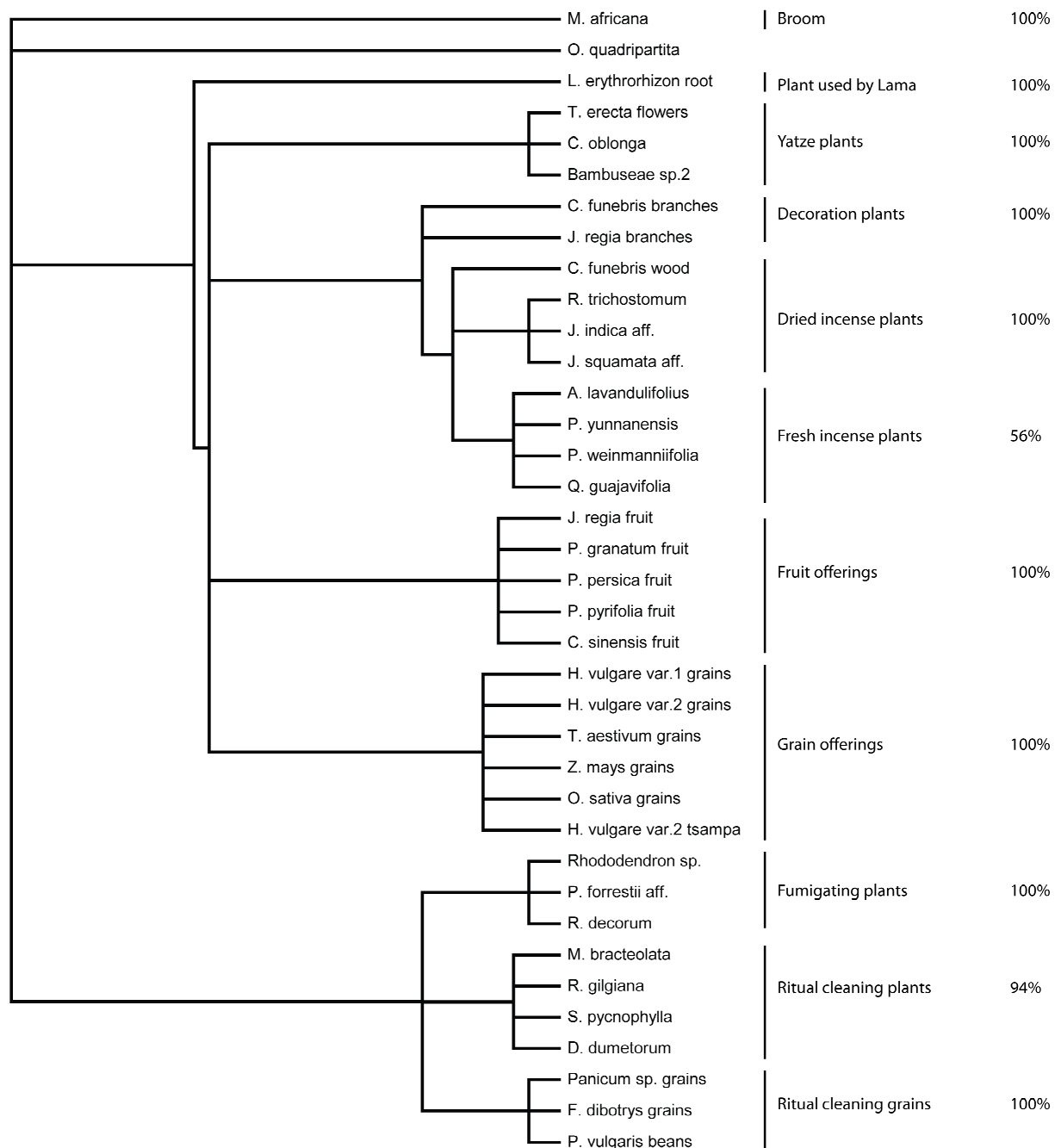


Figure 10: Xiwa, Adams consensus, rooted

Lanman

* Plants appearing in different categories

Figure 11: Lanman, Majority-rule consensus, rooted

Lanman

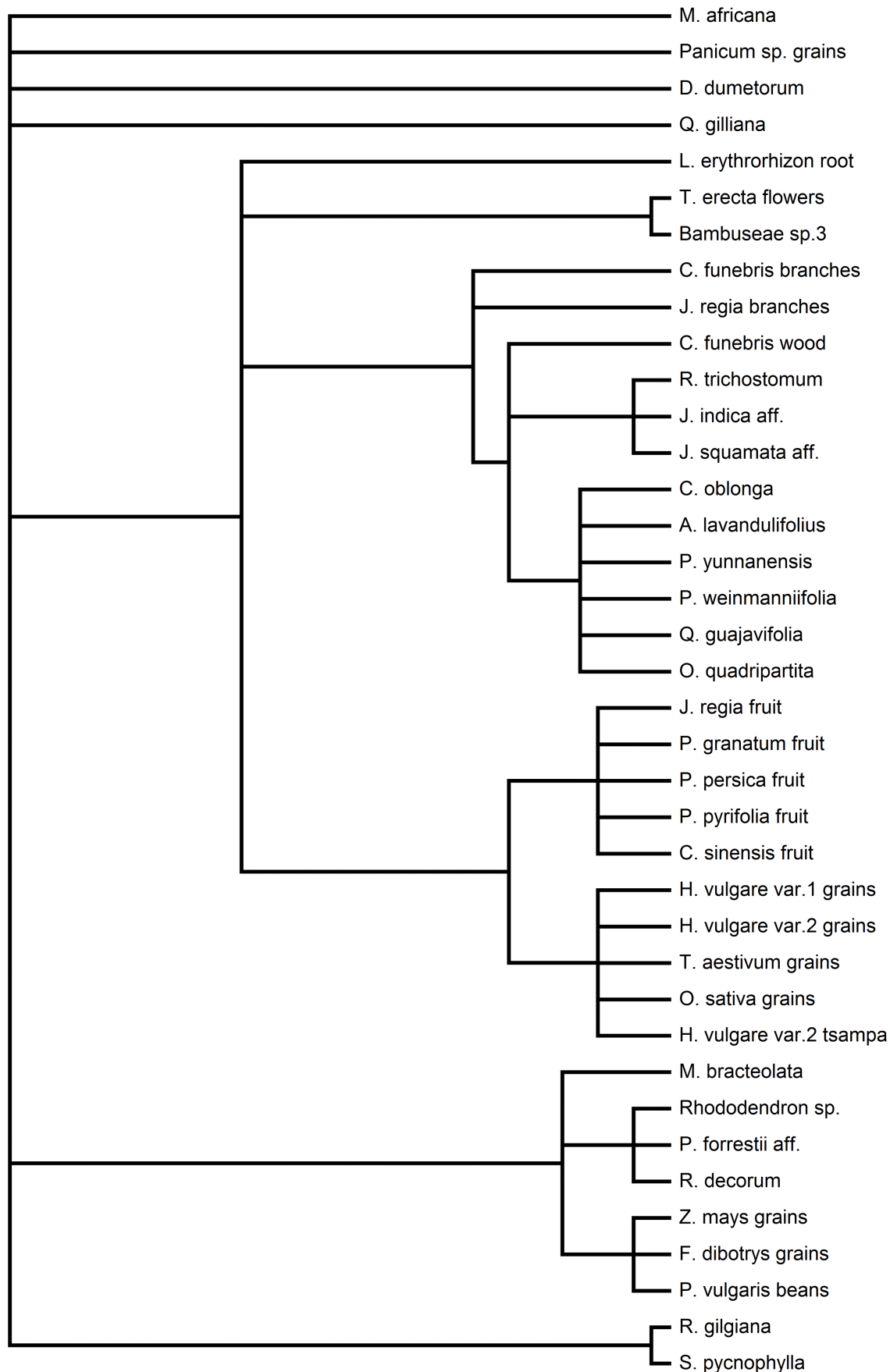
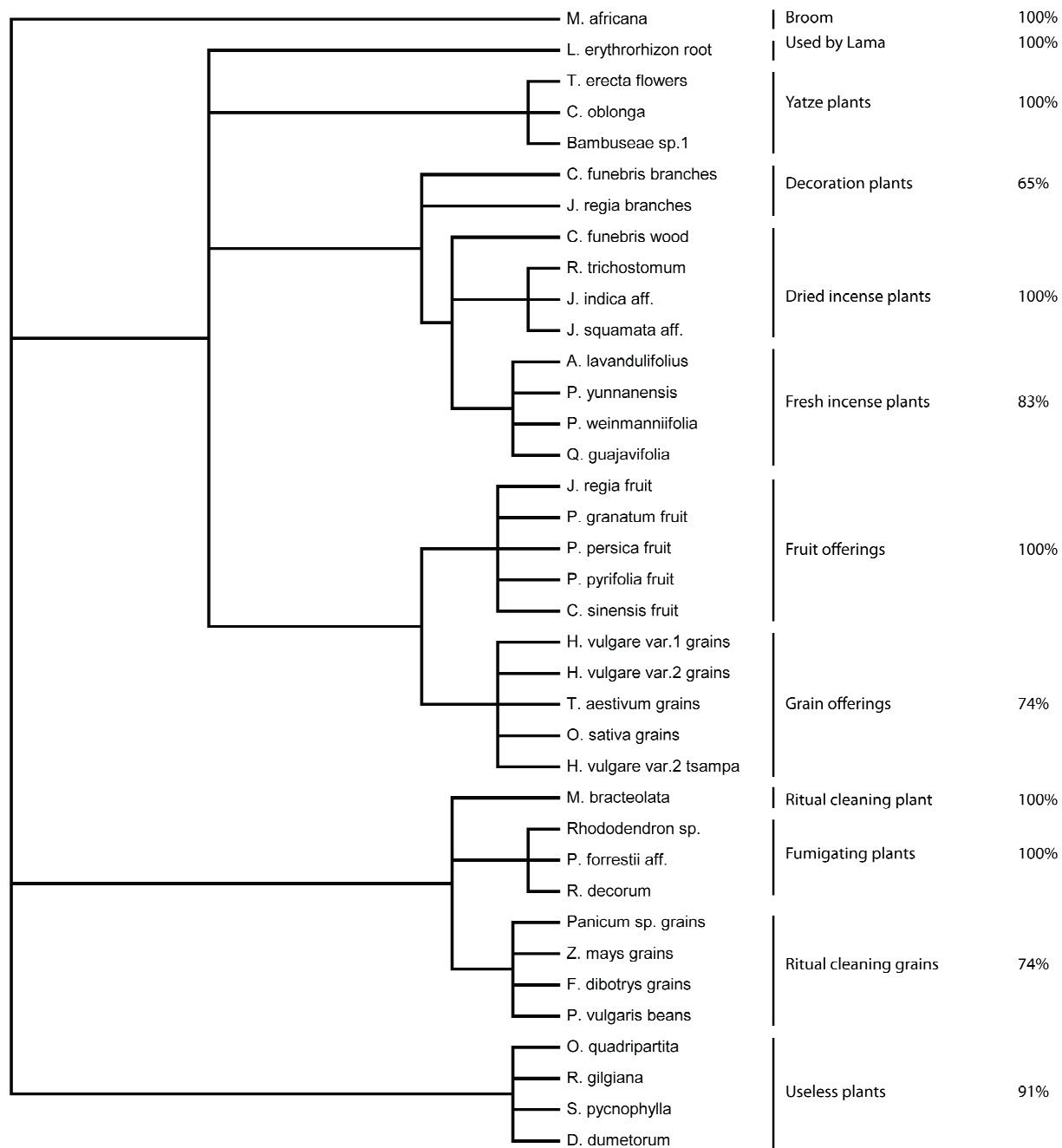


Figure 12: Lanman, Adams consensus, rooted

Siweng

* Plants appearing in different categories

Figure 13: Siweng, Majority-rule consensus, rooted

Siweng

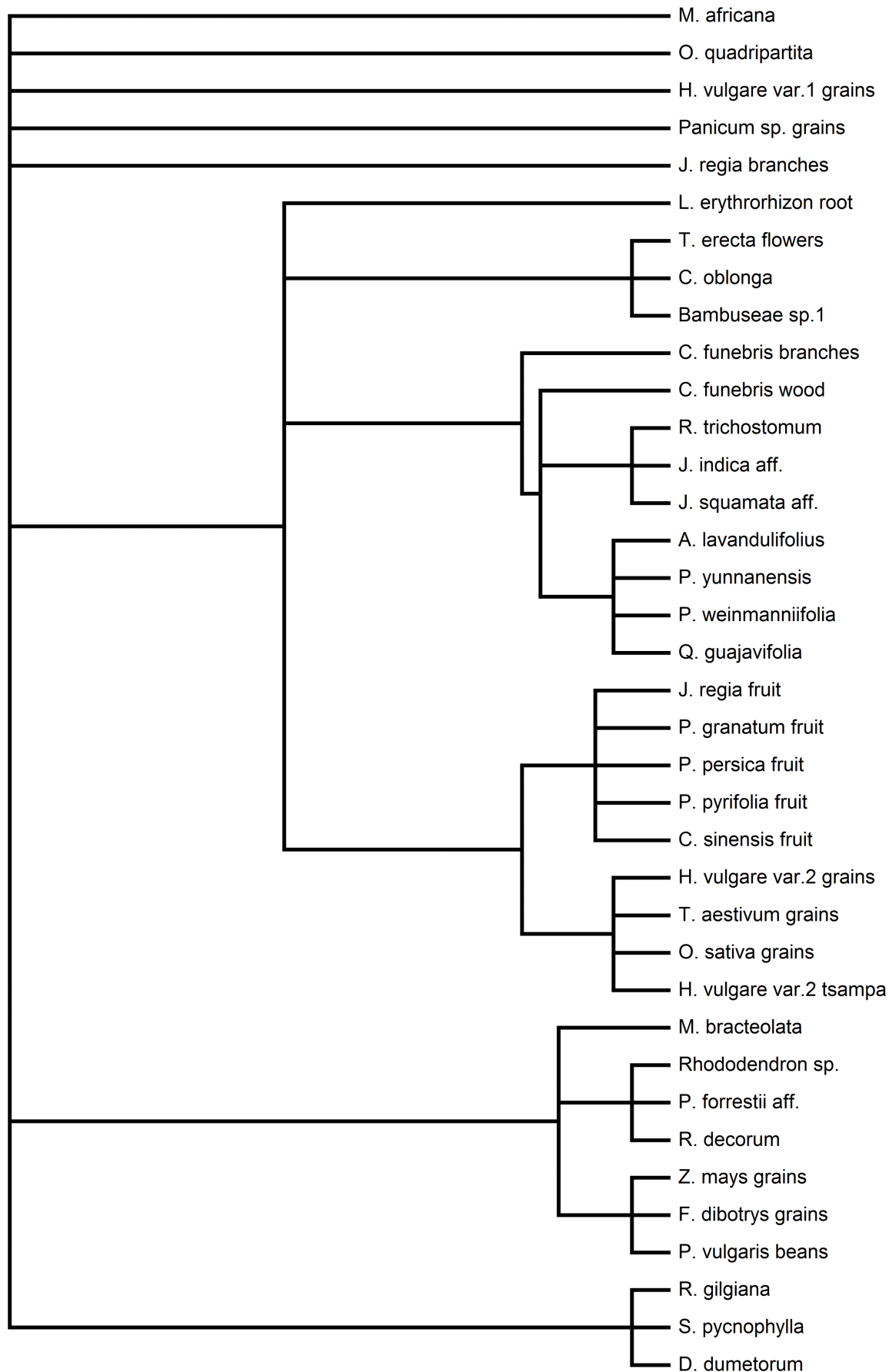
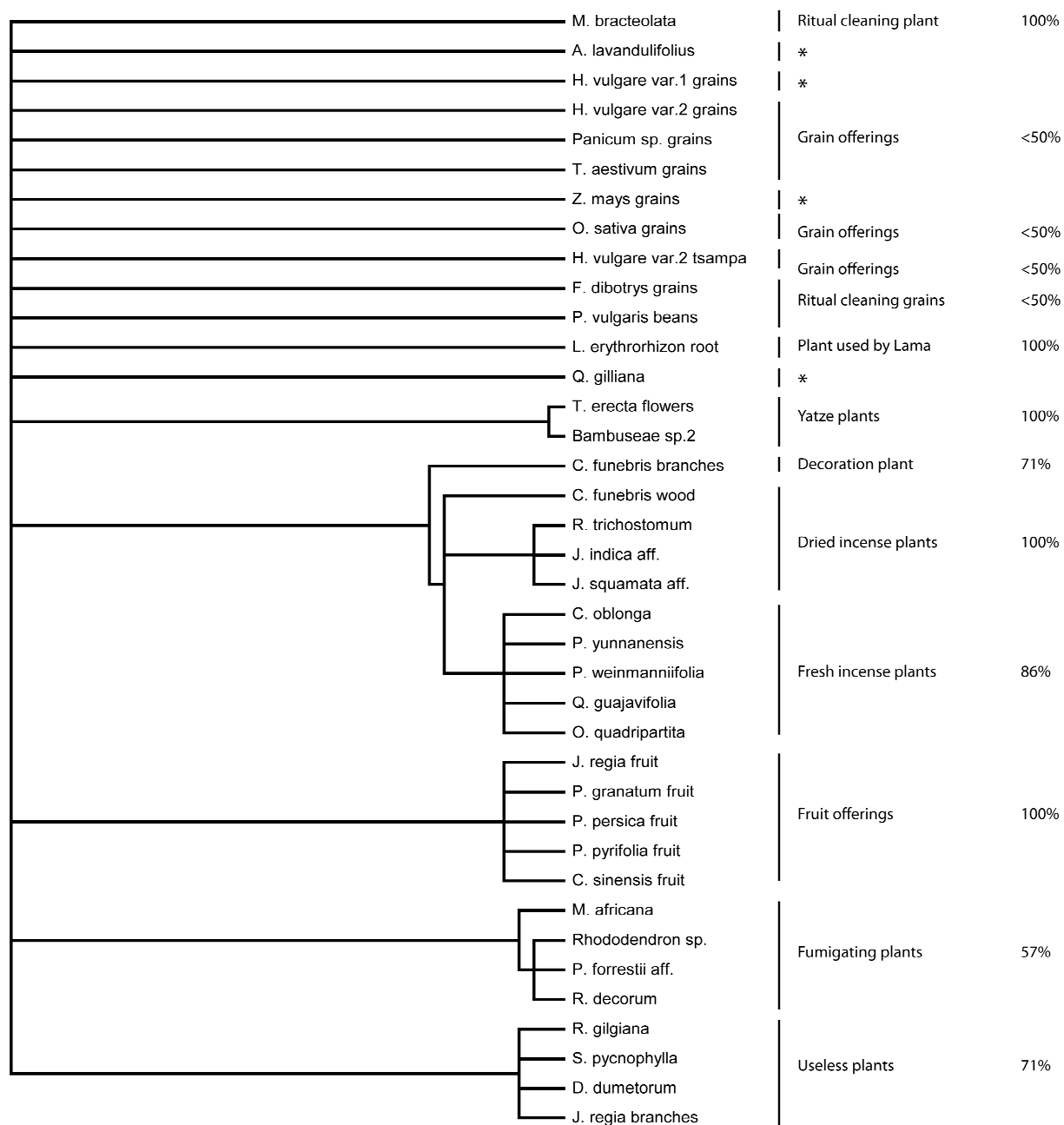


Figure 14: Siweng, Adams consensus, rooted

Mianbang

* Plants appearing in different categories

Figure 15: Mianbang, Majority-rule consensus, rooted

Mianbang

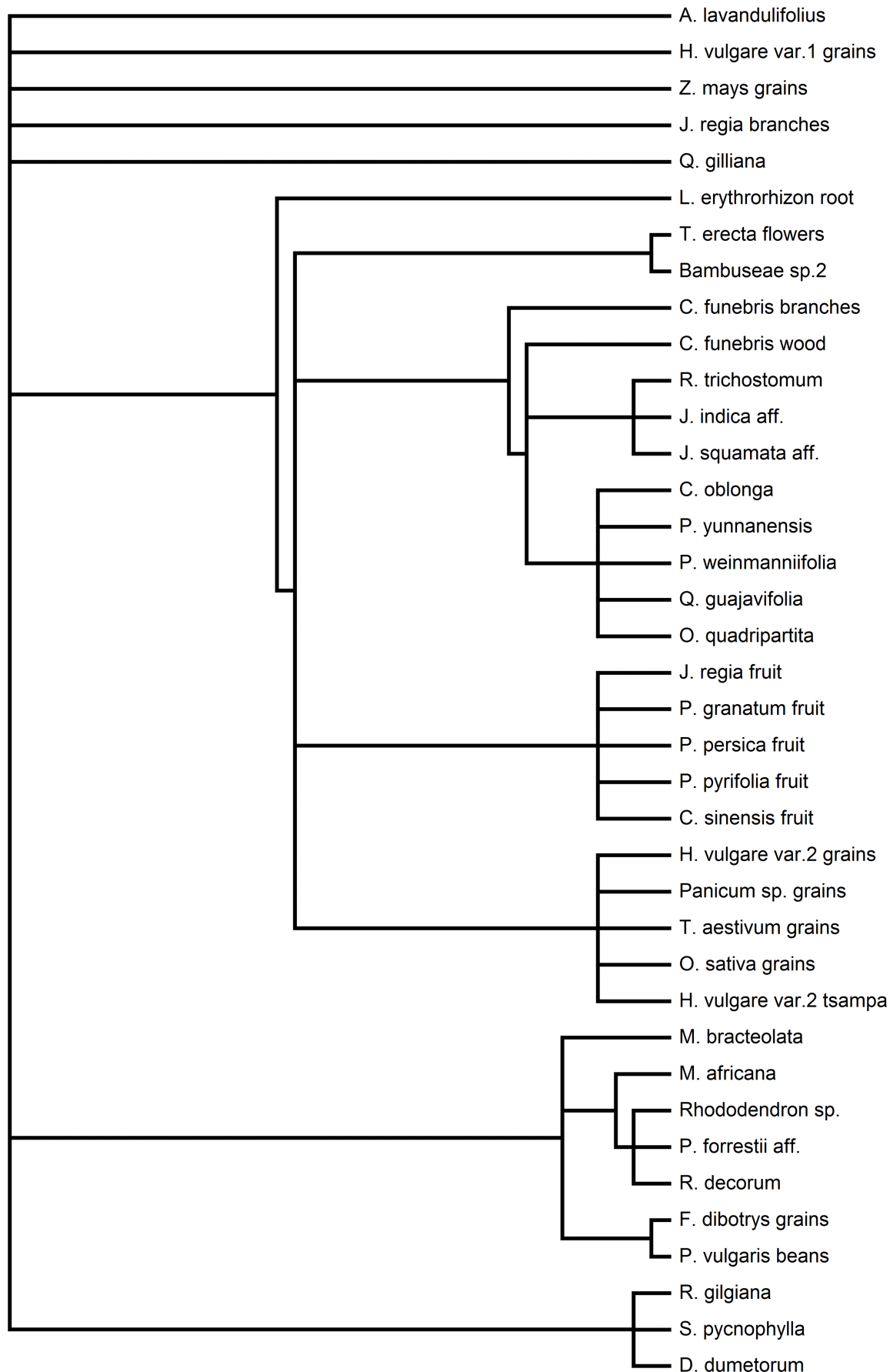
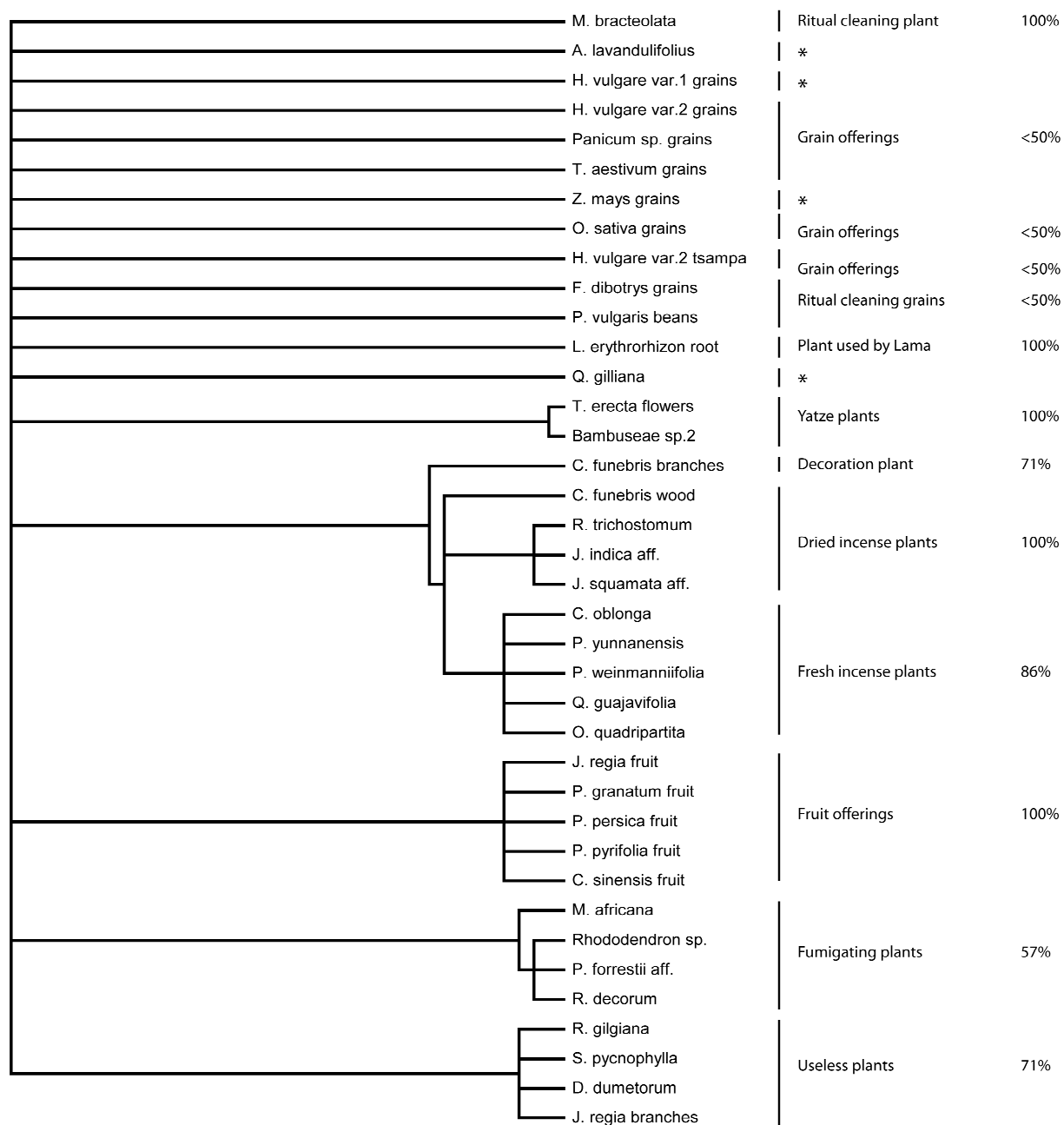


Figure 16: Mianbang, Adams consensus, rooted

Qiubao

* Plants appearing in different categories

Figure 17: Qiubao, Majority-rule consensus, rooted

Qiubao

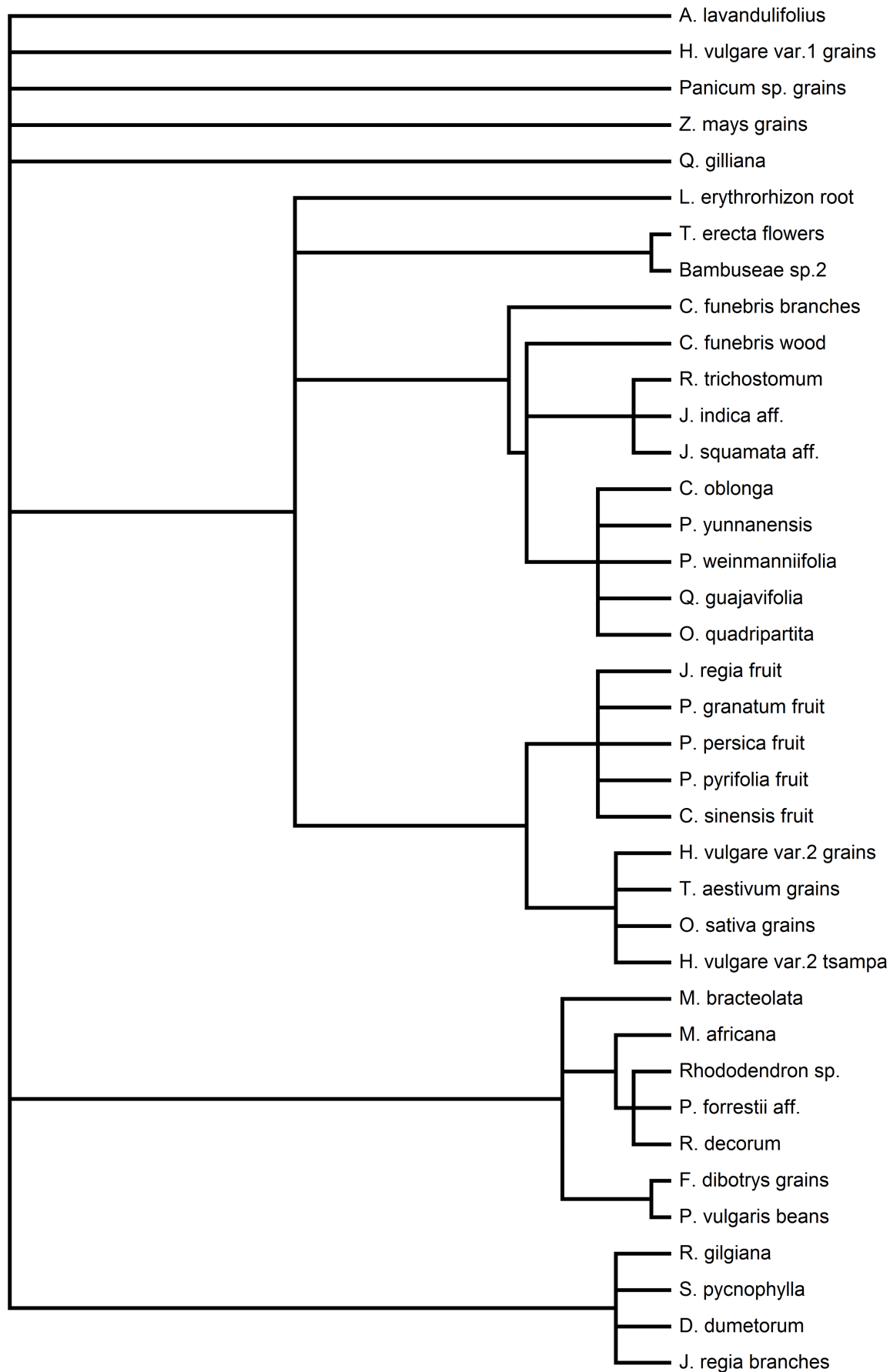


Figure 18: Qiubao, Adams consensus, rooted

DECLARATION

I hereby declare that the submitted thesis is the result of my own, independent, work. All external sources are explicitly acknowledged in the thesis.

Franziska Büeler, Zurich, October 2010