

**THE HERITAGE OF TRADITIONAL AGRICULTURE IN EASTERN INDONESIA:
LEXICAL EVIDENCE AND THE INDICATIONS OF RITUALS FROM THE OUTER
ARC OF THE LESSER SUNDAS**

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INTRODUCTION

Prior to European arrival in eastern Indonesia the principal food crops of the southern islands of this region -- Nusa Tenggara Timur, Timor Timur and the southeastern islands of the province of Maluku -- were rice (*Oryza sativa*), foxtail millet (*Setaria italica*), common millet (*Panicum miliaceum/viride*), sorghum (*Andropogon sorghum* Brot.), Job's tears (*Coix lachryma-jobi* L.), mung bean or green gram (*Phaseolus lunatus/aureus*), pigeon pea (*Cajanus cajan* Millspaugh.) and sesame (*Sesamum orientale* L.). Other early plants included cucumber (*Cucumis sativus* L.), ginger (*Zingiber officinale* Rosc.), yam (*Dioscorea alata* L.), taro (*Colocasia esculenta*) and sugarcane (*Saccharum officinarum* L.), plus a variety of tree crops such as banana, candlenut, mango and tamarind. Several critically important palm species were also cultivated: coconut, aren (*Arenga pinnata*), lontar (*Borassus sondaicus*), gewang (*Corypha elata*) and pinang (*Areca catechu*: the betel nut palm).

The introduction of new plants since the sixteenth century has enormously transformed the cropping systems of the area. These later food crops include maize, squash, onions, garlic, eggplant, a variety of new beans, chillies, peanuts, tomato, watermelon, papaya, breadfruit, sweet potato, cassava and New World taro (*Xanthosoma*). Maize has now become the most important subsistence crop of the region and reliance on cassava for basic subsistence is also increasing.

Of the food plants of the region, the earliest attested in the archaeological record is Job's tears. A single pierced specimen dating from before 3000 BC was excavated at one site from east Timor (Glover 1971, 1979). Also from this early period come fragments of candlenut with bits of *Areca* and *Piper*, the ingredients for betel-chewing.

On the basis of circumstantial archaeological evidence (the first appearance of pottery, the introduction of the pig and greater intensity in the use of sites), Glover suggests the beginning of some early form of agriculture around 3000 BC, for which direct evidence of

plant forms is still lacking (Glover 1979:18). There is no evidence for rice at this early period but there is one possible specimen of foxtail millet.

By 1000 BC eastern Indonesia was in better contact with the wider region and thus open to adoption of new plant varieties. However, the region's semi-arid climate and prolonged dry season may have limited, or at least inhibited, the adoption of some tropical plants.

Without archaeological evidence, it would be imprudent to go too far in speculating about the early forms of agriculture in eastern Indonesia. Nevertheless, for the purposes of this paper, I would like to consider the evidence of agricultural ritual and the lexicons of botanical terms preserved in these rituals as possible indications of earlier forms of subsistence. I would like to begin by considering some of the evidence from the agricultural rituals of the island of Roti, the southernmost island of the Indonesian archipelago.

THE LEXICAL EVIDENCE OF RITUAL LANGUAGE FROM ROTI

The island of Roti is one of the driest islands in eastern Indonesia. Its local economy is heavily dependent on the utilization of the lontar and gewang palms, but the island also sustains a complex system of agriculture which includes both irrigated and dry-land farming: *sawah*, swidden, semi-permanent planting and even a form of orchard gardening (Fox 1977). All of the early pre-European crops are still grown in small quantities on the island, as are virtually all of the crops and plants introduced since the sixteenth or seventeenth centuries.

Given this botanic richness and diversity, it is of interest that Rotinese agricultural rituals focus on only a small set of specially named plants. It is a requirement of all rituals that they be encoded in a form of highly formalized speech, which I have called a "ritual language" (Fox 1971, 1975, 1988). All lexical items in this ritual language must be paired. Such pairs are relatively fixed and appear to be stable. Not only do Rotinese rituals focus on a limited set of plants, but by the requirements of the language these plants are grouped in set pairs. Since ritual language is considered to preserve ancestral knowledge - a number of items named in ritual language refer to objects that have disappeared entirely from ordinary use - the evidence of this language would suggest that the paired plants named in ritual language point to earlier forms of agricultural reliance.

The principal paired plants named in ritual language are the following:

<i>Hade//Betek</i>	Rice//Millet
<i>Huni//Tefu</i>	Banana//Sugarcane
<i>Tale//Fia</i>	Taro//Yam
<i>No//Pua</i>	Coconut//Areca Nut Palm

The lontar palm, which is crucial to the island's subsistence and figures prominently in ritual texts, forms various lexical pairs. It can also form its own dyadic set since reference can be made to the "male" and "female" forms of this dioecious palm, thus eliminating the

need for a symbolic link to another plant. In ritual language, one significant dyadic set links the juice derived from this tree with another important subsistence item:

Tua-oe//Fani-oe Lontar Juice//Honey

This dyadic set encapsulates references to two important traditional food sources. These two sources of gathered food are also associated in that bees that produce honey regularly feed upon the lontar juice as it collects in buckets high in the trees.

A similar sort of linkage joins the *Areca* nut with *Piper betel* as a dyadic set:

Pua//Malu *Areca nut//Piper betel*

Here the term for the piper plant is not the term (*sirih*) used in ordinary language but a term that occurs only in ritual language.

In this connection, it should be noted that most of these lexical terms have recognizable Proto-Austronesian or at least Proto-Malayo-Polynesian forms: *hade*, *betek*, *huni*, *tale*, *tefu*, *no*, *pua* and *tua*. Interestingly, although the term *ufi* can refer to yam in ordinary Rotinese, ritual language uses the term *fia* which appears to refer, in ordinary language, to one kind of tuber/yam.

One ritual text contains a further interesting dyadic set:

Bete//Pela Millet//*Pela* [A, B, C]

This particular ritual text identifies these crops as specific to the two kinds of Rotinese dryland gardens. The question is how to translate the term *pela* in this text. At present, *pela* can refer to three different plants. *Pela-hik*, "true *pela*", refers to sorghum; *pela-hik dele nggeok*, "black-flecked *pela*", refers to Job's tears; while *pela* or *pela-sina* refers to maize. On Roti, it is clear that maize when it was introduced was culturally assimilated to the category of "sorghum". It is also conceivable that at an earlier period when sorghum was introduced, it was assimilated to the category of Job's tears. Thus this category, *pela*, may subsume three stages of an agricultural progression:

<i>Pela</i> [A]	>>>	<i>Pela</i> [B]	>>>	<i>Pela</i> [C]
Job's Tears	>>>	Sorghum	>>>	Maize

Moving from lexical evidence to the evidence of the ritual texts themselves, the special focus on particular plants becomes even more evident.

THE EVIDENCE OF RITUAL CHANTS FROM ROTI

On Roti, the origins of the culturally important items of traditional social life are traced to cosmological relations between the Lords of the Heaven, associated with the Sun and Moon, and the Lords of the Sea associated with the figures of Shark and Crocodile. The earth - or, more specifically, the island of Roti - is seen as the meeting place of these entities and the ultimate beneficiary of their actions. The depths of the sea are seen as the repository of the most valued cultural items and it is by means of a marriage between the Heavens and the Sea that these items (or the knowledge of these items) find their way to land.

Various ritual chants take their starting point from the initial encounter of the sons of the Sun and Moon with the Lords of the Sea. This encounter features a pig-hunt. The pig-hunt alluded to in these chants appears to have been of great ritual significance and seems to relate to a widespread practice in eastern Indonesia of a ritualized pig-hunt that was once considered necessary to initiate a new agricultural cycle of field clearing.

According to these chants, rice and millet were the foods of the Lords of the Sea and the sons of the Sun and Moon initially encountered them when they journeyed to the Sea to carry out the first pig-sacrifice. In the chant, the sons of the Sun and Moon steal a portion of these foods to take back to the Heavens. Thus an excerpt from one of these chants reads as follows: (Note that, given the lexical requirements of ritual language, pig and civet-cat form a single dyadic set.)

<i>Boe ma ala dilu doli nai liun</i>	So they prepare rice in the ocean
<i>De fina kue nai liun</i>	To sacrifice civet-cat in the ocean
<i>Ma tutu lutu nai sain</i>	And they pound millet in the sea
<i>De fati bafi nai sain.</i>	To offer pig in the sea.
<i>La'a te feo filu</i>	They eat, but wind a container of food
<i>Ma linu te poti latu.</i>	They drink, but wrap a bundle of food.
<i>De leni fe Ledo Holo</i>	They take this to give to Sun Holo
<i>Ma leni fe Bula Kai.</i>	And take this to give to Moon Kai.

The Sun and Moon decide to give a daughter of theirs in marriage to the Lords of the Sea and thus to claim as bridewealth the objects they desire from the sea's depths. This bridewealth includes, among other objects, the knowledge of fire (i.e. of cooked food) and the mortar and pestle to prepare rice and millet. The chants do not, however, cite rice and millet as one of the objects of bridewealth. The origin of rice and millet are recounted in a separate chant.

The chant of the origin of rice and millet is the only long chant of its kind to focus on a specific set of plants. This in itself underlines the importance of these particular plants. In the origin chants, these plants are not referred to by the dyadic set, *Hade//Bete* but by a separate dyadic set, *Doli//Lutu* or in its full form, *Doli Mo ma Lutu Mala*. The chant of the origin of rice and millet is the chant of *Doli do Lutu*.

All origin chants contain obscure passages. Some of this obscurity is consciously contrived to serve as disguise. Only specially revealed exegesis by knowledgeable elders may elucidate these forms of disguise and concealment. That *Doli//Lutu* refer to rice and millet is already, at one level, a form of initial revelation since these terms have little significance in themselves. But there exists another level to this particular chant because *Doli Mo ma Lutu Mala* are identified with sea creatures known as *Bole Sou ma Asa Nao*. These figures assault the Lords of the Sea and are, for this reason, cast out from the realm of the sea. A crucial passage in the chant, which follows immediately after the episode that reveals the attack on the figures of the Shark and Crocodile, makes the necessary

identifications and goes on to describe how these figures are carried from the sea to a place on the coast of Roti known as *Mae Oe//Tena Lai*. This passage is as follows:

<p><i>Boe ma iu neu namanasa</i> <i>Ma foe ana nggenggele.</i> <i>Hu ndia de tasi lu Asa Nao</i> <i>Ma oli lama Bole Sou.</i> <i>Boe te lu neni Doli Mo</i> <i>Ma lama neni Lutu Mala</i> <i>De nenin neu Mae Oe</i> <i>Ma nenin neu Tena Lai</i> <i>Fo Mae Oe Loek lutun</i> <i>Ma Tena Lai Laok dean.</i> <i>Besak-ka nupu non na dadi</i> <i>Ma sadu puan na tola.</i> <i>De li lakadodofun</i> <i>Ma nafa lapopolin.</i></p>	<p>Then the Shark goes angry And the Crocodile becomes furious. At this the sea raises <i>Asa Nao</i> The estuary lifts <i>Bole Sou</i>. Thus the tide carries <i>Doli Mo</i> And the flow carries <i>Lutu Mala</i>. Carrying him to <i>Mae Oe</i> And carrying him to <i>Tena Lai</i> To the fish-catch at <i>Mae Oe Loek</i> And the sea-wall at <i>Tena Lai Laok</i>. Now the coconut shoots begin to grow And the areca nut sprouts begin to appear. The waves cover him And the surf soaks him.</p>
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This is but the beginning of what is a long chant. Having washed to shore and reached a fish-trap located at the far eastern end of the island, *Doli//Lutu* lie waiting to be taken up and properly planted to grow as rice and millet. This initial stage is recounted in the chant as follows:

<p><i>Doli Mo nasakedu</i> <i>Ma Lutu Mala namatani</i> <i>Fo nasakedu sanga inan</i> <i>Ma namatani sanga te'on</i> <i>Te hu ina nai Asa Nao</i> <i>Ma te'on nai Bole Sou.</i></p>	<p><i>Doli Mo</i> is sobbing And <i>Lutu Mala</i> is crying Sobbing for his mother And crying for his aunt A mother to <i>Asa Nao</i> And an aunt to <i>Bole Sou</i>.</p>
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Various women come forward to carry *Doli//Lutu* away to be planted in different parts of the island but they do not grow.

<p><i>Te do belan ta dadi</i> <i>Ma hu bokon ta tola.</i></p>	<p>But the heavy leaves do not grow And the bending stalk does not appear.</p>
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Here translation of the text becomes difficult since the personal names in the chants are place names. Thus the names of the women who come seeking *Doli//Lutu* in fact identify particular growing areas (in some cases, individual fields) on the island. In the version of this chant that comes from the domain of Termanu, *Doli//Lutu* finally take root in a particular field after the women of *Bako Bau Dale//Nggoli Kai Tio* bring them with

due ceremony, plant them carefully, and perform the appropriate rituals. This passage reads as follows:

<i>Besak-ka inak-ka Fiti Nggoli</i>	Now the woman, <i>Fiti Nggoli</i>
<i>Ma fetok-ka Lole Bako</i>	And the girl, <i>Lole Bako</i>
<i>Ana tolomu sasali</i>	She comes running
<i>Ma nalai lelenu.</i>	And she comes hurrying.
<i>De neni pua lisu lasu boak</i>	She brings full rounded areca nut
<i>Ma malu boa dongi aik,</i>	And barb-shafted betel catkin,
<i>Pou le'u pana-daik</i>	A sarong with <i>pana-daik</i> bands
<i>Ma sidi soti tola-te'ek.</i>	And a cloth with <i>tola-te'ek</i> strips.
<i>Mai, de ana ifa</i>	She comes, then she carries
<i>Do ko'o nenin.</i>	And cradles him away.
<i>De neu tane nasamamaon</i>	She goes to plant him carefully
<i>De sele nakaboboin</i>	Or sow him fondly
<i>Neu Bako Bau Dale mon</i>	In the plain of <i>Bako Bau Dale</i>
<i>Ma neu Nggoli Kai Tio fuan</i>	And in the field of <i>Nggoli Kai Tio</i>
<i>De ana mole sepe</i>	She celebrates the <i>sepe</i> -basket ritual
<i>Do fua oli.</i>	And she performs the <i>oli</i> -basket ritual.
<i>Besak-ka kalen na didiku</i>	Now the grains bend over
<i>Ma pulen na loloso.</i>	And the buds poke forth.
<i>Boe ma besak-ka oko bolu</i>	Now they yell [to drive away the birds]
<i>Ma do se'ek</i>	And they make noise
<i>Nai Baku Bau Dale mon</i>	In the plain of <i>Bako Bau Dale</i>
<i>Do Nggoli Kai Tio fuan.</i>	And in the field of <i>Nggoli Kai Tio</i> .

This passage concludes with imagery of noise and excitement in a full field of grain. The chant goes on to record the progress of *Doli//Lutu* from site to site around the island. Eventually *Doli//Lutu* complete their cycle and arrive back at *Tena Lai* and *Mae Oe*. They then return to the ocean and go back to the sea.

Among a complex canon of ritual chants, this is the principle chant that recounts the origin of agriculture. That it identifies this agriculture with the cultivation of rice and millet suggests that these two crops once constituted the basis of Rotinese cultivation.

Rice on Roti has retained its importance as a prestige crop considered as the essential food for feasting. Millet, on the other hand, is a minor crop which is in danger of disappearing. Both maize and sorghum have displaced millet in gardens throughout most of the island. Certainly, these two crops are now the equal of rice in their contribution to subsistence. Although maize, sorghum and other food crops have created a more diverse subsistence basis, they have not altered the ritual focus of Rotinese agriculture on rice and millet.

RITUAL TRADITIONS OF TIMOR, SUMBA AND SAVU

Agriculture on Timor presents various contrasts to that of Roti. Some of these differences have to do with the dominance of maize as the mainstay of Timorese subsistence. The early introduction of maize in the seventeenth century (see Fox 1977:76) and its rapid and wide-spread establishment throughout most of the island has largely obliterated evidence of earlier cropping systems. Only rice has continued to maintain a ritual importance equivalent to maize. Other grain crops, such as millet and sorghum, have all but disappeared in cultivation systems and are only hinted at in the rituals associated with cultivation.

Among the Atoni Pah Meto, rice and corn are spoken of as a pair in ritual speech. In ordinary language, the Timorese terms for rice and maize are *ane* and *pena*. These terms are related to Rotinese terms (rice: *ane* = *hade* and maize: *pena* = *pela*). In ritual language, as on Roti, a variety of metaphors are used to refer to rice and maize to avoid any mention of their ordinary language names (Schulte Nordholt 1971:91)

Among the Tetum of Timor, rice (*hare*) and maize (*batar*) are now the principal subsistence crops (Metzner 1977:151 ff). These are also the crops on which rituals are focused. However, as Vroklage makes clear (1952 Vol. I:127), *batar* originally referred to sorghum. Maize was originally known as *batar malae*, "Malay *batar*" in contrast to *batar ai naruk*, "long-legged (i.e. long stalked) *batar*." In fact, *batari* is a Malay language term for sorghum which is related to the term for sorghum in Makassarese (*batara*') and in Bugis (*bata*') (Heyne 1950, Vol. I:189). (Among the Ata Tana Ai of central east Flores, the same linguistic pattern can be observed. Both maize and sorghum are designated as *watar*, with one distinguished from the other as *watar gahar*, "long *watar*".)

Among the Ema of Timor, rituals focus on rice and maize as they do elsewhere in Timor. However, Renard-Clamagirand in her discussion of the agricultural rituals of Marobo mentions that millet for the Ema is the symbol of fertility. Sprigs of millet are hung in the rice granary and tucked into the headbands of the women who harvest rice to increase the crop. Job's tears are also used in rice rituals to draw in the grain (Renard-Clamagirand 1982:278).

Among the Bunaq of central Timor, as elsewhere on the island, the main rituals are concerned with rice and maize. The agricultural rituals of the Bunaq and the myths of the origin of seeds have been well-documented by Friedberg. In the myths in particular, Job's tears and millet figure prominently. Of the three ancestral lines of the Bunaq, the first cultivates a mixed garden which includes both millet, Job's tears, taro and yams; the second ancestor cultivates a field of rice; and the third ancestor a field of millet.

Other myths of the Bunaq relate a version of the origin of new seeds that is the inverse of the equivalent Rotinese myth in that seeds and other cultural goods are obtained not from the Sea but from the sons of the Sun and Moon (Friedberg 1980:276-277).

Thus on Timor as on Roti, the evidence of language and of ritual point to the prior importance of three crops that have all but disappeared: Job's tears, millet, and sorghum.

Moving to another island of the outer arc, Sumba, the situation is not unlike that of Timor. Maize is now the dominant staple throughout the island. Rice, however, retains

its position as the food required for feasting and preferred for offerings to the spirits. Maize may not be used either for offerings or for feeding guests. Rice is referred to as *uhu*, a term which according to Forth (1981:429) has the general sense of "food". Millet, now a minor crop, is identified with rice as a kind of rice, *uhu kani (uhu kanu)*. Maize, on the other hand, - as on Roti - is categorized as a kind of sorghum. In Kampera, the language of east Sumba, sorghum is *wataru hamu*, "indigenous *wataru*" as opposed to maize, which is *wataru jawa*, "foreign" or "outside" *wataru*.

The Sumbanese term, *wataru*, for sorghum and maize parallels the use of the term, *batar*, for these same plants among the Tetum. *Wata(r)* is also the term for maize in some Lamaholot dialects and in the language of Tana Ai but, at least in Tana Ai, it can also refer to sorghum. The similarity and distribution of the *batar/watar* term suggest the introduction of sorghum under this name either via Makassarese or Bugis sources and the later assimilation of maize to this category.

In Kodi, a domain at the far western end of Sumba, *wataru* is the term for maize. As elsewhere on Sumba, maize and cassava have become the main staples of the population. Rice (*pare*), however, has primary importance in the ceremonial system and forms the focus for Kodi's ritual calendar. Special attention is directed to rice at three stages:

- 1) at the time of planting when the people of Kodi adopt various prohibitions and enter a "bitter" period marked by ritual silence
- 2) later, when the rice crop begins to bear grain and is believed to require an infusion of new life
- 3) at harvest-time when the spirits of the rice grains must be "trapped" (Hoskins 1983:241).

The harvested rice is then used at ritual gatherings that extend for several months until the "bitter" period begins again. The origin of rice is attributed to the female figure, Mbiri Kyoni, who was killed and buried to become various foods of the people of Kodi. Although seen as the origin of other crops as well, Mbiri Kyoni stands primarily as the representation of rice, reincarnated in the new shoots that emerge from the ground.

The cropping systems of the island of Savu present yet another set of evidence on earlier forms of agriculture. The lack of rainfall and the limited availability of water on this tiny island set severe constraints on cropping patterns. Here, however, as on Roti and Sumba, rice (*are*) remains the prestige food required for feasting and offerings. Millet is of minor importance. Interestingly, however, the Savunese term for millet is *uhu*, which in east Sumba refers to both rice and millet and carries the general connotation of "food".

The important staples for Savu are maize, sorghum and the mung bean or green gram. In Savunese, sorghum is known as *terae Hawu*, "Savunese *terae*", whereas maize as the later introduced crop is referred to as *terae jawa*, "outside" or "foreign" *terae*. Whereas calendrical systems on Sumba focus on rice, the calendrical system on Savu focuses on mung bean, which assumes, to some extent, a greater ritual importance than rice.

If one were to draw a line from the island of Savu through central Flores to the island of Palu'é, this line would pass through a number of related languages (among them, the languages of Savu, Lio, Nage, Rembong, eastern Manggarai and Palu'é). Along this semantic axis, the term *keqo* (*keo*) occurs but refers to different cultigens. On Savu and in various parts of Rembong and eastern Manggarai, *keqo* refers to Job's tears; in parts of Nage, Rembong and Ngadha *keqo* (*ke'o*) refers to sorghum, while in still other parts of central Flores, including Nage, Lio, Rembong and Palu'é, *keqo* (*ke'o*) refers to maize. As on Roti, the three plants (Job's tears, sorghum and maize) have been assimilated to the same category but in a complex, checkerboard pattern among related languages (see Verheijen 1984:14-15; 20-22).

Thus despite new and varied dry land cropping patterns in which a variety of European-introduced crops provide the major sources of present-day subsistence, the outer arc of the Lesser Sundas retains a heritage embodied in its rituals that still focuses on rice and millet and, to a lesser extent, on Job's tears and sorghum. This heritage also includes a variety of other crops of possible early Austronesian origin. It is useful to consider again the lexical evidence from the island of Roti, which marks the furthest southern expansion of the Austronesian-speaking populations in the Indonesian archipelago.

PROTO-AUSTRONESIAN AND THE LEXICAL EVIDENCE FROM ROTI¹

The Rotinese language possesses a considerable array of plant names that can be constructed as either Proto-Austronesian or Proto-Malayo-Polynesian. The fact that such high level proto-forms can be identified for these particular etyma provides evidence that the plants to which they refer are of considerable antiquity in their use among the Rotinese population. That Rotinese retains these original etyma for its main cultigens and other useful plants may be, in part, the result of Roti's relative isolation at the far southern end of the archipelago and its separation from the main streams of migration. Table 1 lists these forms.

The first observation to be made about this list is that it includes all of the plants of major ritual importance on the island, in particular: rice, millet, sugarcane, banana, taro, and yam; along with some of the most important ritual trees: areca, coconut and the lontar palm including the *waringin* (banyan) and the *delas* tree. Ritual language and ritual practice thus clearly serve as a marker of significance. Only in the case of yam is there another term (*fia*) which is substituted in ritual language for the more general term, *ubi*. Also it is necessary to note that **tuak* cannot be constructed as a specific reference to the lontar palm. **tuak* is rather the term for "fermented palm juice" or "palm wine", which on Roti also denotes the palm from which this juice derives.

Included also in this list are a number of plants, such as sesame, ginger, turmeric, cucumber and seaweed, that are of lesser ritual significance but of common use. During the season of the east monsoon, for example, seaweed is a regular feature of the Rotinese diet. Pandanus is a special case. The legends of Roti allude to a time when the populations of the western half of the island regularly ate the fruit of the pandanus.

The relative antiquity of some of these plants is attested to by the fact that later plants are assimilated to the same category. Papaya (*titimu inak/titimu lonak*) and watermelon (*titimu dafa*), for example, were both categorized as specific kinds of *titimuk* (cucumber) when they were introduced. By the same process, New World taro (*Xanthosoma*) has been assimilated to the category of *tale* (*Colocasia*) and pineapple is categorized with the pandanus fruit (*hena*).

*PROTO-FORM	ROTINESE (TERMANU)	IDENTIFICATION	LATIN NAME
PAN *pajey	hade	rice plant	<i>Oryza sativa</i> L.
PAN *beCeng	bete	millet	<i>Setaria italica</i> L.
PAN *tebuS	tefu	sugarcane	<i>Saccharum officinarum</i> L.
PMP *qaZelay	dele	Job's tears	<i>Coix lachryma-jobi</i> L.
PMP *tales	tale	taro	<i>Colocasia esculenta</i> Schott.
PMP *lenga	lena	sesame	<i>Sesamum orientale</i> L.
PMP *punti	huni	banana	<i>Musa paradisiaca</i> L.
PMP *laqia	lia	ginger	<i>Zingiber officinale</i> Rosc.
PMP *timun	titimu	cucumber	<i>Cucumis sativus</i> L.
PMP *qubi	ufi	yam	<i>Dioscorea alata</i> L.
PMP *latu	latu	seaweed	
PMP *taRum	tau	indigo	<i>Indigofera</i> sp.
PMP *tuba	tufa	"fish poison"	<i>Derris</i> sp.
PAN *quey	ue	rattan	<i>Calamus</i> sp.
PMP *kunj	kuni	turmeric	<i>Curcuma viridiflora</i>
PAN *panDan	hena	pandan	<i>Pandanus</i> sp.
PAN *buaq	pua	areca	<i>Areca catechu</i> L.
PMP *niuR	no	coconut	<i>Cocos nucifera</i> L.
PMP *paSuq	pao	mango	<i>Mangifera indica</i> L.
PMP *tuak	tua	lontar juice	
		>lontar palm	<i>Borassus sondaicus</i> Becc.
PMP *nunuk	nunu	banyan	<i>Ficus benamina</i>
PMP *DapDap	dela(s)	dedap	<i>Erythrina</i> sp.
PMP [*bangkudu]	manakudu	red dye plant	<i>Morinda citrifolia</i> L.

TABLE 1: PROTO-AUSTRONESIAN/MALAYO-POLYNESIAN RECONSTRUCTIONS OF ROTINESE FOOD PLANT NAMES (TERMANU DIALECT)

For several important Rotinese crop plants of pre-European derivation, no Proto-Malayo-Polynesian forms can be reconstructed. This would be evidence of a later introduction of these plants to the region. However, divergent yet recognizable cognate

terms for one or another of these plants are nonetheless widespread throughout the region. This linguistic evidence therefore points to a relatively early introduction.

The most important of these crop plants is the *Phaseolus* bean, popularly known as the mung bean or green gram (Indonesian: *kacang hijau*). An older nomenclature adopted by the Dutch (Heyne 1950: 836-838) distinguished between *Phaseolus radiatus* L. and a *Phaseolus mungo* L. whereas a revised nomenclature (Purseglove 1971: 290-294) identifies this bean as *Phaseolus aereus* Roxb. In various parts of the region such as on Savu and in Kedang on Lembata, this bean is a major focus of the seasonal ceremonial calendar.

*PROTO-FORM	ROTINESE (TERMANU)	IDENTIFICATION	LATIN NAME
PMP *bue	fufue	mung bean/ green gram	<i>Phaseolus</i> sp.
PTM *turi	tuli(s)	pigeon pea	<i>Cajanus cajan</i> L.

TABLE 2: OTHER POSSIBLE PROTO-MALAYO-POLYNESIAN RECONSTRUCTIONS

On Roti, this bean is known as *fufue lutu* (*fufue* being a partial reduplication of the root, *fue*; just as *titimuk*, cucumber, is a partial reduplication of *timuk*). Reflexes of this term are found throughout eastern Indonesia; in almost all instances, they refer specifically to mung bean: Timor: *fue(l)*; Savu: *kebui*; Sikka: *bue*; Lamaholot: (*utan*) *wewe*; Ende: *mbue*; Manggarai: *wue*; Bima: *buwe*; Bugis: *buwe*; Bare'e: *tambuwe*; Uma: *tamue*; Konjo: *bue*; Wolio: *lawue*; and Sawi: *pue*. This gives a distribution that ranges from Halmahera in the north to Roti in the south and from central south Sulawesi to Solor and Alor in the east. A reconstructed form would be **bue* and since its distribution occurs in both Central and Western Malayo-Polynesian languages, one might propose this reconstruction as Proto-Malayo-Polynesian.

A second food crop of some importance on Roti and elsewhere in the region is the pigeon pea (*Cajanus cajan* L.). This plant was once of greater importance in dry field cropping systems, particularly on Timor, than it is at present. On Roti, the term for pigeon pea is *tuli(s)*. Cognates of this term are found in other parts of the Timor region: Timor: *tunis*; Helong: *tulis*; Tetun: *turis*; Savu: *tori*. Verheijen (1984:44,47) has taken note of these forms and proposed what he calls a "Proto-Timor" reconstruction for this term as **turi*. A complication arises in that what appear to be cognates of this term also refer to *Sesbania grandiflora*, a similar drought-resistant dry land legume. Reflexes of this form are: Malay/Java: *turi*; Sunda: *turuy*; Madura: *toroy*; Talaud: *tuli*; Sangir *turi*; Tagalog: *katurai*; Tiruray: *tudi*. On the basis of this evidence, Wolff (in press) has reconstructed a tentative PMP form, **tudi* for *Sesbania grandiflora*. However, the **d* reconstruction appears somewhat peculiar; nor does the **i* explain the Madurese **oy*. A better

reconstruction might be **turuy*. The relation between this form for *Sesbania* and Verheijen's reconstruction for pigeon pea requires further consideration.

On Roti, *Sesbania* is referred to as *ngganggala*, a term related to the Kupang-Malay term for this same plant, *pohon gala-gala*. In recent years, however, development agronomists working on Timor have promoted *Sesbania*, using its Indonesian-Malay name, *turi*. As a result, it is now possible to encounter both "*tunis/turi(s)*" (*Cajanus cajan*) and "*turi*" (*Sesbania grandiflora*) growing together in the same fields on Timor.

A third crop of considerable importance on Roti and indeed throughout most of the region is sorghum (*Andropogon sorghum* Brot./*Sorghum saccharatum*). Verheijen (1984:20) lists no less than twenty-three unrelated etyma for this crop on Flores, Sumba and Savu. This list, however, does not include the terms for sorghum in the Timor area, which in some instances are again different. Adding to this complex lexical mosaic is the frequent occurrence of the same terms for either Job's tears or maize or, in some cases, for both of these plants. One possible interpretation of this data is that sorghum was introduced, possibly by various routes, and spread throughout the region at a time when there was already considerable linguistic differentiation. This would imply a later introduction for sorghum than for the mung bean. Maize, when it was introduced toward the end of the seventeenth century (see Fox 1977:76), followed a similar pattern to that of sorghum.

Wolff (in press) endeavours to provide a Proto-Malayo-Polynesian reconstruction for sorghum. On botanical grounds, this endeavour would seem somewhat questionable because it would imply a relatively early Austronesian acquaintance with this plant. Wolff tentatively constructs the proto-form, **bataq*, based on the following evidence: Cebuano: *batad*; Hanunoo: *batad*; Maranao: *bantad*; Makassarese: *batara*'; Tetun: *batar* and Malay: *batari*. To this evidence could be added the further forms: Sikka: *watar* and Sumba: *wataru*. Again, Wolff's reconstruction is difficult to understand. The Malay, Makassarese, Sumba, Sikka, and Tetun forms would suggest a final consonant other than **-q (-k)*. If, however, at the time of Rumphius in the seventeenth century (see Heyne 1950:190), the common Malay term for this plant was *batari* and a Malay-based trade was a possible medium for the spread of this plant, the particular distribution of the various reflexes of the Malay term, *batari*, could be explained as loan words. A possible candidate as the source of the introduction of this term in Malay would either be the Arabic term *bazra*, meaning "seed", or the Persian term *badr/bazr* (from which the Arabic derives) which refers both to "seed" and to "corn", and therefore possibly at one time to sorghum (see Asbaghi 1988:49; Wollaston 1978:69, 321).²

Sorting out the particular histories of the variety of the major food plants in eastern Indonesia is by no means an easy task. In broad terms, however, we can make some generalizations about the heritage of traditional agriculture in the region. Thus clearly for the region as a whole but not necessarily for every part of it, the earliest crop plants were those for which we can construct Proto-Austronesian or Proto-Malayo-Polynesian lexical forms. These principal plants were rice, millet, Job's tears, banana, sugarcane, taro and

yams, probably with lesser cultigens such as sesame, ginger and cucumber. Exploitable palms, such as coconut and the areca palm were also important.

Roti's semi-arid conditions preclude certain plants and limit the productivity of others. For the wider region, there were other early plants that are of limited or no importance on Roti.

Among the exploitable palms, the sugar palm (*Arenga pinnata*: PMP > *qanaSaw; Bima/Sumba: *nao*) and the sago palm (*Metroxylon*: PMP > *rumbia; Makassar: *rumbia*/Ceram : *lapia/ribia*) were probably of some considerable importance in parts of the region with higher rainfall. Also important in the region were seeded breadfruit (*Artocarpus communis*: PMP > *kuluR; Bima:*kolo*; Sumba: *kulu*), the giant aroid (*Alocasia macrorrhiza*: PMP > *biRaq; Ende/Lio: *wira*; Sumba: *wia*), and the "Javanese almond" (*Canarium commune*: PMP > *kanari*; Bima: *kanari*).

Another tree whose seeds are of ritual importance is the candlenut (*Aleurites moluccana*). This tree is a native of the Indonesian archipelago. The Malay designation for this tree is *kemiri* and reflexes similar to this term are widespread: Roti: *kami'a* or *kamili*; Sumba: *kawilu*. Verheijen (1984:45) proposes **welu* as Proto-Bima-Sumba.

For other important plants that were introduced at a later date but before the arrival of the Europeans, the picture is more difficult to decipher. Certainly, as this paper has indicated, mung bean, sorghum and pigeon pea were among the most important of these early crop plants. Another food plant from Roti that would appear to belong to this category is arbila (*Dolichos lablab* L./*Lablab vulgaris* Savi) which on Roti is referred to as *ndoto*. Clearly at one time, *ndoto* bean figured more prominently in the Rotinese diet than it does at present.

Gradually, some understanding of early agriculture in eastern Indonesia is beginning to emerge. At best, however, this paper can only be considered an interim report. There is yet a great deal of research that must be done. Ironically, a significant portion of our understanding of early agriculture derives from detailed ethnographic accounts of the remaining vestiges of traditional cropping systems that are now in the process of change. Research on traditional agriculture in the region appears to be a race against time to discover a heritage that is rapidly disappearing.

FOOTNOTES

1 I would like to thank colleagues in the Department of Linguistics, Professor Andrew Pawley, Dr Malcolm Ross and Dr Darrell Tryon for their assistance in putting together this section of the paper. In particular, I would like to thank Professor Bernd Nothofer of the University of Frankfurt for detailed comments. I would also like to thank Dr E.D. Lewis, Andrea Molnar and Michael Vischer for specific information on plant names in Flores and Annegret Schemberg for the Arabic and Persian references. I was stimulated to add this section to my original IPPA paper after hearing the paper presented by Professor John Wolff (in press) at the Conference on Austronesian Terminologies in October 1990 sponsored by the Department of Linguistics as part of the Comparative Austronesian Project of the Research School of Pacific Studies. Although I do not agree with all of his particular botanical observations, Verheijen's study of plant names in

Austronesian languages (Verheijen 1984) serves as a useful (and provocative) point of departure for the study of important plants in eastern Indonesia.

2 It is worth noting that *bajra* refers to the genus *Pennisetum* in India, a genus which includes the edible grain known as pearl millet, whereas sorghum is referred to as *jowar* (Vishnu-Mittre 1989).

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