



SAMOA HERBS

Ava Samoa Growing Guide





Upu Tomua

O se ta'iala faigofie tele lea ile ola o le Ava i Samoa, o le totōina lea o le Ava i le ele'ele sa fa'aaoga muamua mo mea totō ua uma fo'i ona fa'amamā le vao, e tele fa'afitauli e le o iai pe a fa'amamā le togāvao muamua po'o lona lua mo le totōina, e mafua ona o le fa'aitiitia o le minerale o le palapala.

O lenei ta'iala o lo'o taula'i ile toe fa'aleleia po'o le fa'afouina o le eleele e toe fa'aleleia ai uiga lelei e mana'omia e ola lelei ai le Ava, a'o fa'aaoga fa'aitiitia ai pe lē fa'aaogaina fo'i fetilaisa fa'aonapo nei, e mafai fo'i ona mulimulita'i ina ia fa'atumauiina ai le saogalemu ma le malu puipuia o eleele i fanua o lo'o fa'aaogaina mo le fa'atoaga Ava.

Filifiliga o le Fanua

I Samoa, e sili ona ola le ava mai le maualuga o le sami e o'o atu i le 400m, i le nofoaga mati'eti'e ma vaotā ina ia lē faigofie ona aveesea minerale ma tafiesea mai le vai i taimi o tafega i vaitau timuga. I timuga fa'aletausaga e tatau ona maualuga ile 2,200mm+, o le vaitau matūtū o le El Nino i totonu o se tausaga, o le vaitaimi lamatia tele lea mo le ava, o le mea lea e tāua ai le totō o la'au paolo ma aua ne'i teuina se'ia o'o i le vaitau timuga, e sili ona lelei le paolo mo se vaega o le aso. E le maua e le ava ni a'a uumi ma fa'atumauiina ai le eleele lelei.

Lāa'u fa'amalumalu o le Ava e pei o le Gatae (Dadapa/Erythrina variegata) e tatau ona

totō ile 8m-10m le va e maua ai le paolo ma fa'aleleia atili ai le eleele. Afai e tele anufe o lo'o maua ile palapala, o foliga vaia lea o le lelei ma le tamaoaiga o le palapala i minerale po'o meaa i le laau/ava peā fa'atumauiina pea le susū o le 'ele'ele.

O nofoaga e a'afia gofie savili ma matagi, e moomia ai laau talimatagi e pei o le Gatae (Dadap/Erythrina variegata), Tamaligi uliuli (Castanospora alphandi), Tamaligi faipa (Gliricidia sepium) o lo'o ola fo'i i Samoa ma ose paolo lelei ma le fa'aleleia ole eleele.

Fa'aleleia ole Eleele

(E mana'omia le lelei ole palapala (loloto, māmā ma tamaoaiga i minerale fa'anatura) ma fa'asusū lelei. O le palapala e maua ile loloto po'o le taele o le eleele ma ē tamaoaiga i minerale fa'anatura po'o palapala ma otaota ua pala, o le palapala lelei lea mo le ola lāusiusi o le Ava.. O le gaosiga sili e mafai ona maua mai le silico-clayey 'ele'ele e iai le ph 5.5-6.5 e mai le tusi ale "Taiala o le Kava i Fiji" (Fiji Kava Quality manual). Ole 'ele'ele i Samoa e 'ese'ese ma isi atunuu o le Pasefika, ona e tele i papa-ma'a /lava ma e tamaoaiga i minerale.

O le maualuga ole kava e maua ile palapala silica-omea, o Samoa e iai 'ele'ele mauga mū e māsani ona pāpā, 'ele'ele pito i luga e mafai ona loloto isi vaega, ae 'ese'ese e tusa ai ma le lava/papama'a, o minerale e faigatā ona maua e a'a umi e feso'otai. Ole togāvaio fou fa'ato'ā fa'amamā ole auala sili lea e fua mai ai le ola mālosi o lā'au o 'Ava ona ole maualuga ole fua, ae ole tipiina ole vaomatua e lē ose auala gafataulimaina e o tatou motu laiti.

E fa'afefea ona tatou fa'ata'ita'ia se ta'amilosaga ole vaomatua fa'anatura? Muamua, e tatau ona tatou mālamalama pe aiseā e fesoasoani ai la'au ile lelei ole eleele, o ituaiga lā'au e 'ese'ese o lātou a'a o nisi e uumi a'a, o isi e pupu'u a'a ma felavesa'i, e aveina uma minerale/mea'ai i luga o lau ma lālā e pa'u

i luga ole eleele ma e lelei tele mo le Ava ona e pupu'u a'a.

O le palapala e iai siama ma iniseti lelei ma aogā na te gaosia ma fa'aleleia le palapala, ma e tatau ona tatou puipua i auala fa'amanatura e mafai ona fa'aleleia ai le siosiomaga. O le taimi e fa'amamā ai le vaomatua, o le taimi foi lenā e suia ai foliga lelei o le siosiomaga mai lona natura, o lona uiga e tatau ona tatou faia auala ma galuega e mautinoa ai le malu puipua o le siosiomaga i auala ma metotia e totōai fa'atoaga Ava. O le fa'aauau pea ona fa'atino o fa'atoaga fa'alēatatau, e mafai ona lamatia ma faleagaina ai atu motu laiti e pei Pohnpei, Easter Island ma Malta. E taua la tatou galuega faifa'atasi ina ia fa'asao ai nisi o motu laiti ile lamatia le suiaiga o le siosiomaga.

O le mea lea, e taua ai le fa'atino o metotia ua taua i aso nei o le carbon farming po'o fa'atoaga fa'afouina. O lenei ituaiga o metotia fa'afaifa'atoaga e fa'amalosia ai auala e mafai ona teumalu ai le kaponi CO2 ile palapala. O le totō fefiloi o laau o le Ava ma laau e pei o le Gatae, Tamaligi faipa, Tamaligi Uliuli ose auala lelei tele mo ia ituaiga fa'atoaga fa'afouina.

O le Matāgaluega o Fa'ato'aga ma Faigafaiva i Nu'u o lo'o iai le tele o lā'au e fetau lelei ma le fa'atoaga a 'Ava. O fa'ata'ita'iga o la'au e iai uiga sili ona lelei e fa'aleleia ai le elelee, o Dadap (Gatae/Erythrina variegata) Castanospora Alphandi (Tamaligi uliuli) African Tulip Tree (Fa'apasi/Spathodea campanulate) Gliricidia sepium, Makuna (Mucuna)) o lo'o ola foi i Samoa, o nei la'au e iai ose a'a loloto, a'a lavelave poo nodules nitrogenous o lo'o iai se symbiotic nodules o siama ma sigi i luga o a'a, lea e fa'agaioia minerale o 'ele'ele e fafaga ai la'au, ile toe tuuina atu o la'au suka i

siama, o la'au e mate ma pala foi e fafagaina le palapala. Ole auala lea e manavaina ai e la'au le CO2 mai le ea, a'o manava O2 tatou te manava i totonu, tatou te manavaina CO2, ose taamilosaga. La'au fa'aliliu CO2 ma minerale mai le elelee i alava ma suka e fafaga ai siama ma sigi fatuina 'ele'ele lafulemu fa'alenua e teuina atili carbon, tele atunuu atina'e ua aveesea le tele o latou togavao anamua e toto mea'ai, fatu, fa'atoaga povi, mamoe ma isi. Ole taunuuga ole palapala e manaomia ai le tele o fetilaisa, ma o lo'o misi minerale e taua mo le soifua maloloina lelei, aua ne'i o tatou toe faia a latou mea sese.

E sili ona tatou galulue fa'atasi ma le natura e fa'amalieina le fa'aleleia ole 'ele'ele e aunoa ma le fa'aogaina o fetilaisa taugata mai fafo. O lo'o iai ni nai vaifofo a le matagaluega o fa'ato'aga i Nu'u e fesoasoani ile aufaifa'atoaga ile puleaina o vao ma le fa'atumauiina ole susu ma le lafulemu ole elelee e macuna.

O 'Ituaiga Ava

Ole 'Ava Samoa sa avea ma fa'ato'aga fa'aleaganuu mo sauniga fa'ale-aganuu ma so'otaga, o lo'o avea ma fa'ato'aga tāua tele mo le tatou māketi i totonu ole atunuu ma fa'atau atu i fafo. Samoa e leai ni 'Ava vao ae o nisi o Ava pepelo/sesē ua aumai mai fafo, mo le auina atu i fafo na o ituaiga Ava NOBILE e fa'atagaina, ae peitai nisi nei o ava e pei o Ava Le'a Lua ma le Ava Sa'atonu e fiafia iai kamupani mo le gaosiaina o vailaau mo gasegase – medicinal. Noble Ava o ituaiga ia e iai le 4 ma le 2 o kavalactones muamua e lua ile chemotype. Ole Samoa Kava Standard o lo'o fa'amatalaina le tulaga taua o le Ava, o lo'o iai kavalactones muamua e tolu ise chemotype e pei ole 246 po'o le 426 ae paga lea olea le tatau ai ona fa'atapula'aina ituaiga o Ava, e mafai ai ona tatou auina atu i fafo, o Vanuatu ole Ava fa'atauina mo maketi i fafo o lo'o fa'amatalaina le taua ole iai o kavalactones muamua e lua, e 24 pe 42 kava lauiloa a e iai le talaaga Borogons 245613 ma le isi Borogu 423561 o lo'o maua i

le mana'oga mai Vanuatu ae i Samoa e le o fa'atagaina i fafo, e tatau ona fa'ata'ita'i ia Vanuatu.

Kavalactones o mea fa'apitoa o Ava fa'afausia e fa'atuina ai a'afiaga eseese e lagonaina pe a tatou inuina Ava, ma o le mafua'aga lea tatou te maua ai le avanoa e auauna atu ai i le lalolagi e ala ai i la tatou taumafaiga, ina ia tupu lelei ai Ava Kavalactones e le fa'aleagaina (dissolve) i le vai malulu, o mea tatou te inu o se vaega o pauta mai le Ava e mafai ona o'o atu i ala-toto. O le lelei ona tu'i o le Ava e avea ma pauta, o le malosi foi lea o a'afiaga o le tofo o le Ava, o se pasene maua i luga atu o a'a pe na'o a'a e sili atu le malosi, aua i totonu o se laau matua le pasene maua i luga o Kavalactones o lo'o maua i a'a pito sili ona lelei, fa'aititia mai le 20% i papa lelei i le 12% a'o fa'ateleina a'a o le tagutugutu e masani ona i ai le 6–11% Lavalactones, O le pitopito i lalo ole 5 o Ava Le'a ua fa'ata'ita'iina ile 3.2%.

E sili atu o le 15 kavalactones, o le tuufaatasina e maua ai a'afiaga eseese, o le 6 muamua kavalactones i se talaaga otooto e aafia ai le 96% o le aofa'i ma le 3 muamua e tusa ma le 70%, o lea e va'ava'ai ai tagata fa'atau i kavalactones lelei e tolu muamua e iloa ai le Ava lelei olo'o iai pasene eseese o kavalactones ta'ito'atasi, ma e taua ai le poto masanai o tagata fa'atau.

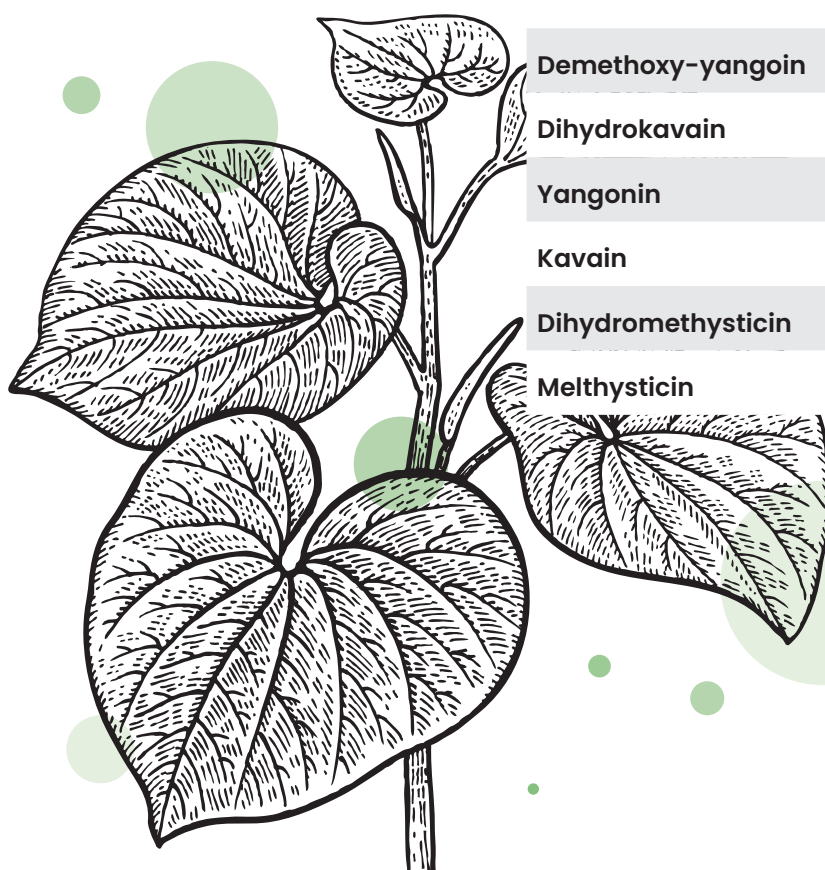
O su'esu'ega ua fa'aaliali ai o le maua luga o le kavalactones e masani lava ona maua luga ile 18 masina ae olo'o fa'aauau le fa'atupulaia ole biomass e o'o atu ise tau tamaoaiga lelei ile 30-36 masina mo 'Ava Le'a, 'Ava La'au, 'Ava Mūmū, 'Ava Talo e tatau ona fa'atumauiina le tele ole susū seia toeititi atoa le 3-5 tausaga e sili ona lelei le selesalega ile va ole 42-48 masina, ole tuua o lau fa'atoaga Ava ile 4 tausaga talu ai ile tele o nofoaga, o anufe (nermatode) e masani ona fa'aleagaina a'a ma fa'atuputeleina mo le 48 masina. Manatua tatou te moomia le ausia o taiala mo maketi i fafo.

I le vaaiga lautele o le a siitia ai se talaaga mautu ole kavalactone, suiga ole tau e pei ole tele pe itiiti ifo ole la, sili atu pe itiiti timuga, poo

le osofa'ia e fa'amai eseese mafai ona iu ai i pasene eseese o kavalactones ise ituaiga fa'apitoa, pea uma ona natura. O taunuuga sili e masani lava pe a selesaleina ile vaitau matutū ole tausaga ile va ole 3-4 tausaga, e tatau ona tatou manatua le tulaga tau tamaoaiga, o lea tatou te mana'o ai ile taimi maua lalo mole toe fa'aleleia o tupe fa'afaigaluega a'o tu'uina atu 'Ava.

Afai e fia tauva le Ava Samoa ma le Ava sili mai Vanuatu, Fiti, Toga, Hawaii, Solomona ma Pohnpei, e tatau ona tatou totō le mea sili. E lua ituaiga Ava tāua ua iloa e ono totōina; Ava Le'a, ma Ava La'au o lo'o iai uiga ia e manaomia e maketi fa'avaomalo, i aso nei ole tele o Ava Samoa o le Ava Talo, e manaia le tofo ae o loo iai le fa'ailoga ole kavalactone e foliga mai e le'i mafai ona o'o ise tulaga tāua tele. O le fa'amalieina o fesootaiga ma le fa'atauina lea o le manaoga o maketi i fafo, e tatau ai ona ave le fa'amuumua ile toe totōina o le Ava Le'a ma le Ava Laau . Afai tatou te mananao e fa'atau faigofie fua o tatou afu, e sili ona tatou tuuina atu ile maketi le mea e manao ai.

O le lisi o loo lalo ole 6 kavalactone e oo atu ile 96% ole aofai o kavalactones.



Demethoxy-yangoin	Le manaomia
Dihydrokavain	E tutusa ma le kavain siitia
Yangonin	Le manaomia
Kavain	Aafiaga sili ona faageetia
Dihydromethysticin	Lemu le aafiaga
Melthysticin	Malosi a'afiaga o fa'ama'i

Aiseā e tataua ai ona tatou malamalama i uiga eseese o Ava? O se itu e faanoanoa ai ona le toatele e lei toe faatumuina le malamalama o Ava mai aso ua mavae, ua mafua ai ona talitonu le toatele o Ava o Ava ae peitai e tele ituaiga o Ava Samoa na faailoa mai e Pava, ma se saienitisi mai Vanuatu i le 1987 – 89 (Dr Vincent Lebot) o i latou nei na fa’ailoa mai; Ava Samoa, Ava Ulu, Ava Le’a, Ava La’au, Ava Mumū, Ava Talo, Ava Sa, Ava Le’a Lua. E leai se masalosalo o isi ituaiga e le’i ta’ua pe fa’amaonia.

O ituaiga ta’itasi e iai sona a’afiaga fa’apitoa mo se fa’ata’ita’iga: Ava Le’a e fa’amalosia ma fa’amalosia feso’ota’iga, Ava Mumū e matuā filemu e aunoa ma se moe, Ava talo e fa’amalosia se moe lelei i le po. O le Ava Le’a Lua ose vaila’au fa’a te’a tiga malosi, ae tusa lava pe lua i le tolu ipu e mafua ai le fa’afaufau.

Ae sili atu ona taua, o e taimi ile matua o se iloilogia mai le itu fapisinisi; Ava faapisinisi ele tataua ona tuua mo le silia ma le 4 tausaga. Aisea? I le iloilogia o le tulaga lelei o le auina atu i fafo, e le’i umi ae 4 tausaga soifua maloloina o Ava e masani ona faaalua le faaleagaina o a’a mai nematodes, lea e mafai ai e fungi ma isi iniseti ona osofa’aia ma faaleagaina lau Ava fa’aititia le lelei ma le talafeagai mo le auina atu i fafo, e fautuaina I le va o le lua ma le tolu o ituaiga mamalu toto ma selesele ile 3-4 tausaga pe sili atu le fua mai i le taimi. O le ava sili ona ta’uta’ua i aso ta’itasi e iai le 426 o kavalactones muamua e tolu i totonu o se talaaga, ae e mafai lava ona i ai sina suiga laititi i pasene o kavalactones ta’itoatasi e iloa gofie ai le a’afia ma le le a’afia. O le tagata fa’atau ua amata ona iloa tino ma iloa igoa o ituaiga e sili ona lelei mai atunu’u ta’itasi.



Ava Talo

Ava Talo o le ituaiga sili ona ta’atele i le taimi nei e tuai ona fa’atau pisinisi aua e sili atu le susu, e lelei mo vaega mago o le tausaga, ae o lona uiga o le fa’aititia tele pe a fa’amago ona itiiti lea o tupe maua seia o’o i le va o 42 i le 48 masina, o le taimi lea e pa’u ai le susu ma uma ai ona fa’amago e maua ai e Ava Talo ni fua maua luga. O lena ituaiga e foliga mai e sili ona faigofie ona ola i le tele o eria, ma e maua luga atu lona taimi o matutu, o le faafitauli o le kavalactone talaaga mai su’ega i le SROS e 246, 426, 463, 462, e pei ona va’aia i lalo o le Samoa Kava Standard tolu mai le lima e le o se ituaiga mamalu, ae i lalo o tulafono a Vanuatu e tolu e mamalu ae lua e leai. HPLC Su’ega e sa’o ma taua mo le auina atu I fafo.



Ava Le’a, Ava La’au ma Ava Mumu

Ava Le’a, Ava La’au ma Ava Mumu e mafai uma ona seleseleina mai le 30 masina agai i luga ma sili atu i le 36-48 masina, tusa lava pe 24 masina pe a tausia lelei i luga ose nofoaga lafulemu, lelei ma tele e mafai ona ausia i nei mea ituaiga. E mana’omia e Ava Le’a le mata’ituina ma le toto’a se’ia o’o i le 9 masina pe fa’atupuina se a’a lelei ona ola lelei ai lea, e masani lava ona faigofie le ola o Ava La’au ma Ava Mumu ma e mafai ona vave tuputupu a’e i le elele lelei Ava Le’a 426351, Ava La’au 426315 o ituaiga uma e lua, a’o Ava Mumu su’e 246351, 254361, Ava Mumu e pei o Ava Talo o le a mana’omia nisi su’esu’ega e malamalama ai i mafua’aga o fesuiaiga, tonu e foliga tutusa la’au ae o le mea moni e eseese chemotypes. E masani lava o le tulaga i Vanuatu o uiga ia e iloa ai pe toe totoina Ava ae e le taua le foliga o le tino o ava.



Ava Le’a Lua

Ava Le’a Lua o le Ava lena e le maua mai a’ago e tele, ma e iai lona fa’ailoga kavalactone e le fa’atagaina mo le auina atu i fafo 642451 (E le o se NOBLE Ava), ae o se analgenic malosi, e aoga tele e fo’ofa ai tino tiga, o lena uiga e tataua ona su’esu’eina e le SROS, ma fautuaga o le mulimuli ia. Ava Sa ma Ava Le’a Lua masalo sa fa’aaogaina e taulasea/fofo mo lona malosi fa’amama tiga ma mo le mafua’aga lava e tasi atonu e fafia i le alamanuia tau vailaau.

Ina ia mafai ona tautuaina se maketi e auina atu i fafo e manao i se aafiaga fapitoa/eseesega e taua le totoina o se ituaiga e Tasi i fasi fanua taiatsi (pu'e Ava) ma aua le faafefiloi ituaiga pea selesese. O le auala lea tatou te faasaoina ai ituaiga ma malamalama o:

- ❓ Faafefea ona tausia ituaiga taitasi
- ❓ O lea le tofo o ituaiga taitasi
- ❓ O lea le aafiaga ua lagonaina
- ❓ O lea le taimi e selesese ai e maua ia le tele o tupe mo a tatou taumafaiga a'o saunia ai le mea sili uiga lelei i se taimi itiiti
- ❓ Faafefea ona faavasega le ituaiga ava mai le isi.



E faigofie ona iloa le Ava talo, e vaivai a'a e faigofie ona gau, e pala gofie pea uma ona selesese, e le matua seia oo i le 3&1/2 tausaga, o le tagutugutu (ata) pea mago e liu pauta pe a tu'i sei vagana ua 3&1/2-4 tausaga. E faapalepale lelei le tau mago.

Sue ao lei auina atu i fafo ina ia faamaonia ai le faailoga mamalu o le kavalactone e taua, o le HPLC.

Mea Toto

O le masani a le taimi e selesese ai ava ona toe totoina lea o lala, e masani ona saunia muamua e le au faifaatoga ni fanua fou (pu'e ava) e toto ai e ala i le aveeseina o maa ma faamafola le palapala, ona tipi lea o lala i luga a'e o le tagutugutu ma aveese mo totoina, vaega pito i lalo mafiafia ma fafie e le masani ona totogo, o le vaega fa'a onatotonu e tele ga ola, ia o le vaega tumutumu, pito manifinifi o se lala e mafai ona vave faatupu i vaega susu o le tausaga e manaomia le tausiga ma le vave totoina, soo se tuai e i'u i le susu ma faaititia le avanoa e fa'aauau ia le tuputupu a'e.



O le taimi sili e amata ai le totoina, o le amataga ma le taimi o timuga, e ui o le tetele o timuga e mafai ona mafua ai le tafe o le vai e mafua ona mate ai le vave tuputupu ae. Le itiiti ifo e le tolu poga (O nisi taimi e 2 poga e lava). E tipitipiina e fuafua i le mafiafia ma le umi o va i poga, tasi pe lua poga e tuu i lalo o palapala i se faailoga laititi, pe afai o mea toto e maloloina, lanumeamata ma fou, 5 fasi ata, e lava i le fasi fanua (PU'E Ava) sili atu pe a masalosalo i le totogo, e i ai nisi e tele mea e toto ai o lea e tu'ua ai le 10-20 i fasi fanua ua saunia, e le afaiga pe a tetele pu'e ae a felataa'i e ono sosolo faatasi mau ai palapala e faigata na fa'a mama mo le maketi i fafo.

Ma o iloiloga fa'apisinisi atonu e mana'omia le tele o fasi fanua laiti i le eka e lelei ai sone aoga, nai lo fasi fanua tetele e le vaevaeina i la'au ono taofia ai le prepesi a fa'amai mai lesi poloka i lesi.

Ava la'au e maua ai le tele, faapea foi ma le tele o la'au faatauva e mafai ona faatupuina se gaogao faafefe o meaola e sili atu ona fa'amama ma faaogaina, o se iloiloga taua mo le auina atu i fafo.



Aua nei faaleagaina ata toto, fa'aoga se laau toto e fai ai se pu ma fa'ase'e le mea toto i tausaga e puipua ai le pa'u ma le mata ola (Mata). Aua nei toto faasaga i lalo o lona uiga o le faaletonuga lava e tasi o le lala o le Ava ola e manaomia mo le totoina fasi.

Afai e te filifili e tipi lala mai la'au ola maloloina o Ava mo le totoina o mea, faamolemole ete faaogaina se naifi ma'ai po'o se tipi ma'ai e puipua ai le vaeluaina o le lala (o le tatupu) so'o se pala o lea tu i le fu'a maloloina ae le alu i luma o le tagutugutu e mafua ai ona pala atoa.



Fautuaina Faufautua Faatoaga na'o le faaogaina o mea toto lelei, o se manatu lelei lea e ui e foliga mai o le Ava o lo'o i luga o lona pa'u toetoe lava o Fa'ama'i uma e mafai ona a'afia ai. Faataitaiga; o se la'au Ava e tasi e mafai ona maua se lala e tasi e ola maloloina e aunoa ma le CMV (Cucumber Mosaic Virus) ae o le isi lala i luga o le pogati e tasi e mafai ona faalia a'afiaga o le CMV, o lea e sili atu le taua le iai po la'au ola maloloina malosi e malosi le tetele

nai lo le taumafai e iloa ai mea e toto i fua CMV. Fa'atasi ai ma le poto masani o le a faigofie ona iloa vaega o le a ola lelei.

O le va e faalagolago i papa o Samoa e mauga mu ma e laititi le elelee ma le tele o vaega e papa, o le mafua'aga foi lea o le laititi o pasene o aa e mafai ona toe maua (33-45%) pe a selesele e le pei o isi atunuu o le Pasefika pei o Fiti, Vanuatu, ma Solomona. Atumotu (60+ %).

Afai o le fua e tasi o Ava, ua tuu laina i le 2m le va ma fasi fanua oute va'aia, e maualuga le malosi ma e manaomia le tausaga ma le faateete e faaititia ai faafitauli.

Mo faiga faatoaga toe faafouina e tusa ma le 3m ma le li'o o fanua, e mafai ona toto i le va o Ava, faatasi ai ma Dadap (Gatac) e toto i le ta'i 8-10m, o lea maua ia se i'uga lelei o le Dadap (Gatae) e mafai ona teuteu ma Faapala (Fa'amalu) i le faaiuga o le vaitau timuga ia maua uma ai latou lau i le vaitau matutu e puipua ai Ava mai le la ma faamaumau ai le susu i le palapala. A toe fo'i mai timuga, titipi le Dadap (Gatae) ma fa'amalu e faaleleia ai meaai mo laau Ava, Ava e papa'u a'a, ma e le masani ona silia atu i le 3m mai le pito i lalo pe a 3 tausaga le matua, o lea e tatau ai ona tausia lelei meaai i totonu o lenei vaega.

O le tele o le aufaifaatoaga e totona talo lea e maua ai le paolo i le ola o le Ava ma le tinoitupe/meaai pe a uma le 6-8 masina, e mafai ona sosoo ai ma le koko pe a uma ona selesele le talo ma e le o fuafuaina se faatoaga lona lua o le Ava i le vaega lava e tasi. (E iai vaega e oo atu i le tolu fua o le ava e mafai ona seleseleina faasolosolo mai le fanua lava e tasi).

E tele auala mo le totona o le Ava i Samoa ma le Pasefika, o le a le mea sili ona lelei e faalagolago faifaatoaga taitasi i le taimi, punaoa, nofoaga ma le poto masani.

E 8 ituaiga Ava ua iloa e Samoa, ae o Vanuatu e tele ituaiga Ava (100+) ma ua leva ona su'esu'eina auala mo le totona. Ia ia faateleina avanoa mo laau e totogo ma ola lelei, toto i le fanua pe a amata le vaitau timuga po'o le mae'a, o nisi tausaga e sili atu le tufatufaina o timuga e mafai ai ona umi se taimi o le totona, e masani lava o pona pito i lalo laupapa sili ona mafafaa o se lala, e le tupu lelei, o le vaega

ogatotonu e masani ona tupu lelei ma o le lala pito i luga vaivai e maua ai ni taunuuga lelei pe a totona vave i elelee susu susu i le taimi o le vaega susu o le tausaga, puipua fanua mai le susulu o le la e ala i le faia o se malutaga i laau e ufiufi i mutia po o vine. E tatau ona iai le paolo o le vasega pepe.

1. Toto tuusao e taatele i Samoa ma e maua i le faaagaina o tipi ma le soifua maloloina lala o 2-3 poga, tasi pe lua poga o lo'o tu'uina i lalo o le elelee, faateete ia aua ne'i fa'aleagina le pa'u o mea toto, pe'a uma ona faamama le palapala ma aveese maa tetele, faaoga se laau sao le lapoa e tutusa ma lala ava e fai ai se pu ma faase'e le mea toto ai i totonu ao e fauu i tua le laau ona faamua lea o le palapala faatamilo i le ava ua toto, ia mautino e togo le fasi mea i le itu taumatau i luga o le laau toto po'o le tupu.
2. I le avea ai ose auala pepe e toto le umi o lala itotonu ose lua papa'u ma faateete e le faaleagina le lala, ufiufi i le afa nisi o le elelee, ufiufi i mutia mago, vai i taimi uma, pe a totogo ma ola maloloina tipi e vave ese laau e leai ni susu tuao, toto i totonu o taga palasitika, faateete nei faaleagina aa, faapipii i le fanua pe a malosi ma maloloina.
3. Faaoga taga palasitika poo le faia o ni atigipusa fa'ato'a faaoga pusa suauu faaoga e tupi faafa ma pu, faatumu i palapala lelei tele, toto ata ta'itasi ma le fuga/Maka e faasaga i luga le ufiufi ma sina palapala itiiti ma se fasi nusipepa, faasusu ma faanofo i le vaitau timuga pe a malolosio lalau.
4. Otiti vaega maloloina ogatotonu o lala o le ava i ni nose tasi ma taoto i luga o le paolo i luga nusipepa, ufiufi i le tele o nusipepa ma faasusu seia oo ina totogo mai pona, e le o mea uma, faapipii fasipepa i totonu o taga palasitika poo pusa fatu laau o loo i ai le palapala lelei sia oo i le elelee e lava le malosi o laau mo le totona i le vaitau timuga.

E 4046sq mita i le eka, e mafai ona maua fua e 4046 Ava laau, mo faatoaga faafouina/carbon e toto ai laau lelei, ufiufi eleele, talo poo koko ma le Ava, mafaufau i le 1,600-2,000 Ava laau/pu'e i le eka a maea le 3 tausaga e masani ona maua mai le 16-20tone o Ava fou poo le 3.2-4tone o Ava mamago, e faatatau i le 10kg i le pu'e ava e tasi, e ui lava i nisi o vaega e oo atu ile 24-28kg i le pu'e Ava ua ausia, i le 4 tausaga. A putuputu tele le ava e le moua le malosi e manaomia e le maketi, talu ai le atuva o ava mo minioale.

Ina ia maua ni taunuuga sili, ia faapipii pea le tuasivi pe faaputu palapala i lalo o le laau kava e faamalosia ai ta'i fou, faavaivai vao ma taofi le laau o le rhizome/aago mai le malamalama. O le faaopoopoina o le faapalaga ma le ototoa o manu e mautinoa ai le malosi o le tuputupu a'e, afai e faaoga faapalapala faaulufale mai ia matua faaetete e nao sina vaega itiiti ma faamama aa ina ia taofia ai le mu, e tolu masina e faaoga ai le taimi e faaoga ai.

Spacing kava when planted as a single crop



E pei ona mafai ona va'aia mai le faataitaiga o lo'o i luga o le fa'ato'aga malosi o Ava e matua vavalalata le va ma o lo'o faatinoina, e masani lava o le afa e seleseleina i le 30-36 masina, toe afa i le 4 tausaga ma le isi i le 5 tausaga, o lenei meatotia e manaomia ai le iloiloina ma le toto, mea taua e pei o le lafulemu o le eleele, tulaga masani o le tau i le nofoaga, fa'aogaina o fanua

o lo'o si'osi'omia ma le fa'aauau pea o asiasiga mo le faaleagaina.

Mo le auina i fafo na'o le tagutugutu (Basal roots) ma a'a (Lateral roots) e tatau ona fa'aoga, e le tatau ona faatauaina se tatata lala mauualalo mo le auina atu i fafo ina ia mautinoa le maualuga.

Fa'ama'i, Fa'ama'i Ma Le Tau



Cucumber Mosaic virus (CMV)

Cucumber Mosaic virus (CMV) ua lauiloa foi o le mafuaaga o le fa'ama'i o Kava Dieback, o nisi o la'au e faafeiloai CMV, o nei; Fa'i, kukama, tamato, maukeni, tapa'a, sana, esi, ma isi, pe a mafai e le tatau ona totina ma Ava. O lenei faama'i (CMV) e foliga mai o lo'o a'afia i le va i Samoa ma e tusa lava pe fa'aoga mea toto lelei, e mafai e le ava ona faatupuina le CMV pe a fa'amamafa, o le puipuiga sili o le faia lea o gaioiga uma ina ia mautinoa le malosi o le ola maloloina o le Ava.

*Cucumber Mosaic Virus CMV/
Kava Die back*



Sisi Aferika

Sisi Aferika, o se fa'afitauli tuga, i le tele o vaega aemaise lava mo la'au laiti poo laau ua tau totogo. E ui e na ole vai sisi le fofo ile taimi nei, ae ua lau silafia lava nisi o metotia ua masani ai epei ole anufe mafolafola, lefulefu ma isi.

Sisi Aferika



Loi

O loi aemaise o se ituaiga fou ua ta'ua o le Singapore Ant e l iai se sootaga symbiotic ma mealy bugs o lo'o 'ai sua, e afaina ai le pa'u o se laau e mafai ai ona ulufale le CMV, ma l'u ai l Ava pe'a. O nisi la'au e mafai ona faafeiloai le CMV, o fa'l, kukama, tamato, maukeni, tapa'a, Sana ma ele tatau ona toto l le Ava. E Maua le oneone l le supamaketi a Chan Mow l A pia e tatau ona faafeiloai ma le suka aisa ina ia mautinoa e ave e loi le maunu l lo tatou ofaga ma faaleagaina ai le kolone, ae paga lea e manaomia togafiti faifaipea ona o le taatele o loi. O nofoaga o lo'o iai loi uliuuli lapopo'a (Loata) o lo'o tumau pea le sa'olotoga mai lenei fa'ama'i.

Nematodes

Nematodes e le mafai ona iloa e mata ae o le leaga o lo'o latou faia e faigofie ona vaaia aemaise lava i a'a e fa'afeteina ma pala, e foliga mai e sili atu le leaga pe a sili ma le le 4 tausaga, fa'aleagaina nemotades e mafai ai e fungi ma isi iniseti ina osofa'i a'a ma poutuutu e mafua ai i le ava mauualalalo e le talafeagai mo le maketi i fafo. O nisi o ituaiga o Nematodes e mafai ona fa'avaivai e ala i le totoina o le lega i tafatafa o Ava, o se mea lelei lona lua ae tataua ona fa'aeteete pe a selesele a'o le'i o'o i le ava aua e tataua ona 'alofia le faaleagaina o a'a o le ava.

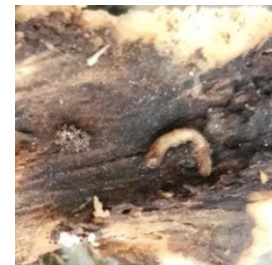


Nematode damaged roots



Kava weevil

O nisi taimi e maua ai le ava i totonu o le tagutugutu ma e mafai ona fa'ataga e sigi fa'aleagaina ai le tuputupu a'e malosi ma le seleseleina pe a ma le 4 tausaga e faaititia ai lenei ma le tele o isi faafitauli fa'atoa'ga Ava.



Kava weevil (1) and possible larvae of kava weevil (2)



Tau mago

O le tau mago o le fili le ao le Ava, o lea e taua ai le nofouta i tulaga masani o le tau faaletausaga i lou eria, mo se faataitaiga e mafai e Asau ona o'o i le matutu tele o le tau mai ia Iulai ia Oketopa, Setema o le masina sili ona matutu mo SAMOA.

E mafai faapefea ona tatou puipuia laau Ava mo le afa aso pe itiiti foi e ala i le totoina o se laina o le DADAP (Gatac/Erythrina variegata), Castanospora Alphanthi (Tamaligi uliuli), African Tulip Tree (Fa'apasi/Spathodea, Campanulate) i le va o laina ta'i lua pe tolu o Ava o le a puipuia ai fo'i le Ava mai le matagi, faafeso'otai le MAF Nu'u mo fautuaga lelei i le ufiufi o le ele'ele, e to'atele

Le afaifaifa'ato'aga e faatumauiina le vao e ola i le vaitau mugala na'o le vele solo i lalo o pu'e Ava.



Afa

Afai o lea se mea e mafai ona faia e faaitiitia iai le faaleagaina ma fa'amautinoa vave le toe fa'aleleia o lau fua o Ava?

O se tasi e tatau ona mataala, pe a mautinoa o lo'o lata mai se afa, ona fa'aoga lea o se naifi ma'ai, tipi lala o Ava pe a ma le 4 pona (faalagolago i le ituaiga) i luga a'e o le tagutugutu ma pe a mafai i luga a'e o s elala totogo e puipuia ai le pala mai le tu'u i totonu. A mavae le afa e tusa ma le tolu masina e vave tatupu le ava, o le a vave ona toe faaleleia la'au, e ui o nisi e le mafai. Toe tipi pe a manaomia mo le fa'aoga vali teuteu e ufiufi ai le lala tipi ma puipuia ai le pala. I le tulaga lea e vave ma malosi le toe fa'aleleia o le fua.



Laau

La matau laau e taofia ai le ola lelei o le ava e pei o, O kofaso e leaga tele mo Ava, Aoa, Pualulu, pulu vao, pulu mamoe, ma guava e tosina ai loi e tatau ona aveesea.

Seleseleina



Muamua, ia tipi uma ese (tulou) lalā pito i luga ole pona e fua i lona ituaiga ma faaaogā mo le toe totōina male toe sosooina o lau faato'aga Ava. Pe a o'o ile taimi e selesele ai, e mana'omia le onosa'i ma ia faato'aga ona fai, talu ai o a'a aupito i sili ona lelei ma e tele le vaega e ta'ua ole kavalactone o loo maua ai, e mana'omia ona eli male faateete, e faaaogā ai meafaigaluega talafeagai e faamalū ai le palapala lea e faataamilo ile laau ma maua ai ona a'a, (la tago iai le lima, eli aga'i ile faatausi'usi'uga ma aua nei motu/gau), ia lulu ese le palapala o loo pipii ile a'a, e faapena foi pe a sei atoa mai i luga le pogati e ono aafia ai uma a'a, (Basal roots) (Lateral roots), pe afai ae iai se a'a e motusia/gau, e manaomia ona eli ma aveese uma mai ile palapala. E tatau ona 40% le mamafa o a'a ninii(lateral roots) pe a faatusatusa atu ile mamafa o a'a malolosi(Basal roots). Mo se faata'ita'iga, pe a faapea ole mamafa o a'a malolosi = 100kg, o a'a ninii la e tatau ona = 40kg+, o nisi taimi e ono o'o atu ile 74% a'a ninii (lateral roots), pei ose tasi o matātī'a mai ise tasi o aiga mai ile afioaga o Falealupo sa galulue faamaoni ile aoina mai o a'a ninii nei, e tusa male 101% o a'a ninii pe faatusatusa atu i a'a malolosi.

E lē tatau ona e fa'atalalē ile tele ole tupe e tatau ona e mauaina lea o le a tanumia pea i a'a o loo totoe i le palapala.



Pe a o'o ile taimi e fufulu ai le Ava, ia mata'itūina le vaega o a'a poo le pogati o loo aliali i luga a'e ole palapala o loo iai le vaega e ta'ua ole chlorophyll (pa'u lanu meamata pei o lalā pito i luga) e tatau ona aveese le vaega lea, ona o loo iai se vaega oona (toxic alkaloids). Ole vaega atoa o loo i lalo ole palapala, e tatau ona matuā fufulu ia mamā, ma ia teu lelei talu ai ole vaega tonu lea o loo tele ai le vaega e ta'ua ole kavalactones. Ose tasi o metotia o loo faaaogāina e nisi ma ua mautinoa e lelei, ole soka lea ise vai ma sina vaega ose oa fufuluipu mo nai itula poo le pō atoa foi e tasi, pe a uma ona faaaogā lea ose masini fufulu palapala (water blaster) e lē malosi tele (1700-2000psi) ma fetuuna'i le saosaoa ina ia maua lelei ai le mamā manaomia.



O pona e tolu(3) pito i lalo o isi ituaiga o Ava, e tatau on fofo'e ese le pa'u lanu meamata ona faaaogā lea e ui e itiiti se vaega ole kavalactone e maua mai ai, ae e ese mai ai la le Ava Talo, o ona lalā maualalo, se'ilogā e mago ona tu'i loa lea ia malū.



Ole 4-6kg ole Ava mata e maua ai le 1kg ole Ava mago, e faalagolago ile ituaiga ole Ava, ole matua male vaega o loo faaaogāina, e ono mafai ona maua ai se fua faatatau e 5kg Ava mata/fou=1kg Ava lelei mole maketi. E tatau ona 12% pe itiiti ifo fo'i pe a faamago ina ia mafai ona ausia vaega mana'omia mo le auina atu i fafo, ma e faigofie ona iloa pe a manutinuti. Ina ia mautinoa le lelei, e taua tele le aua ne'i lapopo'a tele lona tipitipiina(tulou) pe afai ae lapopo'a tele, pe a o'o la ile taimi e faalā ai ole mago na'o le pito i fafo ae o loo susū pea le pito i totonu lea e faigofie ona sosolo ai le limu(pologā) ma e ono oona ai le tofo ma lē talafeagai ai mo le soifua malolōina.



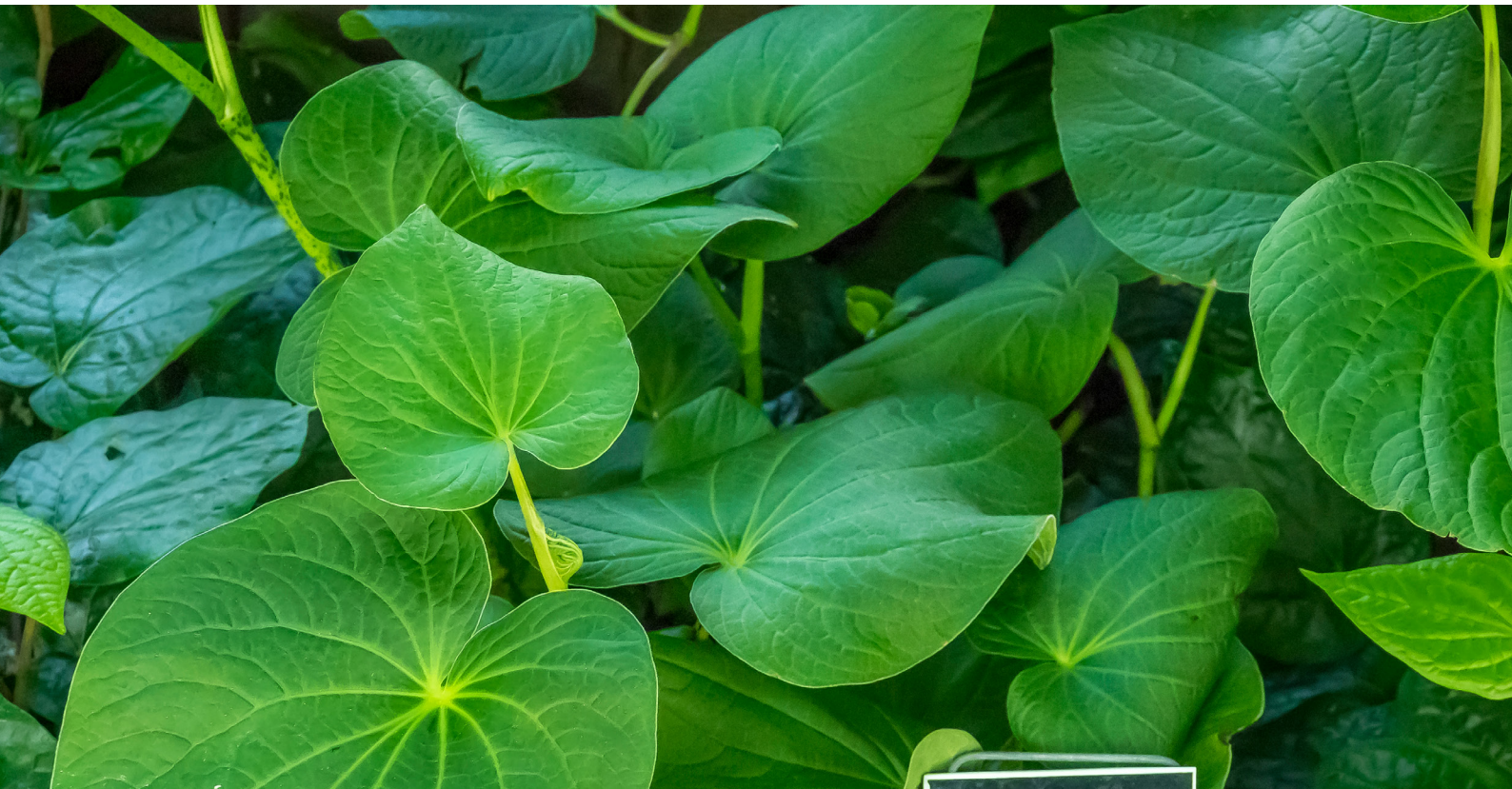
Not dry in the middle, mouldy

Vaega Autū/Taua mo le Silafia e Faifa'ato'aga Ava

- ✓ Totō na'o ituaiga lelei : Ava Le'a male Ava La'au
- ✓ Pe a talafegai e fautuaina le aua nei fa'aaogāina vailaau, (*Organic*) ae faaaogā auala ua masani ai, ma e taua tele mo le puipuiga ole tatou si'osi'omaga.
- ✓ Faaaogā palapala fou o loo i totonu o fale faamili laau (*nursery*), ma faamautinoa e le'o aafia lalā ole a totō ini faama'i.
- ✓ Totō ise vaega mati'eti'e ina ia faigofie ai le tafi ese ole vai.
- ✓ E lē fautuaina le totō tasi (*mono-cropping*), ma e tatau ona alofia le totō faafefiloi faatasi (*mix-cropping*) ma laau o loo aafia ile fa'ama'i e tau'a ole CMV pei ole kukama, maukeni, tamato, meleni, polo feū, fa'i poo le fiu.
- ✓ Laau e aogā : Dadap (Gatae)
- ✓ Laau e faaitiitia ai le aafia ile nematode: ano, makerita, eucalyptus
- ✓ Faaaogā vaega ufi palapala, faapalaga ma ia tapu'e palapala i vaega o loo iai a'a ole laau.
- ✓ Asiasi i taimi uma poo iai ni laau ua aafia ini faama'i, taumafai e mata'itūina le mafuaaga, tipi ese pe susunu foi lalā poo laau ua aafia, pe fa'aaogā foi se vailaau fana iniseti e aveese ai meaola ninii (*mealy bug*) ma loi.
- ✓ E mana'omia ona faamamā lelei le vao ma e ono avea ma faafitauli le fue e tau'a ole *mile a minute* pe a tuu ai pea e sosolo. E taua le faamamā fa'ataamilo o lalo ole Ava(pū-ava) ae tuu ai pea isi vao i autafa e faatumauiina ai le susū ole palapala pe totō foi le fue faalelei eleele e tau'a ole mucuna.
- ✓ Pe a uma ona selesele le to'aga, e fautuaina le aua ne'i toe totōina ose Ava ile vaega lea, ae ia faavāoa mo sina taimi pe totō ai foi le fue faalelei eleele poo gatae.
- ✓ Ia iai ni faamaumauga o vaega ua uma ona selesele, ituaiga o Ava, matua, poloka ua selesele, mamafa o pogati, vaega ua aafia ile nematode poo nisi lava faafitauli e ono alia'e.
- ✓ E 3-4 tausaga e totō ai le Ava a'o le'i seleseleina mo le auina atu i maketi i fafo.
- ✓ Faamautinoa ua matuā mamā le fufuluina.
- ✓ Fa'aaogā se naifi mama toe ma'ai e tipi ese ai (tulou) ma faaputu i vaega e pei o a'a, pogati, ma vaega pito i lalo ma faamautinoa ua aveese uma vaega e le aogā.
- ✓ Fa'amamā ese pa'u lanu meamata o lo'o pipii i a'a ma pogati sa maua e le lā.
- ✓ Ina ia mago lelei ma mago faatasi, e tatau ona tutusa uma le tetelē e tipitipi ai (tulou).
- ✓ Faaaoga se tapoleni mama e faamamago ai, ia taumamao mai le palapala e alofia ai le faaleaogāina i vaega e pei; palapala, iniseti, meaola, lapisi, timuga, asu, pefu ma mea e manogi leaga.
- ✓ Aveese vaega e lē lelei, ia lelei lona teuina, ia tuuese vaega ole a'a mai i vaega ole pogati ma tuu i totonu o ni atigitaga mamā. Faailoga taga ma tusi ai le suafa (Exporter's name), aso na teu ai, ituaiga o Ava, vaega ole Ava loo teuina ai, afioaga na totō ai le Ava male upu "Gaosia I Samoa" (*Product of Samoa*)
- ✓ A'o lei auina atu i fafo, e tatau lava ona su'esu'e muamua le oloa e siaki ai le vaega e tau'a ole kavalactones. Ole vaega aupito sili lava ona lelei e fua ile HPLC. O Ava ua masani ai ma e mautinoa lona lelei ua fautuaina mo le faaaogāina, a'o isi ituaiga e mana'omia ona malilie faatasi iai ma le tagata ole a faatauina.

Felagolagoma'i

A silasila i le le lava o tagata faigaluega i le tele o afioaga ona o le toatele ua tuua mo konekarate ma polokalame tau tagata faigaluega, atonu e aoga le mafaufau i le faatuina o se Asosi a le augaifaatoaga Ava I le Atunuu poo ni vaega o lo o malosai ai le galueina o le Ava, e galulue faatasi e faasoa atu punaoa aemaise I nofoaga e maua luga le manaomia o tagata faigaluega e pei o le sauniuniga ma totoina, Seleseina, fufuluina, ma tu'i.



Faasinomaga

1. Manu'a Taua o Kava I Hawaii ma a latou Pulega Tu'ufa'atasi-Nelesoni
2. Le tusi lesona o le Kava mo le auina atu I fao o le kava mai Vanuatu Me 2013 – May 2013
3. Vanuatu National Kava Strategy 2016-2025
4. Fa'atoaga o le Kava, Fa'asao Tulaga Fa'aleaganu'u, ma Pulega. Vaivai Tu'ufa'atasi o Punaoa I le Motu o Pohnpei – Mark Merhin ma William Raynor?
5. Fa'ato'aga ma Vaomatua Gaosia ma Maketi Fa'amatalaga mo Kava saunia e Scot C. Nelson
6. The Contemporary Pacific, Volume 21, Numera 2,265-297 2009 by University of Hawaii Press
7. Fiji Kava Quality Manual Sau'i, lolomi ma tufatufa fa'atasi ma le fesoasoani a le Malo o Ausetalia ma le Malo o Niu Sila.
8. Samoa Kava Standard – 2018.
9. Fa'ato'aga patino.

Annex 1:

Kava Production Cost and Income

Basic Data/acre

Plant Spacing (m) 1.6 x 1.6 = 2.56sqm @

Plant density 1,600 per acre

Average price Fresh harvest WST\$11.50/kg

Average price dried harvest WST\$57.50/kg

Harvest at 3 years (Commencing 30-36mths)

Yield range 10 - 25kg - conservative 10kg for projections.

Rural villages generally do not follow minimum wage rules as extended family will chip in to help, the favour is always returned in one form or another.

Gross Income	Years	1	2	3
Yield (kg/fresh)		0	0	16000
Price (\$/kg)		\$11.50	\$11.50	\$11.50
Total Gross income Fresh		\$-	\$-	\$184,000.00
An Exporter of dry kava has more Quality control issue				
Yield (kg/dry)		0	0	3200
Price (\$/kg)		\$57.50	\$57.50	\$57.50
Total Gross income Dry		\$-	\$-	\$184,000.00

Variable costs

Planting Material Seedlings @	\$20.00	\$32,000.00	\$-	\$-
Tools		\$315.00	\$350.00	\$385.00
Total variable costs		\$32,315.00	\$350.00	\$385.00

Labour Inputs (days/acre)

Fresh

Land preparation and planting	72		
Maintainance	36	36	36
Weeding	120	120	120

Harvesting			50
Total labour days	228	156	206
Labour cost per day WST\$30.00 (food not incl.)	\$6,840.00	\$4,680.00	\$6,180.00
Annual costs	\$39,155.00	\$5,030.00	\$6,565.00
Gross income	\$-	\$-	\$184,000.00
Total cost			\$50,750.00
Net income fresh			\$133,250.00

Additional labour costs to clean, chop and dry harvest

Labour Days			
Labour input for drying harvest	135		\$4,050.00
Net income Dry			\$129,200.00

Gross Income / yield / price Analysis

Costs fresh - 38%		Cost dry - 42%			
Ava - yield (kg/acre) fresh		Price per kg			
kg per plant		\$11.50	\$13.50	\$15.00	\$17.00
15	24000	\$276,000.00	\$324,000.00	\$360,000.00	\$408,000.00
20	32000	\$368,000.00	\$432,000.00	\$480,000.00	\$544,000.00

Note: results will vary with farmer care and resources such as fertilizer.

Note: If harvesting is done from 36-42mths the harvest kg yield will be greater.

Note: Tax and VAGST is not allowed for as the IRS has not designed collection from rural farmers.

Annex 2:

Kava Quality

Why do we need to improve quality through better methods and understanding of the Ava product we intend to export?

Quality requirements governing food production worldwide are being standardized and regulated, we need to comply to enter export markets, our traditional Ava production methods generally do not meet minimum Safe Quality Food production (SQF) standards set.

For Samoa to grow Ava exports we must meet these three objectives:

1. **Quality**, that meets the **importing** countries quality requirements.
2. **Best Noble kavalactone profile** that gives our **customer** the best experience.
3. **Highest kavalactone content** given limitations we face.

If we focus on achieving these main objectives, it is most likely we will grow Ava exports.

There main kava exporting Pacific Islands are, Vanuatu, Fiji, and Tonga let's be guided by what they do to develop good quality Ava exports, and set achievable goals, not only to grow our income for our families, contribute to social obligations and assist Samoa's export earnings.

Vanuatu, Fiji and Tonga's Ava export figures



\$22,792,036
(774 tons)

Vanuatu kava exports 2020



\$14,568,948
(328 tons)

Fiji kava exports 2019

Fiji exports in 2019 is equivalent to their kava imports from Vanuatu, local production exceeded 1,100 ton and they drank it all.



\$4,749,600
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Tonga kava exports 2020

Tonga has one quarter the land area of Samoa!



\$1,935,960
(223 tons)

Samoa kava exports 1998

(Approximately WST\$23.75/kg dry)
This was a record that dropped to 0.2 tons in 2002.

In 2022, the recent Australia Kava as a FOOD import pilot scheme, some 80+ tons of Ava entered Australia, of this total Samoa achieved just 20kg, the potential for improvement is great.

Achieving 200 tons of kava exports should be our first target (Matatia) to do this we need to progressively plant 250-300 acres (480,000 Ava plants/plots) to allow regular annual 200kg of export, local demand will require additional acreage.

Fiji focuses on 2-3 Ava varieties that the market wants, Vanuatu which has many good varieties with different names on different islands, encourage farmers to grow varieties that give the most pleasant effects. They do this because **the market decides** what we must plant if we wish to sell the fruits of our labours.

There are 4046sq meters per Acre, with mono cropping 4046 Ava plants/plots (depending on the rocks) might be possible, for regenerative farming where we plant advantageous trees, ground cover, taro or cocoa with Ava, consider 1,600-2,000 Ava plants/plots per acre, after 3 years generally yield 16-20 ton of fresh Ava or 3.2-4 ton of dried Ava based on 10kg per plot although, in some areas as much as 18-28kg per Ava plot has been achieved at 4 years, only top quality Ava should be exported. Only the stump (rootstock) and roots should be used.

Although the Pacific Islands diaspora, medicinal herbal and pharmaceutical production absorb exported Ava, there is a growing younger group of non-traditional Ava drinkers being introduced to Ava and they are very cognisant of the effects and names of famous Ava varieties, Samoa needs to establish 2-3 top varieties to build a customer base in this new and growing market. America has a growing number of kava bars that are set up with a cafe' style décor capturing a young generation looking for relaxing socialisation without the side effect of alcohol or drugs, we can embrace this growth potential only by providing top quality Ava.

Ava Quality

What is good quality Ava?

1. Noble Ava.
2. Age 3 – 4 years: Research has shown that on average Ava reaches its kavalactone strength at 18 months, from that point on it continues to gain mass and at 3 – 4 years achieves a reasonable yield to time ratio (Time is money), also there is less time for pathogens to damage the crop.
3. No rot or damage from pathogens: Rot contaminates Ava and usually indicates the presence of mold which is toxic.
4. Cleaned properly: Thorough cleaning of roots and stump must be done. All parts of the stump and roots that have been exposed to sunlight must have any green skin removed completely, this is because Ava above ground exposed to sunlight has alkaloids in the skin, these are toxic and must be removed.
5. Below ground stump and roots must be thoroughly cleaned of dirt. Some buyers may require the skin of the stump be removed.
6. Dried properly: It is important to chop Ava for drying such that pieces are small enough so drying is complete, a moisture level of 12% or less is required, test pieces by breaking, if they snap easily, it is dry if they bend it is not dry.
7. Packed properly: The normal packaging used locally is not airtight and therefore has a short shelf life in our climate, for export, an airtight polypropylene bag or other material that is airtight and preferably blocks light, must be used.
8. Stored properly: our tropical climate ambient humidity averages 80% or more and can result in dried Ava absorbing enough moisture to allow mold to develop, mold creates toxins. A good idea used by a farmer in Falealupo is to store properly dried Ava in resealable drums, if the seal is tight, prevents ambient moisture being absorbed, preventing mold.

Kavalactones

Ava plant part	Local name	Description	Kavalactone	Strength	Colour dried
Roots	USO	Called LATERAL ROOTS, dried, high demand export and local 33 – 65% of harvested weight depending on rocks	8 – 16%	Very high	Gray – brown
Rhizome	ATA	Called the STUMP or ROOTSTOCK, sometimes peeled Chips are dried for export or sold on local market Usually pounded and blended with roots Combination gives a Kavalactone average 8 – 10%	3 – 8 %	Medium	White – light gray
Rhizome skin	Fisi ga PA'U	Called peelings, Usually done to lighten the colour Usually drunk by the Ava pounding team as it is strong	7 – 11%	High	Gray – dark brown
Basal stem	LALA	First to third node depending on variety Ava Le'a 3 – 5 nodes, Ava La'au 1 node	3 – 3.5%	Low	White

The six major kavalactones & assigned numbers:

Kavalactone	Identifying number
Desmethoxyyangonin	1
Dihydrokavain	2
Yangonin	3
Kavain	4
Dihydromethysticin	5
Methsticin	6

Ava chemotype is determined by the kavalactone profile. There are at least 15 kavalactones which work synergistically to create the effect from different kava varieties, effects such as, encouraging free communication, uplifting, sleepy, relaxing, pain relief, stress relief, anti-mycotic and muscle relaxing. Through 2,000–3,000 years of human selection the varieties that give pleasant effects were replanted, whilst others were not. Vanuatu considered the source of Ava has more than 100 varieties, among these are what are known as

NOBLE VARIETIES that may be exported, the first six kavalactones in a chemotype profile make up 96% of the total kavalactones, with the first three making up to 70%, one can understand why buyers want to know the profile of the first 3 major kavalactones in each Ava variety, once a variety is identified buyers and consumers alike can be confident of a particular desired effect.

Fresh kava rootstock, when prepared by mastication, pounding or grinding, yields a greenish milky solution that is considerably stronger in kavalactone content and taste than the grey/lite brown mixture obtained from dry roots. The reason is, kavalactones are contained within cell walls of the Ava fibre, drying shrinks and collapses the cells making it difficult to rupture cell walls in order to release active kavalactones, thus the need to pound dry Ava into fine particles.

Although commercial production of some kavalactones (Kavain and methysticin) is done, the natural product has greater efficacy due to the synergistic action of all the compounds nature creates in Ava.

Noble Ava must have the first two in the kavalactone profile as 24 or 42, those with 246 and 426 are the most common, enjoyable, daily use Ava, varieties with a high percentage of Kavain (4) and Dihydrokavain (2) create a fast uplifting effect, due to its rapid absorption in the brain (Maximum absorption within 5min), Methysticin (6) has a powerful analgesic effect and is best in position three or four of the sequence, Yangonin (3) and Desmethoxyyangonin (1) are inert compared to Dihydrokavain (2) and Kavain (4), the overall effect of any chemotype is highly dependent on the proportions and total kavalactone profile as all work in concert to produce a given effect.

For the export market we must plant Ava with the best mix of kavalactones 246 and 426 at present these two varieties have been tested and are excellent Noble ava varieties.

1. Ava Le'a – 426351
2. Ava La'au – 426315

More testing and identifying of other Noble varieties must be done, Ava Talo SROS testing has given the following kavalactone profiles.

SROS NIRS testing – Ava Talo
Noble-426351
Noble-246351
Samoa Not Noble, Vanuatu Noble-423651
Not Noble-463
Not Noble-462

More research is needed to identify conditions that result in a Noble Ava Talo kavalactone profile, or to identify a particular noble variety currently identified as Ava Talo, because the morphology is not unique or distinctive enough to differentiate. It is possible that a group of cultivars identified as Ava Talo have a similar morphology, a shared high-water retention characteristic, whilst having different kavalactone profiles, ie chemotype. Vanuatu pay little attention to Ava morphology as they focus on the effects and enjoyment to determine if replanting is done to perpetuate the type.

High Level of Kavalactone

Not only must the variety chosen for the export market be a Noble Ava variety, it must have a high total kavalactone concentration, 8% or more will attract buyers.

Fortunately, Samoa can meet this provided only roots and stump (rhizome/rootstock) is prepared for export. The following Noble Ava varieties have been tested and good results obtained. We can be confident these will compete favorably, establishing the reputation Samoa needs to build.

1. Ava Le'a – 426351 / 13.40%
2. Ava La'au – 426315 / 16.69%

Annex 3:

Kava Economics

Introduction

As a supplier of Ava we must understand our customer, know our costs, determine an acceptable minimum margin price, be aware of the available supply compared to demand, thus we can estimate a possible market price. With this knowledge and keeping in mind long term associations are more valuable than short term gains, it might be best to negotiate a win, win price point with buyers and exporters.

The Farmers Commitment

The vital factor for us as farmers planning and committing to supply Ava for export, is that we grow a variety that meets market requirements, planting has to be continuous to achieve the equivalent number of plants to 4 acres (6,000+ plants/pu'e ava), so that one acre is harvested each year providing excellent regular income, one acre is planted each year, maintaining the cycle, this is just an example, one can make a commitment to plant 100 - 500 ava each year so that after 3 years 100 - 500 are harvested. the difficult period requiring commitment, faith in the future, and hard work is the first 3 - 4 years (Mathew 19:26, Philippians 4:13), careful budgeting each year is necessary.

Who is the customer?

Samoa has a population of 200,000 although more young people are enjoying Ava today, only a small percentage drink Ava (The market is small). On the other hand, the export market is enormous in comparison, therefore we need to understand who the overseas market is that presently buys a total of around 1,300 tons equivalent to USD\$42 million = WST\$110 million! From Vanuatu, Fiji and Tonga;

1. Pacific Island diaspora
2. Young generation non-traditional Ava drinker
3. Herbal remedy and pharmaceutical producers

We must understand what the market wants, plant the right variety, provide the best quality, control our costs whilst offering a competitive price depending on market conditions of supply and demand. For a historical note Samoa recorded 223 ton of Ava exported in 1998.

What does a buyer want?

The export market demands high quality. Buyers look for the lowest price possible for high quality Ava, they will contact exporters in other countries to gather information on price, quality and quantity. Vanuatu has a well established reputation for good quality, quantity, and stable supply levels, so they generally command a high price. Also Vanuatu have a national regulatory policy and personal who ensure the nation as a whole maintains its reputation for supplying not only good quality but what the customer wants.

Usually buyers preference is for dry Ava roots or roots and stump chips packed separately, occasionally traditionally pounded kava might be stipulated.



Quality: Noble Ava of high quality will be easier to market and command a high price. Ava that is clean, thoroughly dried, with a fresh kava aroma is the minimum quality.



Consistency: Buyers of Ava prefer to establish long-term business relationships with Ava exporters. Not only do buyers want high quality, they want consistently high quality and the quantity agreed to per shipment ie. RELIABILITY/REGULARITY. However, if the quality or quantity is not consistent buyers will find suppliers who are more reliable.



Part of the plant: The roots are higher in kavalactones and command a higher price than the stump chips. International buyers often prefer Ava roots, which they feel are better value and have the kavalactone level they want, although a growing non-traditional market may require a particular Ava variety of pleasant kavalactone profile, strength and powder grade.



Supply and demand: When there is abundant supply, prices will reduce. Conversely, when supply is low, prices will rise, cyclones, La Nina dry weather and kava dieback disease, have reduced supply at times. Once a relationship is established with a buyer it may be best to settle on a mutually beneficial stable price range rather than create a boom to bust situation, long term relations should be the objective.



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This was a record that dropped to 0.2 tons in 2002.

The foreign exchange earnings support many other sectors in communities, there is opportunity for Samoa to develop Ava exports as part of the Pacific group of Ava exporters.

Export Quality Regulations

An Ava processor aiming to meet buyer nation import quality standards, will be required to have or meet HACCP certification and regular auditing, for this reason processors prefer to do the complete processing in order to ensure Safe Quality Food processing procedures are observed, this will also assure the buyer receive product that can be marketed with confidence. This after all is the objective, the buyer sells, we supply and the circle continues allowing commerce to grow providing us income to fulfil our family obligations and improve Samoa's foreign exchange earnings.

For large farms that comply with export quality and quantity, large investments in Safe Quality Food processing can be done, to achieve higher value added margins.

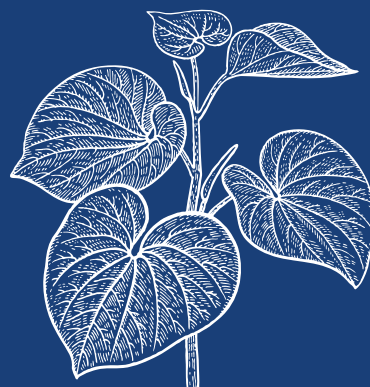
Based on what has been achieved in Vanuatu, Fiji and Tonga, we can enter the market at a competitive market price to begin building a good reputation while achieving good net profits averaged over three years per acre of WST\$34-40,000 per annum, harvesting a minimum of 3,200kg dry Ava 3-4 years old.

The vital factor is that we grow a variety that meets market requirements and regulations, planting is continuous so that with 4 acres is planted, one acre is harvested each year providing excellent regular income, the difficult period is the first 3 to 4 years.

Taking a conservative approach, based on known and tested noble Ava varieties, Ava Le'a and Ava La'au, if well cared for and harvested at 3-4 years, with cooperation between many farmers and export processors we will ensure, quality and quantity considerations are met long term. Keep in mind Samoa exported a record 223 ton of Ava in 1998 and now we need to carefully consider how to rebuild exports to achieve a target (Matati'a) of 200 tons.

The basic numbers that are generally applied to Ava are as follows:

1. For multi-cropping or regenerative farming, 1,200-2,000 plants per acre, depending on how rocky and deep the soil is,
2. 10kg fresh harvest per plant is used as the minimum at 3 years, although as much as 24-28kg fresh Ava per plant 4 years old have been achieved,
3. 10kg fresh Ava is equal to 2kg of dry Ava, only roots (Uso) and stump (Ata) are considered for export, some varieties can yield from 10kg - 2.1-2.3kg dry Ava,
4. Harvest is at 2.5-4 years, depending on growing conditions to achieve good yield.
5. Accrued costs for fresh Ava is estimated as 34-38% of gross income, depending on inputs such as fertilizer and chemicals to control pests,
6. Accrued costs for dry Ava is estimated as 40-44% of gross income.
7. Estimated averaged over 3 years WST\$34-45,000 per acre, clear profit, based on a conservative minimum yield approach (we have no significant export figures today), it may increase once export market presence is established.
8. Daily labour cost is based on WST\$30 not including food or in the case of pounding dried Ava, the Ava consumed during the time it takes to pound, which can be significant.



As many will confirm, a problem today is that many able bodied people are away on the seasonal worker scheme that has now increased to three years for some contracts, this requires a new approach to allow continued growth through specialisation and cooperation, it may prove to be a good situation in respect of export quality. Increasing the quantity of 2 or 3 noble Ava varieties may require some thought, planning and cooperation.

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