SERIES INTRODUCTION
In the year 2050 there will 9 billion people. How do we feed them safely, fairly and well? And make sure very mouth is fed.

Moses Shaha
Where I come from, everybody is a farmer. We have not known anything else. In the marginal areas of the coastal there are more pastoral communities and people are also embracing crop farming along with pastoralism. So this is who we are - this is our lifestyle.

COMMENTARY
Meet Moses Shaha – leader of Kenya’s small-scale farmers. Hoeing maize on his family farm by the coast.

Now - like farmers across the world he's being urged – plant crops not just for food but for fuel. He fears the idea is crazy. But is he right?

Moses
Why feed a car in Europe while I’m going hungry and you’re telling me to substitute my land where I grow my small crops, however small yeah, with biofuel crops – to me it does not make sense.

We must choose between the two – food or fuel. Simply because Africa for a long time has had a problem in feeding itself.

COMMENTARY
While Africa’s short of food - the world is running short of fuel. Until now the fuels that power prosperity have been mostly coal, oil and gas. But these fossil fuels can pollute, and are running short.

Whereas new technology means cars, even power grids, can run on fuels from crops – like ethanol from corn or sugar cane. So farmers have a choice – plant food or fuel. Trouble is farmers are rarely consulted.

Moses
The global biofuels debate is discussed at the international level in some other countries and then it is thrown down our throats to digest. They don’t even bother to ask us on the ground our opinion on the use of biofuels. It is not discussed at the level where it is produced - these are the farmers.

COMMENTARY
The black seeds of the jatropha tree - rich in fuel that can be burnt like oil. Jatropha’s the biofuel that everyone’s talking about in Kenya.

In theory jatropha could mean growing biofuels without jeopardizing food security. That’s because it grows in marginal land where food crops don’t flourish so well.

President Nwanze
There are particular species of crops which grow in very marginal lands sometime even saline lands which have high levels of salt. Jatropha is a good example and in fact jatropha grows more where the land is marginal.
COMMENTARY
So Moses could grow – not corn but jatropha. An oil well in his garden? He’s not yet convinced.

Moses
We do have spots of places where jatropha has been grown in homesteads and we have been trying to see if those seeds can produce enough oil for someone to be bold enough to say: “This is going to change my lifestyle.”

And what we fear is to replace food crops for jatropha crop. Agrofuels have been taunted as the wonder crop, the liquid gold that they say it is; we are yet to discover that.

COMMENTARY
The world’s increasing demand for biofuels over twenty years could need an area one and a half times the size of Kenya. So Future Food took Moses on a trip to help solve his – and our – dilemma. Food or fuel.

He’ll be in for some surprises.

Moses' first stop from Kilifi his hometown – is just three hours away in the Tana Delta and the village of Didaade.

Moses is about to discover how controversial biofuels can be – at least for local farmers.

Abdulla Bile is a pastoralist on a community ranch. He fears for his future if community lands are turned over to biofuels.

Abdulla Bile (translation)
What scares us most is “the jatropha project” because they believe that our land is idle. We depend on livestock for our livelihood, yet they want to start the project on our grazing land. We can see the signs that they want to start planting jatropha.

Moses: Do you know why they are planting it?

Abdulla: We do not know. We feel that it will be of no benefit to us. If we have to leave, then there will be war.

COMMENTARY
Most land here is community-owned. And Abdulla Bile fears local leaders may hand land over to biofuels companies – foreign or Kenyan – without his agreement.

Moses is worried.

Moses
Listening to Bille, I could see him express his passion out that the things - the way things are at the moment does not look - augur well for them.

COMMENTARY
To find out more Moses is off to see the local representatives of a Canadian biofuels company, Bedford Biofuels, who are planning jatropha plantations in the Tana Delta.

Moses
From here, I am going to visit Bedford jatropha plantation I want to relate what Bille has been informing us - the fears that they have.
COMMENTARY
Bedford plan to plant biofuels on up to three hundred and sixty thousand hectares they say they hope to “secure”… always legally. They say they’re committed to improving the standard of living of local communities including education, healthcare, nutrition, housing, and clean water.

Moses is shown round.

Joel Ruhu
We started here a few months ago. And when we started, as you can see the surrounding, it’s nothing but bush.

COMMENTARY
Bedford say they’ll have food crops, cattle and timber on their land… as well as jatropha.

Joel and Moses exchange

Joel: When Bedford came here they were looking for where they could put up this project – and jatropha requires a lot of land.

Moses: Why did you think of putting the jatropha pilot phase here?

Joel: They say jatropha grows best in semi-arid areas and when they heard that jatropha can do well in these ranches; it doesn’t need a lot of water, it doesn’t need a lot of rain, then they said “why don’t we also try?”

Moses: How long do you suggest it will take to give the first seed pods or…

Joel: I want to show you; this plant here is eight months old. Just a short period as it is, you can see it has already given some fruits. You see, this is the jatropha you are talking about, yeah? And every seed, if you open it up, they either carry two or three of these seeds. These are the jatropha seeds, ready for crushing.

Joel: From day one I have been with this project, and I’m the one who took the investors to the local people who are the owners of these ranches to sit and negotiate. We have a signed agreement - a legally signed agreement - which spells out what jatropha will do, and what the role of the farmers will be as far as working together as partners is concerned.

Moses: Are these fears imagined or assumed or they real? Are they real to feel the way they are feeling right how?

Joel: I don’t know who is assuming they will lose their land because this land belongs to the local communities. Some of these ranches were started way back in nineteen seventy five, and for the last thirty years or so they have not been getting any income because of that persistent drought. And when Bedford came and subleased the ranches now the owners are getting annual income which they have not been getting before.

Moses: Do you see any future conflict?

Joel: No conflict, and we don’t see any conflict coming here.
COMMENTARY
About five per cent of Africa has been sold or leased to outside investors in the last decade – much potentially for biofuels.

But experts sympathetic to biofuels say there’s enough land for food and fuel.

Cliff Spencer
There is certainly plenty of land available for both food and energy production. There is no doubt about that. It’s how we go about this that’s the important thing. And to some extent it has been demonized, and in general has a bad smell about it.

I think that is a false view – we’ve been using crops for energy since time immemorial and eighty per cent of energy in Africa comes from crops one way or another from the growing of biomass. We simply need to update that to make that efficient. And there is an enormous opportunity presented in that.

COMMENTARY
Moses says he’ll wait to see how the opportunity in the Tana Delta project turns out.

Moses
We need to know more we need to interview more farmers. So we need more time to work into the project, into this project in Tana Delta and see the outcome of it.

COMMENTARY
To find small-scale farmers who’ve been growing biofuels a while, Moses heads back south. On the way he’s researching biofuels elsewhere in the world.

He particularly wants to talk to a well-known critic of biofuels who’s concerned the USA has been turning forty per cent of its corn into the biofuel ethanol – with potentially serious economic impacts.

Moses: David Pimentel is it?

Prof. David Pimentel: David Pimentel, yeah…

COMMENTARY
Professor David Pimentel has studied both corn in the USA and jatropha in Africa.

Moses and Prof Pimentel exchange

Moses: How do you think it affects us here in Africa if a lot of your corn is turned into ethanol?

Prof. Pimentel: Converting corn into ethanol is taking large quantities of food – corn is food – and so we are converting corn food into ethanol and this is contributing to food starvation – some in the US but more internationally.

Moses: In your opinion, should biofuels be the answer to solve Africa’s energy problems?

Prof. Pimentel: No, biofuels should not be used and I want to emphasize that, should not be used to try to solve their energy problems.

Moses: Well, what I learnt from our conversation with Professor Pimentel is that he was not encouraging us in Africa to go the way America has gone. They need their energy for their own users in their own land but for us we need the land to produce enough food to feed ourselves.
COMMENTARY
About a fifth of Kenya’s land is farmed for food crops. Almost all by small scale farmers like Moses. So could they grow biofuels alongside their food crops? To find out Moses is heading back from the Tana Delta south to the Shimba hills.

Peter Ndung’u has been growing biofuels for six years. He’s found jatropha hedges keep elephants out. But he also sells the seeds for fuel – intercropping jatropha with food crops.

Warnings jatropha would compete for water, he says - unjustified.

Peter Ndung’u and Moses exchange (translation)

Peter Ndung’u: This is where I plant maize and Jatropha mixed with passion fruits.

Moses: Does the Jatropha negatively affect your food crops?

Peter: I have been intercropping it with maize since 2006 and have not seen any harm in it. Look at how healthy these passion fruits are.

Moses: Would you advice other farmers to follow your example?

Peter: I would advise them to plant jatropha and get some income and also from the passion and the maize. They can reap the benefits of three crops at a go from one farm

COMMENTARY
Moses is still skeptical.

Moses
It looks a good thing, but still remember I say there were very few trees. Two the production was very minimal. It was not convincing. Had I seen some twigs bending under the weight of fruit or pods then I would have thought otherwise.

COMMENTARY
But – we pointed out – Peter’s still growing food crops too.

Moses
His food security may not be at risk - but still what is his proceeds from the jatropha plants? Are the jatropha plants enough to give him a livelihood? No.

COMMENTARY
So is Moses too skeptical about biofuels?

He’s come to Energy Africa to meet the people who introduced jatropha to Peter and a hundred other local farmers. They’re a Kenyan company who farm sustainable oil crops... and food for the tourist trade.

COMMENTARY
Moses hears they started cultivating jatropha seven years ago. With high hopes. Using their own oil seed crushers.

Eirik Trondsen
We believed, here was a golden opportunity – poverty reduction, clean fuel, we believed agriculture keep people in the countryside instead of having them going into the cities and slums. Suddenly we have a crop that promised to combine all those things; and that made us excited.
Moses: Excited to see the farm.

COMMENTARY
But others farmers didn’t stick with jatropha as long as ‘model farmer’ Peter did - and Moses is about to learn the consequences.

Moses and Eirik Tronsen exchange

Moses: What are some of the significant challenges that you may have come across?

Eirik: One thing is growing jatropha, the other thing is getting a high yield. It’s a new crop and it hasn’t been domesticated properly. So how to get a high yield, how to prune it correctly, how to be guaranteed a production which makes it viable; that is still a challenge.

Moses: Would you whole heartedly advise small scale farmers in their small holdings, to give it all in jatropha growing?

Eirik: I would ask them to focus first on their food crops, but I would be very cautious at this stage of the plant which is early stage without the plant being properly domesticated to recommend it to small scale farmers.

COMMENTARY
With such uncertain evidence, Moses is wondering about other countries in Africa.

Southern Africa produces about two per cent of the world’s biofuels. Moses wants to know if a leading advocate of biofuels in Zambia can offer encouragement.

Moses: In my journey I really needed to know, beside my home country, what is it about jatropha and other fuel crops? So I decided to Skype and talk to Professor Sinkala in Zambia.

Prof. Sinkala and Moses exchange

Prof. Sinkala: Hello?

Moses: Hello Professor.

Prof. Sinkala: Good, I can hear you now.

COMMENTARY
Professor Sinkala tells Moses that that given a choice between food and fuel, small-scale farmers will always make sure they’re growing enough food for their families.

So biofuels can safely be a source of cash, without endangering food security.

Prof. Thompson Sinkala
For a farmer, the first target is food. They will sell their produce in the food market. It’s only what they can’t sell that is when they will now throw a bit into biofuels market. Therefore, I don’t see the disruption to the food production.

COMMENTARY
The Professor says if Zambia used a quarter of its land for biofuels it could earn almost five times it current GDP.
Future Food: Kenya - food or fuel?

Prof. Sinkala
We could more than transform the continent. Kenya would be rehabilitated. I've been to Kenya…

COMMENTARY
… the Professor not quite winning Moses over…

Moses
Still he did not convince me that - what about food security? What about our land? Because if it is the answer to Africa's energy problems, it means we have to abandon food crops and put all our land under fuel crops.

And if it is so, where are we getting the foods?

Interviewer
That's not true…

COMMENTARY
As our Kenyan director pointed out, nobody's suggesting all land should be devoted to biofuels

Couldn't we strike a balance?

Interviewer
There could be a balance. You could put some. Because don't forget people need energy….

Moses
Yes, of course that is the way people look at it - scientists look at it, entrepreneurs look at it, that is the way they're convincing us.

But as I told you, one example is the intercropping of one farmer in Kenya… Where I visited Mister Peter there wasn't enough to convince me that he's getting enough to feed his family. In the same context, even in Africa, it is the same story. Even if we intercrop, how much land will we need to get enough oil? It means vast, vast hectares and acres.

COMMENTARY
Vast acres - Moses fears - like those now being devoted to biofuels worldwide - as the USA, the EU and others try and move to so-called cleaner fuel.

The temptation to switch land from food to fuel has been blamed for pushing up world food prices.

Though the UN agency which assists small farms - IFAD - is cautious of such claims.

President Nwanze
Most of the arguments are perhaps in the US where a lot of corn goes into biofuel production. But when you look at it globally, it's probably not the cause of price hikes or food shortages.

This year and last year there have been severe climate impacts on crops - we're looking at the impact of climate change on our agricultural systems. So it's not just biofuel production.

COMMENTARY
There’s still the key argument for jatropha - it grows in marginal lands where little else does.

Moses driving three hundred kilometres inland from the Shimba Hills inland to Mtito Andei - classified as marginal land like two thirds of Kenya.
So can biofuels help – not big companies, but small scale farmers on marginal lands?

Boniface Muoki scrapes a living on a five acre farm so badly affected by drought he rarely grows enough food for his himself and his wife. They rely on food parcels for much of the year.

What Boniface does grow - the biofuel jatropha…and on his own farm, not some huge plantation….the drought-resistant crop first suggested by a private foundation. Small-scale farmer Moses helping his hard-pressed colleague out for the morning.

Moses and Boniface Muoki exchange (translation)

Moses: So does Jatropha benefit you more than growing the food crops?

Boniface: Jatropha is ten times more profitable than when I farm food because when the drought comes we cannot rely on those food crops. Jatropha therefore provides an alternative income for me to buy food.

COMMENTARY
Moses hoes on thoughtfully. Small scale farmer saved from hunger by biofuels? He wants to know more.

Moses
We are going to see those who introduced this jatropha farming to the first small scale farmers here - and why they believe that this is the way the farmers should go to be able to make ends meet.

COMMENTARY
The jatropha project’s run by the Vanilla Jatropha Foundation. The seeds are brought into town to be processed. They’re grown by the three hundred farmers the foundation’s introduced to biofuels.

Foundation director Lorna Omuodo still with some work to do convincing Moses.

Lorna Omuodo
This is basically how the seed looks – we store it - we make sure that insects are kept away.

COMMENTARY
Lorna says the farmers are offered twenty shillings a kilo… about twenty US cents. Moses politely reserves judgment – for now…… meantime learning how easy it is to make jatropha oil.

Lorna
Open the valve…

COMMENTARY
Looks good – but Moses isn’t convinced Boniface’s success shows the whole project’s working.

Moses and Lorna Omuodo exchange

Moses: As we went out there to see Mr. Boniface, he is one of the model farmers but the indicators of success of this project were quite absent and do you think that this is the most viable project that you think can bring these farmers out of poverty?

Lorna: What has he produced out of that land for forty eight years he’s been living there? And in fact, this is the first time he is producing something out of that land.
COMMENTARY
Moses is about to learn something that could finally dent his skepticism. Biofuel farming has encouraged innovation in food farming.

Lorna
There is a holistic angle to this magic crop. There is the environmental benefits, the ecological benefits. Apart from that, the improvement on soil, they might even actually end up in the end of all this magic benefiting from growing other crops because of soil rehabilitation, the moisture and things like that.

Biofuels and the benefit for Africa is not exports; it's for local improvements and needs - that's the truth of the matter. It will never make a big industry for exports, it will never make a big industry - but it will improve the lives as they are.

Moses
I saw that it takes such a long time and such a big field to make meaningful production, and if that production is not very high, it means you are getting very little oil.

And when I heard about the price they offer - twenty shillings per kilo - oh dear, I was wonderstruck. I just don't know how farmers are going to make it – make ends meet if they are prompted to only grow jatropha...

If Lorna is able to give a meaningful producer price, then I will join her to convince farmers, right. But if it is twenty shillings a kilo, I'm still not convinced.

COMMENTARY
Moses now uncertain what to advise other farmers. Though not yet ready for biofuels himself.

Moses
Moses Shaha would not plant jatropha as yet. Because I am torn in between the stories I have seen.

COMMENTARY
With Kenya only growing twelve per cent of its own food, concerns about handing land over to biofuels are inevitable.

But despite fears of so-called land-grabbing, biofuels clearly present opportunities.

Cliff Spencer
I believe that biofuels and bio-energy represent an opportunity for farmers to improve production, diversify their income - a lot of thought has to go into this. It's not a case of large plantation agriculture. Systems have to be employed that ensure that local farming expertise and local communities are thoroughly involved.

The bio-energy is a natural asset of Africa, and it's very much for Africa to decide how they use that resource. And my heartfelt wish is that it's used sensibly and if it is it will be a rich resource for them in developing their agriculture and in reducing their energy costs and having clean renewable energy.

COMMENTARY
Moses is back on his family farm on the Kenyan coast. He still has the same concern about biofuels as many farmers he represents. Biofuels may be the future – but this is a continent with a history of famine. So it’s not surprising if this very influential farmer is for now putting food before fuel.
Moses

If you take away our land, where do we grow our food? How do we live off our land? If you have to beg food from other countries outside the continent, it means we cannot feed ourselves - then what about that?

The most important thing for us as small scale farmers is food security - that's the most important thing.
Film Information: Keya - food or fuel?
tve.org/film/future-food-kenya/

Kenyan Farmer and campaigner, Moses Shaha is cynical about 'biofuels', energy extracted from crop plants. He journeys through southern Kenya where farmers are starting to grow jatropha, to understand if this biofuel crop is a threat to farmland and food security as he fears, or whether growing energy crops can inspire innovation and help the environment long-term.

Series information: Future Food
tve.org/series/future-food/

A series of 6 x 25-min films exploring key questions around global food security.

In discussions of feeding the planet, many now argue for a new way of thinking about food technology, food policy and food science. Since the days of the “Green Revolution”, which promised enough food for all but which ultimately reduced crop varieties, created a dependency on fossil fuels and depleted the land, studies have shown that “agroecology” – the application of ecological principles to the production of food – could double food production in the next 10 years sustainably. But can low-yield sustainable farming methods feed 9.5 billion people by 2050? Without GM crops or synthetic fertilizers, can farmers increase food production by 70 percent?

tve information:
tve.org

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tve films are broadcast to hundreds of millions of viewers, screened to audiences ranging from policymakers to rickshaw drivers, and viewed online worldwide. Our films inspire change.

Our aim
To make people think. We inform. We spark debate. We inspire change. And we’ve been inspiring change for more than 30 years

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