

## Transcripts



### Toxic Trail - Part One (Broadcast 23rd April 2001)

Comm: "Russ Dilts has worked with farmers in Asia for over a decade. We follow him on the toxic trail across south east Asia. We'll find that regulations and commitments to corporate stewardship mean little in the field. We'll talk to the victims of pesticide poisoning and discover how farmers could be better off by letting insects and fish do the work of the chemicals. Cambodia is Russ Dilts' main worry. The recently opened borders are a highway for pesticides."

"Poorly educated, impoverished farmers believe they are a miracle ally in the war against pests. But some of the chemicals crossing this border are listed by the World Health Organisation as Category 1A - extremely hazardous to human health. The Cambodian farmers simply have no conception of how dangerous these pesticides are. We wanted to start the trail in the pesticide manufacturing plants. But despite requests routed through the industry association we could not gain access to the factories."

Russ Dilts: "Okay, we're now in Bang Pu. This is the first of Thailand's industrial zones. Many of the world's corporate citizens are based here. You see names familiar to you, such as Zeneca and Bayer. A number of these companies are major pesticide producers, so-called life science companies. These companies import active ingredient for pesticides, which is then formulated here with inert ingredients such as water, surfactants, emulsifiers, other things, to become the final product, which is marketed here and in other neighbouring countries."

"We're standing in front of one of the formulation plants of a multinational chemical company. We would like to know what goes on behind these walls, but unfortunately as at this time we have not been allowed to get inside with the camera. We would like to see what actually they're formulating and in what quantities, and if possible, where this is going. One major chemical we'd like to follow is methyl parathion. It's an old chemical. It is causing problems in rice in several countries in this region. Methyl parathion is categorised as 1A, extremely hazardous, by the World Health Organisation."

"Bayer is one of the major producers of the chemical - however there are hundreds of Thai firms producing their own labels of methyl parathion, often under less regulation than multinationals such as Bayer. I believe they and perhaps government regulators believe that it can still be used safely, that it can be used appropriately, can be used on the correct crops at the correct times. However we think we might see something different when we get to the actual fields and the villages."

Comm: "Our first stop on the toxic trail was Prachinburi, midway between Bangkok and the border town of Aranyaprathet."

Russ Dilts: "Right now we're going to pick up the toxic trail on the way to the Cambodian border. We'd like to see just what range of stocks they have, what volumes and what they're selling in this area."

Comm: "Methyl parathion is top of Russ Dilts' list of the most dangerous chemicals. It must be handled with extreme care. It's not illegal to produce or sell methyl parathion in Thailand. But it's one of the dirty dozen - a list of the worst"

chemicals according to the Pesticide Action Network - an international trust monitoring pesticide use worldwide."

Russ Dilts: Okay. This is methyl parathion by Bayer. If you look, look closely, you'll see the international code warnings. These are, okay, gloves, if your eyes are good you can see this, this is face mask, feet covering, neoprene boots, this is a symbol for keeping out of reach, store carefully, it's dangerous to aquatics and fish, always wash your hands, boots, face mask, gloves, and the old skull and crossbones. This is a category 1A. The LD50, meaning the medium lethal dose, for this is 14 milligrams per kilogram of flesh, or body. This is an old and quite dangerous chemical, Folidol. We notice that all of our major makers are represented here to a range of Thai manufacturers, to American Cyanamid, all the players are here. For the most part well labelled."

Comm: "Store owner Krisorn Kulkiet Partsert has been selling pesticides to wholesalers for 20 years. He believes they're for the local market, not Cambodia."

Russ Dilts: "We think there are several forms of trade. You will have wholesale trade here, selling off to retailers in Cambodia, you'll have Cambodians coming across, who will then distribute direct to farmers - you will probably also have Thais coming in to invest in contract farming. Now they may be bringing their chemicals direct from Bangkok, so there are several ways in which the pesticides cross the border for several types of distribution channels. We're moving now into downtown Aranyaprathet, where we'll try to find some of the actual stores doing retail and wholesale of pesticides that will cross the border into Cambodia.

"Same, so we have the methyl parathion from Bayer, imported active ingredient coming in from, or the pure chemical active ingredient, from Europe probably. This Foxinol, almost an identical bottle, except it's a local company and the active ingredient is probably coming from China."

Comm: "The international companies are not able to stop the fakes entering local markets. Carbon copies of the originals to capitalise on the multinationals' marketing, almost identical except for the safety labelling. But it's the originals which Patchana Juajitrapran sells to cross border traders."

Female Translator: "Few people buy the new products. Some brokers buy it, Folidol, to sell to the local people. But since the opening of the border Folidol is popular. The buyers like the small packages rather than the bigger one and most of them are brokers who buy to sell to the Cambodian people."

Russ Dilts: "We're now travelling the last few kilometres before the Thai/Cambodian border. What I think we'll see here is a lack of regulation in terms of what is flowing across the border into Cambodia, including pesticides. Aranyaprathet is one of a number of very porous border points, where products like pesticides can flow into Cambodia.

"This border, every day thousands and thousands of push carts come across, virtually unregulated. This post has only been open for about two years and today it's wide open. This allows goods, including pesticides, to flow freely into Cambodia."

Comm: "The irony is that although methyl parathion and 50 other category 1A formulations are outlawed for use in Cambodia, it is not illegal to make methyl parathion in Thailand. Whatever the niceties of the legal regime may be, it makes very little difference here on the border with Cambodia. The country has no means to stop the toxic traffic from Thailand."

Nuth Sakhon, Cambodian Ministry of Agriculture: "You see in the border we cannot control it, we have no fully capacity to control the importation from outside like from Vietnam or from Thailand."

Russ Dilts: "We've made it across the border now into Cambodia. We're now on the main road out of Poipet leading to Sisophon. In Sisophon we'll see our first sites, look at our first stores, see our first fields."

Comm: "Chinese New Year, Sisophon. It didn't stop farmers attending a workshop where FAO extension worker Yim Vuthuang and epidemiologist Helen Murphy try to assess the numbers of people experiencing the symptoms indicating pesticide poisoning."

Helen Murphy, Medical Epidemiologist: "I have been working on all of these countries and the first exercise I do with farmers is I say what do you think the signs and symptoms of pesticide poisoning are, please think about only things that you yourself have experienced, and I've

really been quite impressed that in Cambodia, they will give me practically all the symptoms that we know about. 40% of the farmers that I've talked to will say yes, I've experienced vomiting, and I consider that moderate poisoning.

"The point really is not to produce decimal perfect data. The point is for farmers, through self-discovery, to understand the health effects by observing and doing their own studies among each other so they understand the total amount of exposure they're getting. That's the real importance of these. But it turns out, I think some of the data is fairly valid."

Russ Dilts: We're now entering a village about 20 kilometres east of Sisophon. Here we will see Helen and Vuthuang working with farmers to observe other farmers handling highly toxic pesticides. I think this will begin to dispel the myth that these chemicals, these poisons, can be handled safely by farmers under actual conditions in rural areas."

Comm: "They ask what Beuk Suon is using and about the labels. He can't read. Vuthuang, accompanied by another farmer trainer, goes with Beuk Suon to the field. They need to check he has no symptoms, so go through a checklist before he sprays. Beuk Suon guesses that the label is saying he must wear gloves. It's academic, because he doesn't own a pair. With no protection he's mixing a highly toxic cocktail including two brands of methyl parathion - Folidol and Crabicide - both category 1A. Beuk Suon drenches his vegetables several times, washing out the sprayer in the community pond. He's oblivious to the danger methyl parathion and other so-called organo-phosphates pose to the nerves in his body."

Helen Murphy: "Organo-phosphates primarily affect your nervous system. Basically what they do is interrupt nerve transmission. Starting from the top you'd get central nervous system problems where you'd get irritability, insomnia, vomiting, trouble walking, you'd have inco-ordination, staggering, ataxia, excessive sweating, shortness of breath, diarrhoea and abdominal cramps, and finally your, your skeletal muscles. This causes the muscle cramps, and the extreme muscle weakness and fatigue."

Helen Murphy: "A lot of farmers tell us that they develop a certain tolerance. When they first start spraying they say oh yes, I get lots of symptoms, then after a while they say oh I get

strong and I get used to it, and then suddenly out of nowhere they will really get sick, and thereafter they're very, very sensitive, they're hypersensitive."

Comm: "As symptoms can occur overnight we return the next morning. Beuk Suon is cheerful and joking - so far, he seems healthy. Vuthuang still takes time explaining to him about the dangers of what he's doing. Afterwards he picks the vegetables for market."

Russ Dilts: "This leaf crop, sprayed just 14 hours ago, is now on its way to the market. It's now the consumer's turn. This is a short duration leaf crop, which could probably get by with little or no pesticides. If we look closely now, the spray was being applied to get rid of a small beetle, which makes small holes in the leaves. This beetle is still alive and well despite the application of the cocktail. Did he fly? Let's get him to go. Take off, brother. Now I can make him hop."

Russ Dilts: "This is our first stop at a market in Cambodia, to see how pesticides are actually retailed. This is actually very interesting. We have the usual suspects. Folidol very prominent. Lacphose. Which are the legal and still sealed chemicals from major companies in Thailand. Most of what we're seeing is in its original packages, coming from Thailand and Vietnam. The cost of a glove is roughly a dollar. If a farmer's only earning \$215 a year, this is three days' profit."

Russ Dilts: "We're now flying over Siem Reap. This rice bowl fed the ancient Khmer kingdoms and allowed them to grow and flourish.

"This is a group of Cambodian rice farmers. In the off season, they plant patches of vegetables. What they're doing now is making a body map. They'll map out the signs and symptoms that they've experienced before when spraying and applying chemical pesticides."

Ning Chhay: "There are many things that the farmers raise and I have written down here, but the most common one is eye irritation, the blurred visions. There was three among the participant here that used to get vomit, and ten of them just nausea, the feeling like vomiting. And we look at the body, they, the farmers said that they feel difficult to breathe, and in some cases what they feel they have, they feel cold or sweating on their back."

Russ Dilts: "What we've just seen in terms of mixing these five chemicals and spraying this on cabbage, is this unusual in Cambodia?"

Ning Chhay: "Of course this is usual practice, that the farmer in Cambodia commonly practice. And the more important thing that the farmer using his bare hands to mix the insecticides together. Very dangerous."

Russ Dilts: "Right, and also if we look at these fields, they're infested with diamond-back moth, larvae on every leaf, diamond-back moth flying around them and they've been applying probably every other day, to no effect...This is what we talk about when we talk about the pesticide treadmill. You have insect pests, you spray insecticides, you get resistance, you get more insects, you spray more pesticides, you get more insects, you spray more insecticide. Until people can get off that, they will continue to poison themselves, they will continue to lose their crops. What we've just seen here is normal practice. Normal practice as defined by what farmers in Cambodia do in their fields on a daily basis. In one season this happens if not millions of times, hundreds of thousands of times. This is, it's outrageous, it's obscene. These are chemicals that cannot be used safely under conditions in Cambodia. They cannot use protective gear because one, of the heat. If you cover yourself in plastic you would suffocate - two, it is simply unavailable...Three, it would be unaffordable."

Comm: "Ning Chhay explains that some of the farmers view pesticide as a status symbol."

Ning Chhay: "Some farmers they say that oh chemical insecticides are good. The same as they who has the motorcycle has the car in the village, what do you think of this, they are the modernised people, is the perception. And also some, the farmer get some advertisement from Thailand and from Vietnam through the border. Some, so I can say that some middle men, they are small businessmen that come across the border and talk to the farmers, you can use this products so you will get higher yield and can kill all the insect."

Comm: "As in Sisephon the market in Siem Reap is full of highly toxic category 1A pesticides."

Russ Dilts: "What is your number one seller pesticide here? Okay. Folidol, Mevinphose, so

Mevinphose and methyl parathion. Class 1A both. About how much do you sell per week?"

Stall owner: "About 50."

Russ Dilts: "50. 50 bottles a week."

Comm: "From the Thai border in north west Cambodia the trail led us to the ancient heartland and finally to the farms around Cambodia's capital of Phnom Penh. It's the country's most important vegetable growing area - feeding a population of just under a million."

Russ Dilts: "We started in north west Cambodia, near the Thai border; now we're east, off of route 1 on the way to Vietnam, about 200 kilometres from the border. Here we're going to look again at vegetable farmers to see their practices and to see how they're using pesticides. What we've been seeing before is people spraying low on cabbage and even on rice, walking through it, getting a lot of exposure, dermo exposure waist down, plus leaks all up their hands and some down the back. On these beans he's spraying up above his head and you feel the wind coming. Basically spraying here into the wind, you're coating yourself with a mist of pesticides."

Comm: "Pech Savoeun recalls a recent incident of serious poisoning."

Male translator: "When I was in the field I felt dizzy and then I couldn't walk. When I returned home I vomited and asked the doctor to give me a serum. I have to use pesticides. There is no other alternative. I'm a farmer, there's no other work."

Comm: "Pech Savoeun is one of a group of farmers who are attending a 'farmer field school'. The sessions are designed to help them recognise the ill effects of the most toxic pesticides and reduce their use. When questioned many in the group admit to having felt sick."

"The farmers have carried out a survey of what's being used locally. Surprisingly there are equal amounts of pesticide pouring in from Vietnam and Thailand. It's the labelling that is the main concern of the Pesticide Action Network."

Sarojeni Rengam, Pesticide Action Network: "And the labels are all either in Thai or in other, Vietnamese language, not in the Khmer language, and so even if the farmers can read

the labels, they will not be able to understand. These labels are not in the language of the country so it's a really dangerous situation. In Cambodia the farmers have no awareness of the dangers of pesticides and they been using it in really dangerous conditions, and they store it in their homes, in really you know, close to where they sleep, where they eat."

Comm: "Farmer trainer, Sok Is visits farmers to see where they are storing their pesticides. At Heng's home he is disturbed to find that DDT is kept in the bedroom, near a rice store and a bag of herbal medicines. Sok Is is also concerned that the spray cans are within easy reach of the children."

Russ Dilts: "During our trip we've gone and done samples and seen a number of sites, but CEDUC, the first and possibly the only Cambodian NGO dealing with agriculture, has done a lot of research and training and advocacy, specifically on the pesticide issue. We hope that from their experience they can help verify our impressions and provide us with more data on the actual extent of the pesticide problem in Cambodia. We're here in the village with CEDUC specialist Dr Komar and one of the farmers he's been working with on the pesticide issue."

Dr Komar: "Before it was not (inaudible) it was much more. He went to the doctor and the doctor gave him an injection, so that this is less now."

Comm: "Chen Leang's skin irritation combined with his inability to sit still, interrupted sleep and lack of concentration point to pesticide poisoning resulting from long term exposure."

Russ Dilts: "We've come through Cambodia and we've seen a few sights, but only in a week's time. You've been doing this work with CEDUC seriously here with lots of farmers, and what have you found?"

Dr Komar: "Among the farmers we met one among three used to experience poisoning. Sometimes we used to take photo, this is when, they, after they have problems with pesticides, or you see that is their hands, they use pesticides and through this contact you can see the symptoms."

Russ Dilts: "Severe contact dermatitis."

Dr Komar: "And, and, and like this, this one, she drank the water from the rice field."

Russ Dilts: "We see that a lot in rice, you make actually a toxic soup which then goes into your drinking supply. This is a severe case here doing gastric lavage."

Helen Murphy: "The scope of the problem is most serious in Cambodia. I've been really appalled by what I've seen here. I've never seen such hazardous pesticides used in any country in such a hazardous fashion, and I've never heard so many stories of what I consider moderate poisoning from, from occupational use. But I think the problem is, is pretty widespread all over south east Asia. In Indonesia we estimate about 9% of farmers will get sick at any given time over a period of a year. We found in our study in Java that 20% of spray operations will be associated to up to three symptoms of pesticide poisoning. My biggest concern is that this issue is really being missed in this country. We have a population that's highly vulnerable in terms of their health status - they have almost untreatable malaria, high prevalence rates of tuberculosis. Typhoid is like a common cold and they're facing one of the largest AIDS epidemics in the region. Therefore the donor money is focused on these health issues, but the breadwinner farmer and this issue of pesticide poisoning, I think is being totally missed. This whole issue of safe practices I think is false security. There is no way that a farmer can absolutely not be contaminated in the field. He would have to wear a space suit, and that's impossible here."

Russ Dilts: "We're in the large market on the eastern outskirts of Phnom Penh. This market supplies all the pesticides to the vegetable growers who supply all the vegetables to the capital city of Phnom Penh. This is our last stop on the toxic trail. Let's see what we can find. Okay, we're here in, deep inside the market. This whole corner of three large stalls is floor to ceiling in pesticides. We'll pick one and look at it in a little more detail. This will give you an idea of the shelf space which might be a proxy for how much they're selling of different products. Bayer products, this is American Cyanamid, Mevinphose, another 1A."

Comm: "Despite the view from companies in Bangkok that many of the problems originate with fake pesticides, this was the first time we'd seen a genuine copy."

Russ Dilts: "This is clearly, what looks to me like a Bayer knock-off. The seal is different, the label's different, the trademark's a bit different - very close. First one we've seen. All the ones we've seen in the villages have been like this, coming out of the crates with the Bayer on it. The sticker's bad, the colour's different -even the Bayer symbol looks different. And that will be how much, please?"

Comm: "At all the markets we'd visited in Cambodia, Folidol was the most popular product."

Russ Dilts: "With what we've gotten so far on the toxic trail, I think we'll take this back to Bangkok and talk to some of the producers, including Bayer, and see what they have to say."

Comm: "Watch programme two to find out what the companies have to say and see how farmers are developing more eco-friendly solutions for themselves."



## Toxic Trail - Part Two (Broadcast 30th April 2001)

Comm: "In programme one Earth Report followed Russ Dilts of the United Nations Food and Agriculture Organization (FAO) as he traced the route of pesticides from Thailand to Cambodia. Dilts found claims by the manufacturers to exercise controls through 'product stewardship' to have no meaning in Cambodia."

Russ Dilts: "After a week in Cambodia on the toxic trail, we're back in the city of Bangkok. During this last week our colleagues here have been contacting the government and the industry association and specific multinationals, to see if we can meet with high-level policy

makers, with business leaders, and if we can make any visit to actual factories. Andrew."

Andrew Bartlett: "Hey, how are you?"

Russ: "Good, good, good."

Andrew: "How was the trip?"

Russ: "It was great. Got back last night, got the dust washed off. What we found in Cambodia is what I've been seeing since '93, but worse.

"We're seeing all the major players flooding across from both borders, so pesticides flowing in from, from Vietnam and from Thailand. Stuff that's banned, 1As, 1Bs, 1As, 1Bs. We went to stores and just taped the racks from top to bottom and there are all the usual suspects, every multinational company, plus the Thai firms, plus the formulators out of Vietnam. They do have their sub-decree out, but as usual they, how can a small government, new government like Cambodia's deal with the pressure of multinational companies? Companies we estimate spend over \$1 billion on sales and marketing alone, in the 12 countries of Asia we work in. \$1 billion just on sales and marketing, and that clearly just overwhelms anything that can be done by a staff of two in a Cambodian ministry. Anyway, what's - that's my news. What's happening here?"

Andrew: "It's been very frustrating trying to get a meeting with anybody. Nobody wants to talk to us."

Comm: "For nearly three months, we had tried to get an official reaction to FAO findings but did not succeed. Finally we had to make do with a recorded exchange between Andrew Bartlett and Wyn Ellis of the Asia Crop Protection Association which represent industry, and with Rolf Dieckmann, Group Manager of Bayer Thailand."

Wyn Ellis: "Hello."

Andrew Bartlett: "Wyn, hi. Russ, Russ Dilts and the rest of the crew are now back here in Bangkok, I mean they want to discuss the issue of product stewardship. Companies like Bayer have these wonderful policies in which they state that they'll do whatever they can to protect human health and the environment, and yet these chemicals are freely available and the companies must know this is happening, everybody who goes to Cambodia knows this is

happening. What, what is the industry doing about this?"

Wyn Ellis: "I think that there are two issues here. The first is that Bayer cannot, Bayer Thailand cannot be responsible for what is happening in Cambodia."

Andrew: "Okay, we know that the Cambodian government has difficulties in enforcing these current laws, and if the company knows that happens, then shouldn't the company consider stopping the production and sale at the top of the distribution chain, if it knows that further down the chain, these things are being misused?"

Wyn: "Yeah well I mean I'm not in a position to, to, to you know, to advise which chemicals are safe, which chemicals are not safe. If you have a question regarding specific products, and it seems you do have a beef about Folidol here, you know, I think that we, we would always be bound to refer you back to the particular relevant manufacturer or producer."

Comm: "A few hours later we got through to Rolf Dieckmann, Group Manager of Bayer Thailand."

Rolf Dieckmann: "What kind of, I mean what, what, what are you looking at?"

Andrew Bartlett: "Well I think, I think there's an issue here of responsibility, and if you know that a product is being used illegally and is being used in a situation where it's very dangerous, then you have to take responsibility for what's happening down the distribution chain, especially if you have a policy on stewardship."

Rolf Dieckmann: "Which you know we do have. Since I've been here I've obviously tried to find out what the products are that are going, if any, into the neighbouring countries. Obviously we know there is cross-border, illegal cross-border trade with agro-chemicals, okay, but exactly what products they are, we haven't confirmed yet, the only thing we found was some products coming in from Vietnam. Well I appreciate the, the feedback and as I said that's a big concern for us, particularly all this information, and we will take this further."

Russ Dilts: "Okay. Okay, thanks very much."

Andrew: "Thank you."

Comm: "The Pesticide Action Network (PAN), which monitors pesticide use worldwide believes the company is already aware of the problem."

Sarojeni Rengam: "I know that PAN Germany and the Bayer co-ordination group has brought this issue up to Bayer, and they basically have answered by saying that they, they do not know what happens to their pesticides once it goes, you know, to, to a country like Cambodia, where they say they have no control, but what we are saying is that this is, you know, they're making a profit out of this, huge profit, and they should be responsible not only on the production and sales but how it is used in the field. If it is causing pesticide problems then it should be withdrawn. It should not be used in those kinds of conditions."

Comm: "Several weeks after our telephone conversation in Bangkok there was an official reaction. Industry still seemed to perceive that the problem is fakes rather than their own products. "Industry condemns the illegal trade in counterfeit pesticides and continues to work with governments and the distribution chain throughout the region to implement tougher action to eliminate this threat." The only person prepared to be interviewed on camera was the ex-governor of Bangkok, Dr Bhichit Ratrakul."

Dr Bhichit Ratrakul: "I understand why you cannot find anyone to talk about this, because the business itself is 30 billion per year. It's a huge amount of money, 30 billion a year, and without that this kind of big business, people would not like to touch, and I think that now under new constitution, we have to protect the quality of life. The government has sole responsibility to protect the quality of life of the people. We have to look at different angle, that investment, that's a business opportunity, that's economics, but this is life and people."

Comm: "Dr Bhichit Ratrakul is behind an innovative scheme."

Bhichit Ratrakul: "When I became the Governor of Bangkok thought that 10 million people in the city of Bangkok has to consume this kind of contaminated vegetables every day without knowing that those are the deadly poison products from the farm, and I just want to let the people learn and avoid the contaminated products. Later on I found myself that not just only to let the people know in advance what's going on, but we asked the, even with the local

government, to do something to prevent that kind of product to be sold in the market."

Comm: "In just three years Bangkok has safer vegetables."

Russ Dilts: "We're in Si Moom Wong market. This is the largest fresh market in Thailand, 16 hectares. Literally thousands of trucks pass through here daily. Unlike what we saw in Cambodia, where vegetables were sprayed with pesticides and hours later went to the market, the vegetables here are inspected, they're inspected for a safe level of residue before they go to the market in Bangkok, before they get onto the tables of consumers."

Comm: "With nearly 2,000 truckloads of fresh produce arriving each day, the technicians manage to test around 70% of the produce. Just 5% is rejected each month."

Bhichit Ratrakul: "The consumer always think that without the holes, without the scars on the leaf of the vegetable, is good to consume. In fact, anything on the vegetable that you can find, a hole or a scar on that, means it's pesticide-free."

Comm: "Encouraged by the Thai authorities and royal household, many farmers have already turned to more ecologically sound farming. In Chainat district, farmers have started their own insectory. First they collect insects from the field, then they select and breed natural predators like the assassin bug which eats worms, and the ladybird beetle which consumes aphids. The insectory's success can be measured by its popularity as farmers come from neighbouring districts in search of 'green' bugs. For Dr Ratrakul, looking after Thai interests alone is not enough."

Bhichit Ratrakul: "We not just only try to solve the problem particular just only for Thailand, because some day for the Thais people, maybe we have to import vegetables from Cambodia, from Burma. In that case, we would be able to, we will not be able to solve the problem. I think that we have to look at the law to minimise the importation and the production of the pesticides. We have to tackle the problem on the basis of regional approach. Not just only the capital of Thailand, Bangkok, not just only the country of Thailand, but the whole region of SE Asia should be working together."

Comm: "The ecologically aware farmers in Thailand are part of a wider movement which

began in Indonesia. Known as integrated pest management of IPM, this way of farming only resorts to pesticides when they are absolutely necessary."

Russ Dilts: "In Cambodia, we saw farmers caught on what we call the pesticide treadmill. We're now in Indonesia, flying to West Java, where we'll see an alternative to this poisoning of the fields. Farmers here are both creating and spreading an ecological method, an ecological approach to agriculture. We're going to go on our first stop to look at the beginning of the movement, a movement led by farmers themselves. Some have called this is the quiet revolution, something that's happened from village to village and farmer to farmer."

"This movement started actually in 1986, when then President Suharto banned the use of 57 formulations of pesticides on rice, and declared that farmers should learn about integrated pest management and more ecological methods of farming. Since then a very strong national programme has grown."

"In this district alone, over 23,000 farmers at last count have graduated from farmer field schools. What we're seeing here is going on simultaneously in nearly 200 districts of Indonesia. Here this movement is led by 400 farmer trainers, trainers who have, farmers who have graduated from a field school and then moved on to more complex activities, organising science and field studies and working to build their communities. If aliens landed on earth, the first person they would meet would most likely be a rice farmer. It is the largest single employer on the planet. Over 1 billion people make their livelihood from farming rice. IPM, or integrated pest management, starts in the rice field. This is the book, this is the classroom. We learn about the ecology of the field and how it functions."

"Bill Settle, behind us, the stranger in the rice, is an agroecologist from the University of California. He also spent five years in rice fields in Java looking at ecology, the ecology of the insect community, the aquatic ecology and soils, seeing soils as a living entity, the foundation of IPM. This is an unsprayed rice field. It is full of insects. Bill is now with the farmers as they do an observation and a collection and do their own agroecosystem analysis."

Bill Settle: "What we have here is about a three hectare plot of land, and in this three hectares we have at least 1,000 species of insect. Maybe

only 1% would be actually causing problems, so our job has been to try and figure out what exactly is an immune system in a rice field. You might think of the, the spiders and the beetles and the predatory flies as the white blood cells, in, in, in the body of this rice field, and the alternative food sources and these plankton-feeding and organic matter feeding insects, would be like the, the immunisation."

Female translator: "The stemborer starts off in the seed bed and progresses to the young larvae than then burrow into the plant causing what we call a dead heart."

Bill Settle: "In our analogy of, of a rice field immune system, you have to look at pesticides as something comparable to the Middle Age practice of bleeding the patient. They didn't know about white blood cells, they didn't know about antigens and antibodies, they, they would, would bleed the patient to remove the bad humours. Now, this is effectively what you're doing with pesticides. You're killing of the immune system of the rice field by using insecticides."

Bill Settle: "She's saying that this is a dragonfly and that it's useful for eating brown plant hoppers as well as other, other pests. From the from a farmer uses an insecticide early in the season to the time in which he might see a resurgent outbreak of, for instance, the brown plant hopper, is usually going to be about 30 to 40 days, and unless that farmer understands the mechanism, what's going on in the field, that is the pesticide is actually killing the beneficial insects, as well as the pests, they aren't going to necessarily intuit the fact that they sprayed 30 days after transplanting and 60 days after transplanting they have a brown plant hopper outbreak. That's why you need an educational programme that looks at cause and effect relationships of what's going on in the field. An education is a long-term investment, and it's, it's going to cost some money. It's going to be literally an investment."

Comm: "Understanding the ecology of the field entails more than gaining a knowledge of bugs and plants. Here farmers are learning about soil properties and discovering solutions for themselves."

Female translator: "Before we had the farmer field school we didn't have the confidence to speak. We were just force fed packages from above, from the government. We had to use

them without any explanation as to why we should follow these instructions and packages."

Comm: "In a neighbouring district, IPM has increased farmers' understanding of their crops and helped them develop management skills which have led to a thriving agribusiness."

Russ Dilts: "What we see here is something that started very small. It started as a field school about eight years ago. If we look here, we see something that many corporations or organisations attempt to do but have trouble with it. It is a strategic plan, beginning fully with problem analysis, goal analysis, programme matrixes down to actual activities. This group took on the problem of seed. They're now producing their own quality seeds and distributing them across ten villages. They took on the problem of high prices of fertiliser. They're now producing organic compost and fertiliser, and last year they sold 35 tonnes of this."

"This is a clear example of the jargon word empowerment. Power that can be created by people and by communities as they gain control over their lives and over increasingly broad issues that affect them. This is the essence of IPM. In this whole hampa ran here, this whole set of contiguous fields, is completely pesticide-free. You notice the traditional method of fish-growing - this canal along the edge is full of fish, which you cannot have with pesticides in the field. The women here are doing a seed selection process. They're in the field selecting the best tillers and the best grains, and they're selecting quality seeds off an area larger than 50 hectares. For thousands of years, farmers have been the selectors and breeders of rice. This changed some during the green revolution, and it's changing now as we hear of GMOs. GMOs and seed control by a handful of multinational companies instead of by millions of farmers. We're seeing now where farmers are coming back and regaining control over seed, over something very vital to their lives."

Comm: "Preparing rice seed for sale doesn't end with selection, but the farmers think it's worth it."

Female translator: "The reason we grow our own seed is because if we buy it from the market the price is higher and the quality is less good. We've tested our seed against government labelled seed and found our seed to be better quality. After people try it they want to keep buying it."

Comm: "The farmers sell their seed through their own IPM co-operative store which is also the site of their organic fertiliser enterprise. Like their seeds, the farmers are convinced their produce outstrips commercial competition."

Male Translator: "The results are better with the organic fertiliser because the soil becomes more fertile and the plants are healthier because there's more organic matter in the soil."

Comm: "With large numbers of farmers converting to IPM, there's little demand for pesticides."

Russ Dilts: "What's interesting about this store is that we just came out of Chilloncha Village. There, there used to be a lot of small kiosks selling pesticides, like we saw in Cambodia. Now there are none. If you want to get insecticides you come here, to the capital city of the sub-district, and even here your stocks are, are small and limited, and you're moving over to fungicides, herbicides and bio agents, though we do find a few things here that are in the process of being banned. The law's unclear now, they should have been banned several years ago."

Comm: "The ecological methods developed by IPM farmers are not confined to rice."

Russ Dilts: "We're not in Pangalengan sub-district, in the hills of West Java, about 40 kilometres south of Bandung. We're going to see some farmers doing cabbage. This is the major crop in this area. After Cambodia, and from what we've heard in other places, many doubt that you can grow cabbage without using chemical pesticides. People further doubt that farmers can train other farmers to grow cabbage without pesticides. What the farmers are doing here, they'll be examining plants. They do a transect across the field on marsh plants, they're measuring height, they're checking for leaf damage, they're checking for insects, they're checking soil to see the moisture, doing analysis of the various factors in their agro ecosystem. This is the observation and data collection. One, one important thing about a field school is that it's held in a village in real farmer fields. As the farmers are working, people passing by in the road, including this man, who sprays, will stop to see what's going on. They'll recognise farmers they know, they'll begin to ask questions. This is how IPM starts to spread across a community."

Comm: "In a field nearby, farmer trainers examine the extent of leafminer infestation in a pesticide-free potato patch, which has been set aside as a test site. They collect the yellow fly traps which attract the leaf miner and replace the sticky plastic. Before returning to their lab, they gather leaf samples."

Russ: "What we're seeing here is farmers involved in a scientific process. These are farmers who've been traditionally ignored in this. They have a store of local knowledge, a store of experience in their fields. In IPM this is especially important, because biology is ferociously local. We have variances from field to field, we have variances from season to season, and habitat and microclimates vary to a great degree. Farmers have traditionally been offered package solutions. They've been seen as problems. Here we've seen how farmers are actually looking at parasitoid populations, looking at effects on, on other insects, capturing over time, data, analysing data, which allows them to access other forms of knowledge, allows them to link to research efforts in other parts of the system."

Male translator: "After we get the data on parasitoids and leaf miners we plot it across the season. Through this graph we can see that the critical period of leaf miner infestation occurs 40-60 days into the season."

Comm: "Understanding the ecosystem of their fields helps farmers reduce the amount of pesticide they use. This leads to other benefits."

Male translator: "There's no special market for IPM products. I get the profits up front because I save on inputs, especially pesticide. I still hope for a special market for IPM products, which will give us more motivation to develop this kind of agriculture. On potatoes I've cut the cost of production by 30% while on cabbages between 50-60%. And I can use the savings to cover my daily needs and other productive activities."

Comm: "As a farmer trainer, Isep conducts many different field experiments."

Russ Dilts: "In this field we're seeing farmers tackling clubroot. They're using a combination of agronomic measures, cutting the roots, and also applying some local, traditional botanicals, to assist in keeping the infection from spreading, so farmers are becoming expert, farmers are gaining a foothold in a number of cropping

systems; rice, rotation crops like soybeans and even the complex highland vegetables."

Comm: "IPM doesn't mean all pesticides are banned."

Russ: "We're not saying that we can instantly get rid of all pesticides in the production of vegetables. What we can do, however, is go from a very high, in fact egregiously high level of pesticide use, down to something more rational, and this is simply done by farmers learning how their crops work, observing insects, observing disease, building on their local knowledge of agronomic practices, so we can cut it down up to 80% almost immediately. From there, farmers begin to do their own experiments on local problems and work toward a more organic agriculture."

Comm: "Anxious to share their knowledge, the farmers, who've formed a national network, have also set up a newspaper."

Male translator: "First the 'newspaper' is important because farmers are scattered across the country and we have IPM farmers throughout 11 provinces, and second we need to share new ideas and innovation across farmers."

Russ Dilts: "Farmers comprise the largest silent majority on the planet. This is changing. Their newspaper, Putani, goes out in 10,000 copies a month. It reaches policy makers, the general public and the farm community. It is written and developed and distributed all by farmers. There are a range of advocacy issues that farmers are tackling. Just while we've been filming, groups of IPM farmers have met with national parliament, with the national commission on human rights, and in West Sumatra, at the province level, a major protest was televised when farmers were trying to get pesticides out of their agriculture, so farmers are working on the simple principle of speak truth to power. Take real issues from the field and make sure they're heard. Farmers are gaining voice."

Male translator: "We really hope that through this media we develop a process for empowering farmers because no-one can really empower farmers except farmers themselves. Farmers must do it themselves."

Russ: "We've come to the end of the toxic trail. We've seen the damaging effects that toxic chemicals, pesticides, can have on the

environment, upon human health and even upon the crops they're supposed to protect.

"We've ended up here in Indonesia, seeing something different, seeing farmers who are gaining voice, taking charge and pushing for a more ecological agriculture. Now's the time of choice. Are we going to go down the same path, which may threaten our very existence, or are we going to side with farmers and ecology?"



**For Further Information:**  
[www.ToxicTrail.org](http://www.ToxicTrail.org)