

REPORT OF A CIVIL SOCIETY FACT-FINDING VISIT TO PERAMBALUR DISTRICT IN TAMIL NADU TO INVESTIGATE INTO PESTICIDE POISONINGS

Background:

Pesticides are poisons that cause acute and chronic health impacts on those exposed. Intentional, occupational and accidental poisonings from pesticides have been a regular scourge for India, as in other countries. Despite the menace that they are, and despite the fact that successful farming is possible without the use of such deadly chemicals, Indian pesticides industry is thriving and growing. The pesticides industry has not been held liable for the poisonings that they have caused, in addition to numerous adverse environmental impacts.

After the horrific instances of deaths and large scale hospitalisations of many farm workers and farmers due to pesticide exposure and poisoning, in Vidarbha region of Maharashtra from July to November 2017, and later in Telangana (October 2017), the menace is now surfacing in Tamil Nadu. In Perambalur district which is the largest cotton-cultivating district of Tamil Nadu, by the time this fact finding report was written, four deaths have been reported due to pesticide poisoning. One other death each has been reported from neighboring Salem and Ariyalurdistricts. Media reports indicate that at least 200 people have been treated for pesticide poisoning in various hospitals so far. It is in this context that a civil society fact finding team was constituted, consisting of representatives of numerous organisations, to investigate into the matter.

Fact Finding Visit:

The fact finding team consisted of the following members and organisations:

- KavithaKuruganti, ASHA (Alliance for Sustainable & Holistic Agriculture);
- Ananthoand Parthasarathy, Safe Food Alliance;
- K.Balakrishnan, SwarajAbhiyan;
- Saravanan, PUCL (People's Union for Civil Liberties);
- Ramesh Karuppaiya, ThamizhKadu;
- Swaminathan, Karunganni Cotton Growers' Group;
- S Nandakumar, UllatchiUngalatchi; and
- N Ganesan and V Vetrivel, Barefoot Academy of Governance.

The fact finding team members visited five villages, on December 4th and 5th 2017, with a smaller team making the visits on December 6th 2017 also – 1. Sithali village in Veppur block, Kunnamtaluka, Perambalur district; 2.Odhiyam village in Veppur block, Kunnamtaluka, Perambalur district; 3.Pasambalur village in Veppanthattai block, Veppanthattaitaluka, Perambalur district; 4.Koothur village in Alathur block, Alathurtaluka, Perambalur district; 5.Kallakudi village in Ariyalur block, Ariyalur district. 5 death cases and 5 hospitalisation cases were documented in detail by this fact finding teammembers in these villages. As part of the fact finding, the team interacted with the following people:

- Meenakshi of Sithali village in Perambalur district, who is the wife of (Late) Raja, and the deceased's father, Ramasamy;
- Anandhi of Odheyam village in Perambalur district, who is the wife of (Late) Selvam;

- Annabackiyam of Pasambalur village in Perambalur district, who is the wife of (Late) Arjunan, as well daughter and son—in-law of the deceased;
- Saraswathi of Koothur village in Perambalur district, who is the wife of (Late) Ramalingam;
- Rajeswari of Kalakkudi village in Ariyalur district, who is the wife of (Late) Raman, Ariyalur district
- Nallaperumal, a sprayer in Sithali village who was hospitalised with acute pesticide poisoning and had been discharged;
- Annadurai s/o Arumugam, a sprayer in Sithali village who was hospitalised and later discharged;
- Krishnaswamy s/o Chinnaswamy, a sprayer in Sithali village who was hospitalised and then discharged;
- Solaimuthu, a sprayer in Pasambalur village who was hospitalised and discharged;
- Kavitha, a woman sprayer in Koothur village, Alathur block of Perambalur district, who had to be rushed to a hospital after being affected by pesticide exposure.

This team could not investigate the case of Suresh Kumar who died of pesticide poisoning, of KizhakuRajapalayam village in Salem district. At the time of this report being finalised, one sprayer called Murugesan (45) from Kulathur village in Perambalur district is undergoing intensive care treatment at KMC private hospital in Tiruchirapalli.

The team also interacted with the following other stakeholders, to understand the situation comprehensively:

- Ms V Santha, District Collector, Perambalur district;
- Mr Sudarshan, Joint Director of Agriculture, Perambalur district;
- K Jayabalan, Deputy Director of Agriculture, Perambalur district and 2 Agriculture Officers;
- Dr G Anitha, Dean, Medical College & Hospital, Tiruchirapalli;
- Dr K Dharmalingam, Hospital Superintendent, Government General Hospital, Perambalur;
- A private medical practitioner in a popular private hospital in Perambalur;
- A pesticide dealer in Pasambalur village

The team would like to record that all persons met provided time to interact with the team members, though data and information was not always forthcoming or even readily available.

Details available of those who died of Pesticide Poisoning in 3 districts in Tamil Nadu so far

SI	Farmer Name	S/o	Age	Village/ Block/Taluk	Date of death	Relatives	Pesticides used
1	R Raja	Ramasamy&P eriyammal	35	Sithali, Veppur block, KunnamTaluk	25.10.2017	Meenatchi-Wife +1 Female child (8yrs) +1 Male child (6 yrs)	Monocrotophos Acephate Profenophos
2	S Selvam	Solaimuthu&A rayi	28	Odhiyam, Veppur block, KunnamTaluk	25.10.2017	Anandhi-Wife, 25 years +1 Female child (3yrs) +2 Male	Monocrotophos Acephate growth promoters like

						children (1.5 yrs & 3 months old)	Cotton plus
3	Ramalingam	Ramasamy & Periyammal	52	Koothur, Alathur block & Taluk	30.10.2017	Saraswathi-Wife + 1 daughter (25 yrs) married	Monocrotophos, Imidacloprid and <i>Billo crystal</i>
4	P Archunan	Periyasamy & Sivamalai	54	Pasumbalur, Veppanthattai block & Taluk Perambalur district	14.11.2017	Annabakkiyam -wife 45 yrs+ Kandasami - Son 27 yrs+ Manjula - 29 yrs married	Monocrotophos Carbendazim + Mancozeb
5	Suresh Kumar	NA	45	Kizhaku Rajapalayam, Salem district	25.11.2017	Vasanthi wife, 28 yrs (other details unavailable)	Not visited
6	Raman	Maruthamuthu	32	Kallakudi (Near Arunkal), Ariyalur Block, Ariyalur district	27.11.2017	Wife - Rajeswari, 2 Daughters - and now, 7 months pregnant	Monocrotophos, Acephate

Media reports indicate the following to be a glimpse of persons who have been affected by pesticide poisoning, who needed to be rushed to hospitals for treatment:

- Rajadurai (22), Manoharan (30), Periyaswamy (43), Vijai (19), LathuvaadiRanjithkumar (24), VellaiyurKumaraswamy (52) – all of Kizakkurajapalayam of Salem district
- Murugesan (55), from Kulathur village in Perambalur district, who has been shifted to a normal ward at the time of finalisation of this report, after undergoing intensive care treatment at KMC Private Hospital in Trichy
- Farmers in Cuddalore district (no death reports so far)
- AnukurKudikaduSeenivasan (55), KulathurIlaiyaraja (23), KowlpalayamGunasekaran (33), ThuraimangalamSelvakumar (36), TheraniMarutharaj (25), ArurBalakrishnan (40), ThirumaathuraiMaruthathurai (30), SirukudalRamasami (30), LakuvadiParamasivam (55) and VaragurManikandan (19) – all cases treated in a private hospital in Perambalur

MAIN FINDINGS OF THE FACT FINDING TEAM

As in the case of other such instances, including in the recent Yavatmal (Maharashtra) poisonings, the tendency to blame the victims was apparent here too. That they consume alcohol, that they use dosages beyond recommended dosages, that they don't adopt safety gear while spraying etc., were the ready reasons proffered by various people that we spoke to. The fact finding team believes that blaming the victim will not address the problem, and prevent its recurrence.

The following are the main findings of the fact finding team.

- 1. Apathetic and insensitive approach of Tamil Nadu government and local administration:** The fact finding team found that the government has been apathetic and insensitive so far to the problem of pesticide poisonings, as well as to the individual victims. No officials visited the families where fatal poisonings took place, whereas many media houses had met with the family members and other poisoning victims and covered the issue. While village level officials collected some information in a couple of cases, no senior officials have taken up any inquiry so far. In fact, it was during this team's fact-finding visit to Perambalur that the Joint Director-Agriculture, along with some Tamil Nadu Agriculture University scientists, went into the field to inquire. No one visited the families so far, as per the villagers and families. This is after more than a month after the first reports emerged, and after scores of sprayers have been hospitalised!

What is more unacceptable is the discernible attempt to discount the number of fatal pesticide poisoning cases by attributing other reasons like cancer and diabetes to the sprayers who died.

What is also unacceptable is the lack of any announcement and payment of ex-gratia to the victim families. This is surprising, and the reasoning provided by senior officials was insensitive. The blaming of the victim, for excessive spraying in unsafe conditions, fails to take note of the fact that pesticides have been projected as safe products by the entire establishment (government and pesticides industry), and this false sense of safety is also responsible for the carefree attitude of the sprayers.

The failure to publicise about the ill-effects of pesticides, or the failure to regulate the aggressive marketing of deadly poisons, and most importantly, the failure to anticipate the potential dangers of pesticides in violating the fundamental Right to Life of citizens in India's socio-economic milieu lies squarely with governments. The fact that "bannable pesticides" that are highly hazardous continue to be allowed in the country and in the state of Tamil Nadu is the clear failure of governments and regulators, in particular. Importantly, the lack of knowledge amongst farmers related to ecological farming is also a clear failure of the government. It is in this context that the victim-blaming has to stop, and relief provided to the spouses urgently.

- 2. Pesticides implicated in the cases met:** In each case that the fact finding team met, either from the hospital records that the patient/family was having, or from the pesticide containers that they have kept intact after the incident, we attempted to collate information on the pesticides that are involved in these poisoning instances. The following is the list:

- Selvam: Monocrotophos, Acephate, Cotton Plus and Nitrobenzene;
- Raja: Monocrotophos, Profenophos, Acephate;
- Arjunan: Monocrotophos, Carbendazim+Mancozeb;
- Ramalingam: Monocrotophos, Imidacloprid and *Billo crystal*;
- Raman: Monocrotophos and Acephate;
- Nallaperumal: Monocrotophos and Profenophos;
- Annadurai: Monocrotophos, Profenophos and Acephate;
- Solaimuthu: Monocrotophos and Profenophos;
- Krishnaswamy: Profenophos and Acephate;
- Kavitha: Not verifiable.

Companies whose products were used by the sprayers on the day that the poisoning occurred: Adama India Private Limited; United Phosphorus Limited; Crystal Crop Protection Private Limited; Coromandel; Syngenta; Insecticides India Ltd etc.

In a private hospital in Perambalur, out of the 10 cases admitted during October and November 2017 of patients affected by pesticide poisoning, it is reported that all of them had sprayed monocrotophos along with other pesticides, in mixtures.

It is important to note that organophosphate as well as carbamate and neo-nicotinoid pesticides were involved in the poisoning cases investigated, cutting across different classes of pesticides. Synthetic growth promoters were also noted.

The fact finding team finds it important to name these companies and products, so that the administration can make them liable for the poisonings.

3. Factors that aggravated the situation: There has been an unusual growth of cotton plants this season, which could have been because of adequate rains, since the seed varieties adopted appear to be the same as the earlier year(s). This then meant spraying with power sprayers onto plants that are taller than the person spraying, with the pesticide mist falling back on his/her face.

Interviewees in this fact finding visit reported high pest incidence of different kinds of bollworms (including tobacco caterpillar and pink bollworm) attacking their crop at levels higher than usual, though the agriculture department officials said that they have no reports of pest incidence other than some incidence of pink bollworm.

Meanwhile, this also meant long spraying hours for the sprayers (both men and women), including during hot and humid afternoons.

In terms of protective gear, some of the sprayers indeed wore overalls which were however not waterproof – they in fact reported getting fully drenched and wet with the pesticide mix. The same applied to a case where a cloth was worn as a mask over the nose. This cloth as well as the rest of the body was reported to have gotten drenched with the pesticides mix. In one case, the sprayer did not wear anything other than a shirt.

Mixing of the pesticides by hand is also done, as reported in one case. While in most cases, it was reported that lunch is eaten at home, after having a thoroughly-cleansing bath, in one case, it was consumed in the field itself, after a thorough washing of hands.

The power sprayer is kept running at full speed so that the sound and vibrations keep snakes and scorpions away, in the dense cotton field. This then means that in just 7-8 minutes, a tankful of pesticides mixture has to be sprayed on the maximum possible extent, forcing the sprayer to move rapidly between the cotton plant rows.

It is noted that sprayers try to spray upto 25 to 30 tanks per day, to maximise on their earnings as well as to cater to greater demand for pest control from farmers who are frightened about crop losses, in the season of high pest incidence. In addition to such daily intensity of pesticide

spraying and exposure, it is noted that in one of the cases visited, a whole month of spraying activity was taken up by Arjunan with a break of just 5 days or so during Dipawali festival time.

Mixtures of pesticides were used in all cases. A matter of serious concern is the fact that even agriculture department recommends several mixtures, and that proprietary brands of pesticides are sold as combination pesticides. What is unclear is the biosafety testing that such mixtures would have undergone, and apparently, no such testing is possible for the innumerable combinations of pesticides that (desperate) farmers can come up with, egged on also by the pesticide industry representatives.

- 4. Farmers' lack of knowledge:** As part of the fact finding visit, the team would have interacted with more than a hundred farmers – it is noteworthy that not a single farmer or farm worker knew what the pesticide color coding indicates.

What is equally alarming is that amongst all these people that the team interacted with, only one woman farmer said that she attended a training once in the block headquarters, while none of the other farmers has ever heard of any non-chemical technique or practice or approach to plant protection. This is an absolute failure of the extension department to catch up with successful and well established post-modern pest management science. Even the agriculture department officials are in the era of "Integrated Pest Management" when "NPM (Non Pesticidal Management of crops)" is a well-established approach by now. The ambience created around the inevitability of toxic pesticides for plant protection is eminently questionable, along with an ambience of complacency around the 'safety' of pesticides.

- 5. Inadequate response of the government:** Even now, the administration's response is highly inadequate. Safety kits being given by a pesticide company are being distributed by the administration. What was this company doing, selling deadly toxins without such safety gear being provided so far (even though this fact finding team's findings tell us that such safety gear is no solution to the problem)? Some posters are being displayed now in dealer shops, and as per the District Collector, 4 shops have been closed. However, no action has been taken against any pesticide manufacturer. FIRs have not been lodged in all cases. The local police have not yet picked up the "police intimation summary" filed by a private medical practitioner. All of this points to extremely inadequate, un-coordinated and apathetic response from the government.
- 6. No data systems exist for monitoring:** As in the case of other parts of the country, no clear and comprehensive data systems are being maintained for monitoring the incidence of poisoning cases. Without such data being collected regularly, governments cannot act intelligently on preventive action so that such incidents do not recur in future. Our fact finding clearly points to monocrotophos being a big culprit (not just here but in the case of Maharashtra poisonings too), in addition to acephate and profenophos. Basic data collection for all occupational exposure poisonings by now would have revealed this, and action would have been made inevitable on such deadly pesticides with such stark data. Absence of data systems does not reveal which regions, crops and farmers are vulnerable to occupational poisonings, for focused interventions to be planned and executed.

7. **Tamil Nadu government continues with “bannable” pesticides:** While neighboring Kerala state government has stopped licensing of sales of Class I pesticides (along with other pesticides), Tamil Nadu continues with pesticides that can be stopped from being sold and used.
8. **Failure of Modern Pest Management Technologies:** It is clear that most crop pests and diseases themselves are the result of so-called modern agriculture, and new age seeds/cropping (often, monocropping). As our information on a traditional, Indian species of cotton shows (box item below), local landraces are naturally more pest-resistant. In the case of Bt cotton, including the second generation Bt cotton, the claims that it would control bollworm attack have been busted by now. Farmers were found to have sprayed upto 9 times already in this season! Pesticides as well as GM technology have been adequately proven to be not just failed technologies, but also highly hazardous.
9. **Pesticide poisonings are medico-legal cases:** A medico-legal case is where “a case of injury or ailment where the attending Doctor after history taking and clinical examination, considers that investigations by law enforcement agencies are warranted to ascertain circumstances and fix responsibility regarding the said injury or ailment according to the law”. The doctor should report to the concerned police station after undertaking life-saving medical care (Cr.P.C. section 39). An autopsy has to be ordered in such medico-legal cases including hospital deaths. From what is apparent in the current spate of poisonings, these cases are not being dealt with as such – if they were, the government would have accurate numbers of the extent of prevalence of the problem from police records.
10. **Questions on the scientificity of treatment protocol adopted:** One of the questions that confronts us is whether the almost-uniform usage of atropine as the anti-dote for poisonings is scientific and effective. While many of the death cases occurred in government hospitals which seem to opt for this antidote approach, it appears that death cases in private hospitals were not many where treatment protocols adopted are different. This needs thorough investigation.
11. **Glaring failures of the AnupamVermaCommittee for reviewing bannable pesticides:** It was in 2013 that the Government of India constituted the AnupamVerma Committee to review whether India should continue with 66 pesticides that have been banned or restricted severely elsewhere. This Committee gave its report towards the end of 2015. There are allegations that the Committee was guided mainly by the pesticides industry in its review process, and the fact that the Committee’s recommendations do not exhibit scientificity, consistency or clear rationale lends credence to the allegations. This is a Committee that was headed by an agriculture scientist and not a health expert, as various other such review committees in the past. To begin with, listing only 66 pesticides under this “bannable pesticides” category reveals that the Government of India is not serious about the matter and updated. Further, while India has 18 Class I pesticides (as per World Health Organisation’s classification based on acute toxicity potential), this Committee reviewed only 11 of these. 30% of India’s pesticides usage in 2015-16 was of these deadly chemicals. Even here, the recommendation of the AnupamVerma Committee for banning from 2018 was for only 3 of these 11 Class I pesticides reviewed, and phasing out of another 4 that too from 2021. There are at least 93 “bannable” pesticides that the Government should have reviewed, including some herbicides like Glyphosate and Paraquat.

In the case of the three pesticides that have been most-implicated in the Perambalur poisonings, the picture is the following:

- a. Monocrotophos has been banned in at least 60 countries of the world including the European Union; however, AnupamVerma Committee recommended that it be continued and reviewed in 2018.
- b. Profenophos, that has been banned in 28 countries at least, has not even been studied by AnupamVerma Committee, and did not figure in the 66 pesticides' list put up by the Government of India for a review;
- c. Acephate, which is noted by the AnupamVerma Committee as having been banned by 10 countries globally, was recommended to be continued and reviewed in 2018.

It is clear that the AnupamVerma Committee failed to discharge its responsibility properly, and could very well be responsible for future poisonings too, by its biased and unscientific recommendations.

DESI KARUNGANNI COTTON & MILLETS AS SUSTAINABLE ALTERNATIVES

*While the Fact Finding Team looked into the current spate of pesticide poisonings in Perambalur district, it has also taken note of sustainable alternatives that exist within the same district. These are initiatives supported by civil society organisations like Karunganni Cotton Growers Group and ThamizhKadu, wherein 38 farmers have opted to grow desi cotton (*Gossypium arboreum*) suitable for the local conditions, on 40 acres of land in Veppur block of the district. Similarly, Barefoot Academy of Governance is promoting millet cultivation as an alternative cropping system against the problems of Bt cotton and pesticides in the district.*

It is seen that in the case of organic Karunganni cotton farmers, there is hardly any incidence of pest or disease attack on their crop while Bt cotton farmers are struggling with high pest incidence and pesticide usage. Illangovan of Olaipadi village who is growing this desi cotton on one acre of land has not had to spray even bio-agents for pest control on his crop. So far, he had spent around 12500 rupees for various agricultural operations like ploughing, sowing and weeding, and for the farm yard manure and seed he used. He had sprayed Panchakavya and fish tonic that he himself prepared. His pest-free crop is expected to yield at least 5 quintals per acre, based on earlier year's experience and the crop appearance as of now. Forward linkages already created for his desi organic cotton crop will fetch him around 27,500 rupees as gross income.

Jayalakshmi N is another farmer from Siruganpur village of Alathurtaluka of Perambalur district growing Karunganni cotton in one acre of land. She has the experience of growing the same desi seed variety last season too, from which she had saved seeds, without having to rely on seed companies. She had incurred Rs. 9000/- for undertaking operations like ploughing, sowing and weeding, in addition to cost of farm yard manure. There is no noted incidence of sucking pests or bollworm, including pink bollworm on her crop. She had sprayed Panchakavya on her crop three times so far, at a cost of Rs. 2100/- in total including spraying charges of Rs. 1200/-. Jayalakshmi is expecting at least 5 quintals from her one acre of organic desi cotton crop, for which she has assured buyers at the end of the season.

Contrast this with Bt cotton growers that the fact finding team met: More than Rs. 20,000/- per acre of cost so far, including around Rs. 5000/- for pesticide usage for plant protection. 4 quintals per acre is being expected, after recent boll shedding from rains, and due to high pest incidence. Farmers are now afraid to take up chemical pest management on this crop. A gross income of Rs. 17,280/- is anticipated for these farmers, resulting in negative net returns.

Another alternative is that of millet based cropping systems. Barefoot Academy of Governance, a Chennai based institution on governance, was given the task of preparing Model Perspective Plan for Veppur block in 2013-14, by State Planning Commission. In its report to the SPC, it identified the issues related to Bt Cotton and chemical farming as well as how farmers get into a debt trap in this paradigm. Following this report, starting from 2015, Barefoot Academy has been promoting Organic Millet farming in rainfed areas in Veppur block. In the last two and half years 38 farmers, covering 65 acres, have shifted to Millet farming. Kodo, Barnyard, Foxtail, Proso, Black Sorghum and other Millets are being cultivated by these farmers with organic practices. The produce is fetching higher prices than prevailing market prices. More farmers are coming forward now as organic millet farming requires low investment, less labour, little care and fetches decent prices.

CONCLUSIONS AND DEMANDS:

Pesticides, which are poisons, are a clear threat to the Right To Life of citizens, especially farmers and farm workers. In the case of farm workers, it is important to note that these are citizens desperate to earn a decent wage for a dignified life, and had to take up spraying of toxic chemicals on crops. These are citizens who wanted to stay alive (as compared to those who commit or attempt to commit suicide with intentional ingestion of pesticides), whereas the pesticides that they have sprayed had become a threat to that life.

In many ways, this tragedy in Tamil Nadu and other parts of the country was waiting to happen. This was something completely avoidable, but was not prevented from occurring. The fact that deadly toxins in the form of pesticides are allowed in our farming, which threaten the right to life of many people, is unacceptable. This is all the more unacceptable given that these pesticides should have been banned, and because these are not needed - ecological alternatives exist that are highly effective.

Our fact finding visit leads us to conclude that at least 200 to 300 poisoning cases would have occurred in Perambalur district alone so far. Each poisoning instance could have meant an additional unforeseen financial burden on the sprayer families ranging from Rs. 10,000/- to Rs. 85,000/- (the range of expenses incurred for treatment, by cases that the team met), in addition to possibilities of future expenses in the case of continuing health problems.

Meanwhile, it is apparent that the so-called modern pest management technologies of chemical pesticides as well as Genetically Modified (GM) seeds have failed badly. They are bound to, given the serious shortcoming in the very science of these pest management technologies, which seek to kill a pest rather than manage or control them.

While this report is discussing acute poisoning from pesticides, these pesticides are also causing large negative impacts in the form of chronic health impacts and environmental impacts. There is also an economic implication for farmers who are trapped on this treadmill, of course.

It is in the above context, that the Fact Finding Team demands the following from the government:

ASSESS AND MONITOR THE SITUATION:

- A complete time bound rapid assessment of the prevalence and incidence of the problem to get a complete picture of poisonings (not just fatal) so far in all of Tamil Nadu.
- Take up immediate massive awareness campaigns on the ill effects of pesticides, on toxicity codes and symbols related to pesticides, on acute poisoning symptoms, and on ecological farming alternatives.
- Issue instructions afresh to ensure that all cases of pesticide poisoning are treated as medico-legal cases, as mandated and required. This not only helps in fixing liability but also for surveillance.
- Institute data systems of hospital-based surveillance that can help the government to monitor and intervene effectively at least in future – these data systems should be able to capture various proximal factors that caused the poisoning.

PROVIDE RELIEF AND REHABILITATION FOR THE AFFECTED:

- Announce and pay immediately an ex-gratia amount of at least ten lakh rupees per victim family, and recover the same from the pesticide companies/industry. Further, social security schemes should be extended to the family, and educational assistance provided.
- Pay a compensation amount of two lakh rupees each to all the other affected persons, given that they might need continuing medical care in addition to the amounts that they have already incurred for treatment. There should be complete health check up done free of cost, and continuous follow up arranged for these persons.

REVIEW CURRENT CHEMICAL AND GM TECHNOLOGIES' PERFORMANCE AND IMPACTS:

- Take up a comprehensive review of the performance of Bt cotton in Tamil Nadu, brought in ostensibly to control bollworm incidence and reduce pesticide usage, both of which are belied on the ground.
- Take up a comprehensive assessment of ecological impacts of pesticides including weedicides so that suitable responses can be made.

REVIEW PATIENT TREATMENT PROTOCOLS:

- There needs to be a thorough investigation on whether treatment protocols being adopted, especially in government hospitals, are appropriate in saving lives of affected persons, and change the standard operating procedures immediately if found deficient.

PREVENT RECURRENCE:

- Stop the licensing of sales of all 'bannable' pesticides. Kerala government has already shown the way on this matter.

- Initiate and strengthen extension advisory on non-chemical agro ecological methods of plant protection, and build capacities of farmers to adopt the same on a massive scale.
- Revive traditional desi cotton varieties with appropriate agronomic practices that don't involve any chemicals, so that cotton cultivation becomes sustainable and hazardous Bt cotton can be replaced by desi cotton.
- Shift farmers from cotton cultivation to other sustainable cropping systems like millets, and support them comprehensively, end to end (seed to marketing) for the same.

FIX ACCOUNTABILITY:

- Make pesticides industry accountable and liable for the poisoning caused, for impacts on human health as well as environment. This should include stopping further sales but also deterrent penalties as well as compensation to be paid by the pesticides manufacturers and sellers to the victim households.
- Stop the illegal use of herbicides like glyphosate being used rampantly in violation of their registered uses.
- Fix liability on all public authorities who failed to discharge their duties adequately in the current instance of pesticide poisonings. This includes the district administration in general as well as police, agriculture and health departments.

For more information:

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Photos from the fact finding visit are available at:

https://drive.google.com/open?id=12RuQnKp7R2L37RUAUqHOygaK_o7kwWJw



Top Row: Left to Right: Meenatchi w/o Raja; Anandhi w/o Selvam; Saraswati w/o Ramalingam;
Middle Row: Rajeswari w/o Raman; Annabackiyam w/o Archunan;
Bottom Row: Nallaperumal and Arumugam, hospitalised & discharged; A farmer couple set out to spray pesticides on their crop in Koodalur village