

Statement by the Faculty of Agriculture, University of Peradeniya
on the issue of agrochemical ban

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According to Gazette Extraordinary No 2226/48 of May 6, 2021, the importation of chemical fertilizers and pesticides has been banned. Based on the information publicly available, the objectives of this directive are to produce healthy food free of contaminants so that people will gain health benefits and producers receive higher prices in international markets. While appreciating the initiative to achieve these nationally important goals, we (the academics of the Faculty of Agriculture, University of Peradeniya) wish to highlight potential considerations/implications arising from the said policy and propose measures, which would be appropriate towards matching the above directive to the current circumstances of local agriculture.

Short and long term implications relevant to the implementation of the above policy:

1. Agricultural production has been carried out on diverse soils with different inherent fertility levels and under varying management regimes in terms of crop establishment practices, supply of nutrients and soil amendments over decades. As a result, nutrient supplying potential of soils vary by location and by system. Further, unlike forest ecosystems where nutrient cycles are self-contained, agricultural systems need constant replenishment of nutrients at variable rates as nutrients are extracted from the system in the form of harvest and residue.
2. Crop yield responses to a total elimination of chemical fertilizers and replacement by alternative sources of nutrients are therefore highly unpredictable in diverse soils, agroecological regions and cropping systems (on average, likely to be lower than the conventional yields). Further, there may be specific cropping systems that cannot be managed with only the organic inputs, under the existing production technologies.
3. Application of alternative sources of nutrients is necessary but the expected results will depend on optimal rates of application and the maximum carrying capacity of soils. For valid scientific recommendations, experimental trials at different locations representing soils with different nutrient supplying power, different agroecological zones and different cropping systems are necessary.
4. As per the existing data, adequate quantities of organic fertilizers with the desired quality are not readily available to match the national needs. Importation of organic fertilizers and pesticides may be counterproductive to the stated policy as they may contain substances and organisms which could have irreversible negative impacts on soil quality, soil biota, plant, animal and human health.
5. While there is encouraging evidence of 'organic' pest control methods that perform comparably to 'inorganic' practices, delayed action and environmental/seasonal/variety variations have been observed to influence efficacy of organic pesticides. Also, the lack of rapid action is a concern with organic methods of pest control when handling emergencies.
6. There are also shortcomings with respect to farmer attitudes/competency on the use of pesticides and eco-friendly management measures. Such gaps can have unintended consequences on the efficacy of a conversion to organic practices. Further, the process of conversion to organic is likely to present unforeseen economic and business challenges to local value chain actors.

7. A weaker crop (due to nutrient deficits or suboptimal protection) will always be prone to pests and diseases aggravating the threat of further yield reduction and potential post-harvest losses (perhaps in addition to the current rate of post-harvest loss).
8. Under such a scenario, food importation would become necessary but importation of food will contradict the health and economic rationale of the policy initiative. Besides, the economic livelihoods of farming community and others in the local agricultural value chains will be at risk under importation.

To address the above uncertainties and implications, we propose the following measures:

1. Reduce importation of agrochemicals only by 25% in the first stage while adhering to the Good Agricultural Practices (GAP) framework across all systems. Decide on the fertilizer types, the critical pesticide categories and their quantities that need to be imported for general use and stocked for emergency use with the recommendations of the Department of Agriculture and national research institutes. Progressive withdrawals beyond the 25% level need to be determined after expert consultation on the first stage outcomes and be implemented within a realistic timeframe.
2. Identify crop and location specific alternative sources of nutrients and pesticides based on available research data and field evidence of existing diverse farming models at different scales; and recommend feasible agricultural technologies accordingly.
3. Identify strategies to improve available technologies for large-scale production of nutrient sources and pesticides.
4. Introduce guidelines (and regulations) to assure the quality and safety of materials sourced under an organic or a 'mixed' regime of input use.
5. Develop a program of agricultural extension and outreach to train farmers and other stakeholders to conform to the new paradigm.
6. Identify marketing channels and facilitate business innovations that ensure a stable revenue flow to farmers, including farmer livelihood (and income) support during the transition to organic cultivation.
7. Introduce programs to reward technologically-efficient organic practices and 'green' innovations that can bring down the costs of production.
8. Introduce guidelines for a comprehensive monitoring and evaluation of the policy (and its implementation) within a multi-disciplinary framework.

As the academics of the Faculty of Agriculture, University of Peradeniya, we are eager to offer our knowledge, expertise and time (including necessary student involvement) in order to ensure a scientifically-sound agricultural system that can deliver food and nutrition security to the nation without compromising economic, social and environmental sustainability.

**STATEMENT BY THE FACULTY OF AGRICULTURE, THE UNIVERSITY OF PERADENIYA
ON THE ISSUE OF FERTILIZER & AGROCHEMICAL BAN**

According to the Gazette Extraordinary No 2226/48 of May 6, 2021, the importation of chemical fertilizers and agrochemicals has been banned with immediate effect. Based on the information publicly available, the objectives of this directive are to produce contaminant-free healthy food to improve human health, receive higher prices for our products in international markets and reduce our dependence on imported agricultural inputs. While appreciating the initiative of the government in its endeavor to achieve the Green Economic Model, we (the academics of the Faculty of Agriculture, University of Peradeniya) wish to highlight that there are several concerns related to input usage in agriculture that have not been considered in presenting the policy on the banning of importation of chemical fertilizers and agrochemicals with immediate effect (See Annex 1).

The immediate implementation of the said policy could have several repercussions in relation to reductions in food production and exports (such as increase of imports, food prices and cost of living, unemployment, poverty, and malnutrition, and contraction of the entire economy), and also to the importation of organic fertilizers (such as threats to biodiversity, soil and environmental quality and human health, and increased spending on importation of costly agricultural inputs). We wish to highlight several concerns with respect to the identification of policy problems, formulation of policy goals, the adaptation of policy process, use of policy instruments and likely policy effects (Annex 2). We can provide a detailed account of short and long term implications relevant to implementing the above policy on request.

We endorse that we need to enhance the sustainability of the food system of Sri Lanka while ensuring the availability and accessibility of nutritionally rich, safe and healthy food in sufficient quantities to meet the dietary needs and food preferences of the growing population of the country. In this context, the Faculty of Agriculture of the University of Peradeniya proposes the following measures:

- **To increase availability of food through enhancing national production and productivity:**
 1. Identify strategies and methods, and facilitate them to improve available technologies for large-scale production of nutrient sources and techniques for pest and disease control.
 2. Strengthen implementation of soil conservation act and introduce strategies to improve soil health and the use efficiency of natural resources in agricultural lands.
 3. Enhance availability and accessibility of sources of plant nutrients and damage control agents in the market, both with organic and chemical origin.
 4. Lift the blanket import ban on chemical fertilizers and pesticides, at least for selected items with strict control measures.

- **To ensure safety of food:**
 1. Strengthen existing regulations and impose new regulations on sales of food items in the marketplace, including implementation of Good Agricultural Practices (GAP) and Good Management Practices (GMP) suggested by research institutes. This should be applicable to organic products as well.

- **To minimize damage to the environment:**
 1. Implement stringent environmental policies, including emission taxes on environmentally-damaging products and banning the use and importation of products containing substances imposing risks on environment quality and human health.
 2. Identify crop- and location-specific alternative sources of nutrients and techniques for pest control based on available research data and field evidence of existing diverse farming models at different scales, and recommend feasible agricultural technologies accordingly (i.e. Home-garden models, etc.).
 3. Introduce guidelines (and regulations) to assure the quality and safety of materials sourced under an organic or a 'mixed' regime of input use by farmers/growers.
 4. Develop a program of agricultural extension and outreach to change farmers' mindsets through training farmers and other stakeholders to conform to the new paradigm.
 5. Reinstate Krushi Viyapathi Sewaka (KVS) officers in agriculture extension service.

- **To enhance financial and economic sustainability of food systems;**
 1. Gradually (within a time span of 2-3 years)/immediately remove the subsidy on chemical fertilizers.
 2. Reduce importation of agrochemicals by 25% in the first year while adhering to the Good Agricultural Practices (GAP) framework across all crop production systems. Decide on the fertilizer types, the critical pesticide categories and their quantities that need to be imported for general use and stored for emergency use with the recommendations of the Department of Agriculture. Subsequent progressive withdrawals need to be determined after expert consultation on the first stage outcomes and be implemented within a realistic timeframe.
 3. Identify marketing channels and facilitate business innovations that ensure a stable revenue flow to farmers, including farmer livelihood (and income) support during the transition to organic cultivation.
 4. Introduce programs to reward technologically-efficient organic practices and 'green' innovations that can bring down the costs of production and facilitate the introduction of such innovations for adoption.
Members of the Faculty have conducted long term research on biofertilizer, biochar, pest and disease control methods, automation and farm mechanization options, and role of animals and livestock in sustainable farming systems [this has not given adequate attention], the Faculty look forward to making such technologies available to address issues and safeguard the farmer and consumer.
 5. Introduce guidelines for comprehensive monitoring and evaluation of the policy (and its implementation) within a multi-disciplinary framework.

As the academics of the Faculty of Agriculture, University of Peradeniya, we are eager to offer our knowledge, expertise and time (including necessary student involvement, through research and research-based studies leading to higher degrees, extension programs such as participatory productivity enhancement programs with the farmer and other communities, and necessary training required to reach this goal) in order to ensure a scientifically-sound agricultural system that can deliver food and nutrition security to the nation without compromising economic, social and environmental sustainability.

Annex 1: Concerns related to input usage in agriculture that have been overlooked in implementing the policy on the banning of importation of chemical fertilizers and pesticides with immediate effect.

1. Unlike forest ecosystems, where nutrient cycles are self-contained, agricultural systems (under any management system) need constant replenishment of nutrients at variable rates as nutrients are extracted from the system in the form of harvest and residue. Crop production systems are highly diverse and span from soil-based, hydroponic to aeroponic with different levels of intensification of inputs and technology usage in open fields to protected agriculture. This diversity affects the input choices, especially when operating at a commercial scale.
2. Agricultural production has been carried out on diverse farming systems and soils with different inherent fertility levels and under varying management regimes in terms of crop establishment practices, supply of nutrients and soil amendments over decades. As a result, nutrient supply power of soils varies by location and by the farming system. Total elimination of chemical fertilizers and replacing them with alternative sources of nutrients disregarding site specific nutrient requirements would lead to highly unpredictable consequences. Such non-sustainable practice would result in unhealthy crops owing to nutrient imbalances and frequent incidences of pests and diseases. These problems may not be solved satisfactorily unless time-tested and proven technologies and products in the required quantity and quality are available. Further, there may be specific cropping systems that cannot be managed only with the organic inputs under the existing production technologies.
3. Application of alternative sources of nutrients is necessary, but the expected results will depend on optimal application rates and the maximum carrying capacity of soils. For valid scientific recommendations, experiments should be conducted at different agro-ecological regions, representing different soils with variable nutrient supply and different cropping systems.
4. Livestock and poultry production is an essential and integral component and plays an important role in sustainable ecological agriculture, which is not captured or highlighted in the proposed policy directive.
5. As per the existing data, adequate quantities of organic fertilizers with the desired quality are not readily available to match the national needs. Importation of organic fertilizers and pesticides may be counter-productive to the stated policy as they may contain substances and organisms that would result in irreversible negative impacts on soil quality, soil biota, plant, animal and human health.
6. While there is encouraging evidence of 'organic' pest control methods that perform comparably to 'inorganic' practices, delayed action and environmental/seasonal/variety variations have been observed to influence the efficacy of organic pesticides. Furthermore, lack of rapid action is a concern with organic methods of pest control when handling emergencies.
7. There are also shortcomings with respect to farmer attitudes/competency on the use of pesticides and eco-friendly management measures. Such gaps can have unintended consequences on the efficacy of conversion to organic practices. Further, the process of conversion to organic is likely to present unforeseen economic and business challenges to local value chain actors.
8. A weaker crop (due to nutrient deficiency or suboptimal protection) will always be prone to pests and diseases, thus aggravating the threat of further yield reduction and potential postharvest losses (perhaps in addition to the current rate of postharvest loss).
Strategies to reduce postharvest losses have not been identified in the policy directives. Pesticide are being used to minimize losses during storage, and feasible solutions should be proposed considering this important component of agricultural value chains.

Under such a scenario, further food importation would become necessary, which contradicts the health and economic rationale of the current policy initiative. Besides, the economic livelihoods of the farming community and others in the local agricultural value chains will be at risk under importation.

Annex 2: The policy problem identified, policy goal formulated, policy process adopted, policy instruments used, and likely policy effects with respect to the ban on importation of chemical fertilizers and pesticides.

1. **Policy problem:** The import ban on chemical fertilizers and pesticides was justified stating that agrochemicals are over-applied and there are human health and environmental hazards due to the application of such. However, at the national level, agrochemical usage has not exceeded recommendations, and fertilizer usage has been decreasing over time. Moreover, pollution of waterways and reduction in soil productivity is largely location-specific, and no proven research data exist to infer that food is contaminated except on a few isolated occasions. Hence, a rephrasing of the policy problem is required.
2. **Policy goal:** The policy goal set is not acceptable. Zero pollution is neither required nor realistic, and zero pollution cannot be achieved by making agricultural production 100% organic as both chemical and organic fertilizers contain harmful substances and lead to environmental pollution. Total organic products are costly given the nature of organic fertilizer/pesticide production in Sri Lanka and the rest of the world. Scientific evidence has proven that a combination of chemical and organic fertilizer is the most sustainable production technology. Yields in organic agriculture are universally lower by 25% compared to conventional agriculture, and no proven research data to infer that organically produced food is always healthy and more nutritious. Moreover, organic agriculture is financially viable when and only when there is a higher demand generated and catered through specific value chains connected with premium price tags. In the world, organic agriculture extent constitutes 1.5% of the total agricultural land.

There is a positive and significant relationship between crop yields and application of chemical fertilizers. Sri Lanka is the first country (after an unsuccessful attempt by Bhutan) to declare a 100% organic strategy across the nation. Accordingly, a more pragmatic policy goal is to be specified.

3. **The Policy process:** The government has not evaluated the potential costs and benefits of alternative policy instruments prior to the policy decision was made. Any change in policy should be made based on scientific evidence.
4. **Policy instruments:** Two policy instruments have been chosen to achieve the policy goal, namely an import ban on chemical fertilizers and agrochemicals and importation and production of organic fertilizers. Import bans are stringent instruments. Though they are expected to narrow down the trade balance, they will lead to widening of trade balance due to the anti-export bias that they create. No country uses import bans across all kinds of fertilizers and pesticides to regulate fertilizer and agrochemical imports. Standards, certification and taxes are the commonly used instruments to regulate fertilizer imports. Import bans are not compatible with the WTO commitments made by Sri Lanka. Organic fertilizer importation is not feasible due to sanitary and phytosanitary concerns. Further, there is no cost advantage in importing organic fertilizers and pesticides from other countries when an inexpensive substitute is available. Moreover, locally produced organic fertilizers will not be adequate to supply the required plant nutrients in diverse crop production systems in the long run.