Executive Summary

1. Four pillars on which Maharashtra’s agriculture should rest for next 25 years should be productivity, quality, profitability and sustainability revolutions. Instruments through which this objective should be achieved may include a reorganised State Land Use Board to provide through internet based ‘Virtual University for Agrarian Prosperity’ proactive advice to farm families, a state level inter-agency Action council for Rural Technologies to bridge the ever widening gap between academic know how and field level do how; Maharashtra Mission for Farmers’ Well Being integrating various technology missions with watershed development and Demonstration-cum-training centres in precision farming, high-tech horticulture, organic farming and Low External Input Sustainable Agriculture. Quality revolution should be heralded through establishment of testing facilities for sanitary and phytosanitary measures, codex standards and micro-nutrient deficiencies. For higher profitability, employment in rural non-farm sector promoted through agri-business centres and food parks, establishment of community food and feed banks promoted by SHG’s and setting up of small farmers agri-export estates with common infrastructure should be the strategy.

2. Sustainable agriculture on firm ecological foundations should be attempted through equity in the use of natural resources, judicious exploitation of agro-diversity, promotion of traditional multi-crop farming systems, popularisation of low external input organic farming and watershed and wasteland development and water harvesting measures. To achieve the objective of sustainability, a Mission for Agro-ecology and Sustainable Livelihoods should be launched. Natural Resource Management Systems for introducing resource mapping and for taking measures to conserve prime farmland for agriculture and to prevent the unsustainable tapping of ground water should be some of the goals of the Mission for Agro-ecology and Sustainable Livelihoods.

3. For a state with nearly 85% cultivable land under rainfed conditions, an ambitious watershed development programme covering at least 1 million hectares of land every year for next 15 years through technically sound ridge to valley conservation and a massive capacity building effort of the communities implementing the projects under a multi-agency approach cannot be
overemphasized. Prioritisation in watershed works, commitment of adequate resources, mainstreaming of women in decision making, equity in terms of burden and benefit sharing and expertise development of various agencies involved should be the components of such a gigantic exercise in watershed development.

4. To minimise the harmful impact of rain fed farming remaining a gamble in the monsoon, making forecast of rainfall and forewarning of pests and diseases available to the farmers through a Virtual University utilizing Met Sat Satellite data needs to be introduced. This would obviously require research in determination of genetic coefficients, crop planning and modeling through simulation and automation of meteorological data.

5. It is projected that through optimum utilisation of water, introduction of new hybrids, and genetic material, adoption of IPM & INM discipline, achieving higher efficiency of inputs, more effective extension networking with the use of IT and a stronger research backup, it should be possible to double the food grains production and nearly increase three times the production of oilseeds and pulses in next 15-20 years. Massive gains in cotton as well as sugarcane productivity are also predicted. Genetically modified varieties, though promising to achieve higher gains, needs to be introduced in a most transparent manner after a rigorous risk-benefit analysis.

6. For sustaining and expanding the ongoing horticultural revolution, continued application of EGS for horticulture over 50,000 Ha. area per year, emphasis on low cost greenhouse cultivation, mission mode approach for processing with active participation of the private sector, offering market information and establishing small farmers horticultural estates, introduction and vigorous enforcement of the norms and standards for quality of inputs and outputs have been advocated. All round gains in production and productivity are expected to take place for fruits, vegetables, flowers, spices, relatively unutilised and new crops, medicinal and aromatic plants for all of which research needs have been clearly identified. A special focus on Konkan due to enormous possibilities for Mango, Cashewnut, Coconut with spices under intercropping and several unexploited fruit crops is needed.
7. A market survey for medicinal and aromatic plants has been identified as the starting point for enormous gains in this upcoming field. Identification of agro-ecologically attractive plant species, availability of quality planting material, development of proper packages of trees and shrubs for sustained economic gains, intermediate and bulk processing facilities, enforcing strict quality control measures and organising the disorganised markets are the areas of concern which need to be tackled urgently. Conservation of endangered species of medicinal & aromatic plants in their natural ecosystems has been strongly recommended.

8. Integrated Pest Management (IPM) as a means to promote sustainable agriculture at a lower cost of cultivation with a promise of cleaner environment and higher agricultural produce would require proper surveillance of crops through a massive capacity building programme for farmers as well as extension workers, availability of bio-control agents in a decentralised manner at a low cost and proper testing facilities for quality control. Since pest infestation and pesticide residues are important considerations for international trade, creation of pesticide residue testing facilities, enforcement of plant quarantine measures, availability of testing facilities for genetic bio-inputs and creation of pest risk analysis capability due to large scale imports needs to be tackled on priority. Vigilance is essential to prevent the introduction of invasive alien species in crops, poultry, fishes and farm animals, along with bulk food imports.

9. Keeping in view the tremendous opportunity globally available for organically grown produce from low chemical input in traditionally rainfed areas in the state, it is recommended to adopt a comprehensive approach towards organic farming. A group approach envisages certification from international agencies made available locally through a process of public awareness for production as well as consumption, establishing regulatory mechanism for quality of inputs including urban waste, popularisation of vermi-composting and standardization of organic farming practices. Formation of a state level cell coordinating all the activities linked with organic farming is the need of the hour.
10. Coastal aquaculture presents promising opportunities for Konkan coast through shrimp, crabs, jitada, mussel, prawn and ornamental fish farming. Establishment of publically funded hatcheries with private participation, post harvest quality control measures, research inputs on value addition and exploration of new markets are some of the needs which should be met on priority by the state. Coastal areas also present opportunities for agro-aqua farms, combining agro-forestry and capture and culture fisheries.

11. Knowledge driven agriculture with greater use of frontier technologies is bound to come up in greater measure in near future. Application of new hybrids, Gene transfer technologies for GM seeds, precision tools like molecular markers, biotechnology initiatives, greater exposure to ICT, renewable energy systems and upcoming nano-technology would require capacity building of the universities. For meeting the gaps in infrastructure available, appreciation of bio-safety issues and greater application of precision farming techniques, a clear commitment of state support would be an obvious requirement. Agricultural Universities should develop eco-technologies by blending traditional wisdom and technologies and frontier science.

12. There is an urgent need to spell out clearly state’s policy – short as well as long term – on agricultural exports. Gaps in physical and technical infrastructure and technological as well as R & D back up needs to be bridged urgently. An all encompassing HRD exercise has been spelled out clearly. Finally, to ensure better convergence of efforts in government functionaries, a Cabinet Committee on Agricultural Trade would help in quick decision making on important policy issues linked to agri-exports. Cost and quality consciousness is essential for capturing new markets and retaining old ones.

13. ICT is a potent tool in various sectors of activities in public domain, and agriculture is no exception. Demand and supply monitoring of inputs, dissemination of technologies relevant to farming community through various organizations including universities, making available marketing information at grass root level are only some of the possible usage of ICT in agriculture. Covering each and every farm family through cable TV, internet and community radio should be the aim for greater usage of ICT. A Virtual University for Agrarian Prosperity has been
envisaged as a centre of excellence meeting all the information needs of the farmers and reaching every farm woman and man in Maharashtra.

14. Relative neglect of women in agriculture has already endangered the greater participation by the masses in agricultural production. Capacity building through formation of self help groups and design and implementation of schemes particularly for women farmers, could be the starting point. Introducing an extension strategy keeping women in mind, development programmes designed exclusively for women, and engendering the education and research in agriculture are identified as some of the tools for ensuring greater contributions of women in agricultural development. Women graduates (Home Science, Commerce, Biotechnology, etc) should be assisted in establishing agri-clinics, Nutrition clinics, Agri-business Centres, School Nutrition Gardens and Biotechnology and Food Parks.

15. Most promising outcome of the present exercise has been the identification of self-employment and livelihood opportunities in agriculture for more than 1 million unemployed and under employed in rural areas. 400 million of man-days employment per year while doubling the production could be created through production and application of hybrid and GM seeds, manufacture and distribution of the biological software essential for sustainable agriculture, greater application of micro-irrigation, plantation through raising seedlings, manning of internet kiosks, micro-propagation, production of bio-fertilizers and bio-agents, starting of farmers’ markets, food processing and opening of agri-business and agri-clinic centres.

16. Since the budgetary support from the state’s exchequer is drying up for agriculture, it is suggested to tap all possible sources of support in GOI as well as bilateral and multinational funding agencies. While proportionate share for agriculture sector in state GDP has been advocated, emphasis is placed on development of human, infrastructure and institutional resources. Internal resource generation by universities for funding research and tapping private investment through tax incentives are other avenues for generating greater investment in agriculture. Involvement of NGO’s in capacity building, policy reforms for attractive investment in marketing infrastructure and strengthening of agri-polyclinics are stressed. It has been strongly advocated that a shift to local sector of the responsibilities of the state department of agriculture should not be attempted,
unless agri-clinics in private sector are fully developed and initiatives under new deal for self-employed are operationalised.

17. Though WTO concerns tend to overshadow the window of opportunities for state’s agriculture, the need for greater investment in agriculture cannot be over emphasized. Joining hands with the centre in getting farm subsidies and excessive export support reduced in countries competing with the state in international market, fighting for removal of unreasonable non-tariff barriers, protecting products with geographical indicators like Alphanso Mango and providing market intelligence in international arena are some of the steps indicated to meet the WTO challenge with protection of livelihoods of state’s farmers being the bottom line. For more synergetic efforts in meeting the challenge, it is advised to constitute a committee on Agricultural Trade, with all stake holders being the members for a continuous update on impact of WTO provisions on the state’s agriculture.

18. Agricultural progress provides the best safety net against hunger and poverty. Maharashtra has many innovative initiatives to its credit like EGS, and the horticultural revolution. We have cited many examples of success in different fields of agriculture. We should now convert such unique examples into a universal accomplishment.

19. In addition to bridging the gap between potential and actual yields even with the techniques on the shelf through mutually reinforcing packages of technology, training, techno-infrastructure, trade and input and output pricing, there is need to initiate anticipatory research to meet the potential adverse impact of changes in temperature, precipitation, sea level and ultra-violet B radiation as a result of global warming and the enlargement of the ozone hole. The proposed Virtual University for Agrarian Prosperity should provide timely information to every farm woman and man in the State on matters relating to meteorological, management and marketing factors.

20. Ecological agriculture is knowledge intensive. Hence, training and retraining will be important. The smaller the farm, the greater is the need for marketable surplus, in order to get some cash income. On-farm and non-farm employment should receive integrated attention. Hence, we recommend that the existing and new
KVKs may be developed as **Krishi aur Udyog Vigyan Kendra**. Such reorganised KVKs should have the capacity to impart quality and trade literacy among farm women and men.

21. Maharashtra farm men and women are becoming leaders in innovations in all aspects of farming, like water harvesting, wasteland development, horticulture, seed technology and organic farming. In order to get them guidance in shaping Maharashtra’s agricultural future, it is suggested that a **Consortium of Innovative Farmers for Agricultural Transformation of Maharashtra** under the chairmanship of Minister of Agriculture may be established.

22. Ultimately, for achieving the goals of agrarian prosperity and a hunger-free Maharashtra, it will be necessary to reach as soon as possible a demographic transition to low birth and death rates. Bridging the demographic, digital, genetic and technological divides are all important for an agriculturally prosperous and food secure Maharashtra.