

Q 1 Answer in about 250 words each.

5 x 20 = 100 marks

Q 1.a Excess subsidies are doubly detrimental to Indian agriculture; on one side they cause market distortion and a burden on national exchequer; on the other, they lead to environmental degradation. It is also true that, Indian agriculture can't sustain without the subsidies. Subsidies are a kind of imbrogllo. Analyze.
20 marks

Agriculture subsidies are of many types – fertilizers subsidy, power subsidy, irrigation water subsidy, price subsidy in form of Minimum Support Prices (MSP). They are not without their disadvantages.

They cause market distortions. Higher and effective MSPs mean farmers grow that crop more compared to others where MSPs are low or ineffective (not backed by state procurement). Power subsidies make drawing groundwater cheap. Coupled with water subsidies, it distorts water market and cropping patterns are altered. This, along with a high and effective MSP, is the reason why Punjab is growing rice despite its climatic conditions. Fertilizer subsidies create distortions in the nutrient market thus favoring crops which require large amount of Nitrogen. It also leads to crowding out of bio-fertilizers from the market.

Subsidies
and
MSP
are
different
instruments

These subsidies also cause a high fiscal burden. The National Food Security Bill is expected to cost Rs. 125,000 crores annually. The fertilizer subsidies are over Rs. 60,000 crores. Water and power subsidies accrue to the states' budgets and even though they vary from state to state, expected figure is over 1% of GDP (over Rs. 1 lakh crores).

Despite this, our agriculture can't do without them. Our small and marginal farmers are already 84% of the total. Lakhs of people are dying in agriculture! The poor state can be seen from the NSS data (2011-12): 49% of labor force is engaged in agriculture while only 13% of the GDP comes from agriculture. There is mass poverty in agriculture and it is becoming unviable every year. NSSO figures suggest that agriculture has shed over 14 million jobs between 2004-05 to 2009-10 and another 10 million since then. Thus these subsidies are essential despite all the mess and distortions they have created.

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Q 1.b "The supporters of liberalization often argue that if the modern food retail sector is allowed a full round of liberalization, it will have serious positive outcomes including a reduction in prices. However, what if the markets fail to deliver on account of the structural snags that may continue to persist in a rapidly growing and yet highly segmented economy like ours?" Critically evaluate.
20 marks

Some of the gains from modernization of food retail sector are as follows:

Currently over 30-40% of our production goes waste. Government efforts to create cold storages, godowns even in PPP mode have proved inadequate. This sector needs urgent investment but the problem is that logistics alone is not profitable. For the private investor, storage and logistics needs to be integrated with the retail to make it profitable and hence opening up of retail is so crucial. Furthermore, the government has mandated that 50% of the FDI must go in backend supply chain. This will reduce wastage and hence prices.

Then our present supply chain is so inefficient with the presence of a large chain of intermediaries which leads to price escalation. Modernization will simplify this supply chain pushing out the intermediaries. Farmers will get better remuneration, invest more, produce more

36
36
12
13
97

and consumers will get lower prices.

Currently farmers are forced to sell their produce in the mandis in most states. These mandis are dominated by cartels of grain traders who literally rob them. Modernization will enable farmers to enter into direct marketing contracts, contract farming which will enhance their choices and make the food market transparent.

Such a move will also bring in modern technologies into agriculture. Economies of scale, farm mechanization, IT based product, soil testing information can be made available to the farmers. Use of insurance will increase. Overall it will modernize the sector, increase labor productivity and also overall production.

However, in Indian setting specially, such a move is not without its fears as well. Our farmers are poor, weak, illiterate and have a weak bargaining position. Modernization will mean creation of a monopsonistic market as these buyers will be very large. Bargaining strength will shift even further away from the farmers. The experience from other countries shows that these retail chains try to squeeze the supplier. How will our farmer face them?

Then there is the issue of loss of land if the crop fails under contract farming. Or even if land possession is assured to the farmer, in the event of a crop failure, the insurance payment will go to the retail chain.

Then there is issue of non existence of land titles and tenancy records. In the absence of such, how will the companies be able to write contracts or invest in farming activities?

Finally it will lead to the creation of a highly asymmetrical, unregulated market where the farmer will be vulnerable to exploitation.

Q 1.c Do you think that existing ceiling and tenancy laws, should be repealed? 20 marks

Existing ceiling and tenancy laws have mostly failed. Yet while repealing may not be a good idea since there is still a need to protect the vulnerable, suitably amending them in the today's necessities may be the way forward.

The idea behind the ceiling laws was equitable distribution of land. However, the current land holding situation is anything but equitable. Over 40% of the rural workforce is landless, mostly SCs. Among those who own land, 84% are small and marginal farmers owning < 2 hectares of land. And they are increasingly becoming landless. The ceilings were fixed arbitrarily high (for example, as high as 175 hectares in Rajasthan). Then benami transactions remain unchecked.

The needs of the economy have changed. Agriculture is no more a lucrative sector and as the economy modernizes, labor needs to move out of it. Farm productivity has to increase and for this agriculture must be mechanized. But this requires economies of scale which calls for an upward revision of ceilings. And if the corporate sector has to come in, ceilings must be revised up as well.

Similarly, the tenancy laws were supposed to protect the tenants. But instead, they made the tenants worse as tenancies were pushed underground. And if tenancy doesn't exist on record, how can the tenant protect his rights? They are now more dependent upon the mercy of the landlords! The biggest issue with the tenancy laws is their utter disregard for securing the property rights of the landholder.

Today there are additional needs of securing the benefits of farm credit, insurance, labor under MGNREGS to the small tenants. So perhaps a pragmatic decision would be to amend the

Discuss both in favour and against

tenancy laws to guarantee the land ownership rights of the owners and then give security of tenure to the tenant. Ideas such as the land banking system in Andhra Pradesh need to be adopted at the national level.

Q 1.d Evaluate the type of irrigation systems in India and related problems due to faulty practices? Suggest a road map to improve the situation. 6
20 marks

There are 2 major types of irrigation systems – (i) ground water based and (ii) surface water based. Their problems and roadmap ahead are as follows:

1. Ground Water Based Systems

These include various wells, tubewells – both diesel run and power run. The issues involved and suggested roadmap are:

- Briefly explain*
- Issue of equity. These require high investments and hence only affluent farmers can afford them. To overcome this, panchayat or community owned wells should be dug or suitable collective models be pursued.
 - Issue of regional disparity. Because it is based on private investment, only certain states have gone up and others have lagged. To overcome this, public investment needs to go up.
 - Issue of indiscriminate exploitation of ground water and falling water tables. Due to heavy subsidies given on power and diesel and free water, it has been severely exploited and water tables are falling. Water guzzling crops are being cultivated even in arid areas. To overcome this, we must move away from the legal framework where groundwater is considered a property of the land owner. Instead it should be considered a common resource and managed by the community. Differential pricing of water must be explored. Subsidies given on power and diesel should be rationalized.

2. Surface Water Based Systems

These include various canals, dams, tanks. The issues involved and suggested roadmap are:

- Issue of inordinate delays. A large number of projects have been delayed for 40-50 years which is much beyond their planned time. A reason for this is states start new projects without finishing old ones and once the project falls under 'non plan' category, funds literally stop. Suggestion is funds from Macro Management of Agriculture Scheme should be more focused on completing old projects. Taking up of new projects should be avoided until old ones are completed.
- Low efficiency (< 30%). Even though India has irrigation potential created of 110 million hectares (mha), the actual utilized area is only 80 mha. This is because of very low efficiency of projects. A major reason for this is that water usage charges levied are grossly inadequate to cover even a fraction of the operation costs. As a result, the maintenance of the system is neglected. Because of the low charges, farmers at the head cultivate water guzzling crops and those downstream don't get adequate water. A solution is to create and empower Water User Associations, levy suitable charges and incentivize irrigation departments to collect charges by giving matching grants from the Planning Commission.

Q 1.e Strategic alliances within key value chains between farmers, corporate sector and banking sector may be one promising way to mend many of the ills of the agricultural sector. Comment

20 marks

Our agriculture today faces many ills. Let us analyze some of them one by one.

1. Marketing

The farmer today is forced to sell to mandis under the APMC Acts. These mandis are dominated by cartels of self serving grain merchants. The weighing, storage facilities are very poor there and there is no transparency about price information. A farmer often has to travel long distance to reach the mandi and because of this has to take whatever the cartel offers him. Here corporates can step in a dual role. They can engage in direct marketing and contract farming which will give farmer more choices and hence less exploitation. Secondly they can devise models to deliver price, weather, soil, input costs information to the farmers through IT based systems like e-Choupal.

2. Risk

Indian agriculture is a highly risky venture specially after the coming of modern seeds, fertilizers, chemicals as is evident from rising number of farm suicides. Despite the ever increasing MSPs, farmers are in distress because these MSPs are not effective for most crops other than wheat and rice and in most states other than Punjab, Haryana and western parts of UP. So farmers have to face huge price fluctuations. Corporates can take off this risk from the farmer by giving him alternate choices and via contract farming, developing platforms to hedge in the futures markets. Banking sector can step in by providing insurance services. To protect them from price fluctuation risks, cheap credit can be extended against warehousing receipt.

3. Inefficient Supply Chain

Food supply chain in India has a long chain of unproductive intermediaries who exploit both the farmer and the consumers. There is gross shortage of storage, post-harvest logistics and food processing industry due to which large amount of food is wasted (30-40% by some accounts). Corporates can step in here to remove the intermediaries and invest in the post harvest management. Banking sector can step in to provide loans for the above investment.

4. Credit

Farmers often don't have access to formal credit (due to lack of tenancy record, land title or other reasons) and have poor repaying strength due to which they have to rely on the local moneylenders who charge exorbitant rates and practice fraudulent means. Here banking sector can step in a big way by relaxing KYC norms for the farmers, creating additional lines for them, coming up with innovative IT based solutions like the Kisan Credit Cards to reduce the last mile delivery costs and establish Banking Correspondents in villages. Ultra Small Branch model can be explored too.

Q 2 Answer the following in about 200 words each.

5 x 15 = 75 marks

Q 2.a Dry land farming in India is the new area of emphasis to improve the farm productivity and agricultural efficiency. Explain.

15 marks

Over 60% of our cultivated area is under dry land farming. Still its productivity is very low. With the irrigation potential of the country having plateaued, it is natural to shift focus on dry land farming for the next green revolution.

There is tremendous scope for improvement in farm productivity and agricultural efficiency in such areas. Currently, ICAR dedicates only 13% of its research funds to dry farming (despite the 60% area).

Protein crops like pulses, oilseeds, horticulture products and fodder (used for livestock industry) are all produced primarily in these areas. And let's not forget that these will be the growth drivers of our agriculture in the next generation.

The yields of dry farming crops too have been stagnant so far at very low levels. For example, since early 70s, yield per hectare of pulses has gone up only from 580 kg to 680 kg. Nobody has paid much attention yet on increasing fodder yield. On the other hand, the yields per hectare of wheat and rice have grown by leaps and bounds and are already at a high level. Thus there is a tremendous scope for improving productivity in dry crops compared to wheat and rice.

The supply chains of dry farming crops are also very inefficient. The MSPs are virtually ineffective in such crops. Thus here too there is a significant potential to improve the efficiency.

In the light of climate change, it is imperative to invest in development of drought and pest resistant varieties for the dry farming areas since they would be particularly vulnerable. Hence there is a need for new emphasis here as well.

Thus overall, the future lies in dry farming.

Q 2.b To harness the full potential of the food sector, the Ministry of Food Processing Industries has launched various schemes in the last few years. Mention some of them and evaluate how successfully they have been able to create modern infrastructure to facilitate food processing and cold chain systems. 15 marks

Some of the important schemes so launched are:

1. Mega Food Park Scheme: In this scheme, the government has decided to open clusters of food processing industry. Common infrastructure and technology upgradation will be encouraged here by subsidies and government grants. Units located here will also receive taxation benefits. Market and credit linkages will be provided. Raw materials linkages will be established as well. Skill training will be given. However, so far, the performance is lagging the target as only 3 such parks have come up.
2. Scheme for Technology Upgradation, Integration of Value Chain: Focus will be on technology upgradation in the food processing units and creating an end to end improved supply chain. For this purpose credit and fiscal subsidies / grants would be given. However it has failed to create much impact.
3. Scheme for Cold Storage Creation: Focus will be on encouraging the local entrepreneurs to establish and run cold storages. Credit linkages and fiscal subsidies and grants would be given. However, it has failed to take off because of the following reasons: (a) Banks generally consider it a very risky business so are averse to lend for it. (b) States have ESMA acts which can criminalize grain storage. (c) In the absence of forward retail connection, storage business alone is not lucrative.
4. National Food Processing Mission: This is a scheme envisaged for the remaining part of the 12th Plan where some of the above schemes and others would be integrated and a holistic view would be taken. It would focus on a cluster based approach, establishing market and credit linkages, promote entrepreneurship, technology upgradation, creation of cold storages, removing legal hurdles.

Q 2.c To harness the full potential of the food sector, the Ministry of Food Processing Industries has launched various schemes in the last few years. Mention some of them and evaluate how successfully they have been able to create modern infrastructure to facilitate food processing and cold chain systems. 15 marks

The major push for land reforms happened mainly twice – first time in 50s and next in 70s – even though we keep on hearing the murmurs even today. Both times, though high on commitment

from topmost national political leadership, the ground level achievements failed to impress. So much so, that they seemed to worsen the situation only.

For example, take the case of tenancy reforms. They were supposed to strengthen tenants' position. But exactly the reverse happened. Most of the tenancies went underground (official tenancy records fell from 50% of land holdings to 15% only). And if there is no paper to back the tenancy, how can the tenant have ANY right? So even the traditional rights were lost and they fell entirely to the mercy of the landlord. Only 4 million hectares land (out of net cropped area of 140 million hectares) was distributed among 11 million tenants.

Zamindari was abolished in name, but zamindars now became the landlords. Agricultural income tax was reduced to zero, but the rent which these landlords charged the tenants became unregulated. Land ceilings were supposed to create an equitable distribution of land. But loopholes in defining ceiling, excessively high ceilings and benami transactions led to their failure. Only 2 million hectares land was so declared surplus. Even today, agricultural land holding spectrum is so skewed that 84% are small and marginal farmers (holding < 1 hectare) and there is a trend of increasing marginalization. And those at the margin are becoming landless while the large farmers are becoming larger.

Perhaps the most important reason for this was lack of political commitment. Governments and legislatures are dominated by or are dependent upon the landed elements, the powerful ex-zamindars for their election funding. So even though the rhetoric is high pitched at the top level, the actual implementation at the ground level is only half hearted. Years pass between the laws are first proposed and finally enacted and even when enacted they leave several loopholes and then the implementation is mostly tardy and finally even the miniscule that is implemented is challenged in the courts where litigation continues for decades.

Q 2.d While e-technology always had the potential of improving efficiency in all the spheres of the activities of Indian farmers, the emerging scenario of a "deregulated agriculture" has brought in a need and urgency to include it as an integral part of decision and policy making. Comment on the utility of IT for farmers in the WTO era. 15 marks

IT has become even more crucial for Indian farmers in the WTO world in the following major areas:

- Price volatility: WTO has brought down import barriers. Gone are the days of administered, tightly controlled domestic prices. They are now affected by global factors. A sudden surge in imports can lead to a crash in domestic prices. Thus in this heightened price volatility era, it is absolutely essential to leverage ICT based solutions to disseminated marketing information quickly to the farmers and make markets more transparent.

- Export linkages: WTO has increased export linkages. (our agriculture exports last year stood \$25 billion). Windows of opportunity may open and shut very fast and hence it is important to have a database of major export markets and disseminate this information to the farmers.

- Supply chain efficiency: WTO promotes competition. Indian agriculture suffers from an inefficient supply chain with a number of unproductive intermediaries who weaken the producers and also increase costs. IT based solutions like selling directly on commodity markets and corporates have a potential to make our supply chain competitive again. IT can also increase efficiency in logistics and reduce wastage and pilferage in the storage and transport phase.

- IPR issues: WTO has ushered in strong IPR protection. It is essential today to protect our farmers from bio piracy attempts of MNCs. Our laws provide for recognition of farmer rights in the seed development process. But for its effective implementation, it is essential to create a

national database of our traditional community knowledge. MNCs are also coming in with patented seeds which are a threat to our agricultural bio-diversity (issues of cross pollination). For our security, a gene bank has to be developed which again must leverage IT.

- Best practices: WTO has increased flow of goods and competition. IT should be used to document and disseminate the agricultural best practices followed around the world to our farmers. 8

Q 2.e Animal husbandry can emerge as a core sector to the Indian economy but not until major bottlenecks are removed. Discuss the hindrances to the growth of this sector. 15 marks

Livestock sector has outpaced the crop sector since 1991 and in fact its share in total agricultural output increased from 20% in 1991 to 25% now. Our milk production has increased to 120 million tonnes already. Increasing demand in favor of the animal husbandry items makes the growth potential only too bright. However there are some critical issues which are as follows:

- Fodder: It has suffered from traditional neglect. Efforts have so far been focused on growing dual use crops on village community land. As a result the high yielding varieties have not been developed. It is estimated that against a requirement of 510 million tonnes, we produce only 50 tonnes (Source: State of Indian Agriculture Report tabled in Parliament, 2012). Furthermore, with the erosion of village commons, we have to explore other options – perhaps grow fodder on the degraded forests. It is absolutely essential because the high yielding cattle breeds require a high amount of fodder.

- Unorganized sector: The entire sector is unorganized. The producers are poor, illiterate and have low investment capacity. As a result the productivity is low and technology is backward. Special attention in this direction is needed.

- Inefficient supply chain: The storage and logistical facilities are poor. There exists a long chain of unregulated intermediaries who corner all the profits. As a result, there are little incentives and capacity for the farmers to invest and produce more. This needs to change. The Amul cooperative model has to be extended. Governmental interference in cooperatives should be minimized. Investments should flow in cold storage, pasteurization plants and transport.

- Low R&D: The indigenous varieties are low yielding. The fodder so far is low yielding too. Even though India has one of the largest cattle heads, low productivity is hampering the growth. High yielding breeds should be introduced and an entire ecosystem built for them including artificial insemination and veterinary services. 9

- External challenges: EU and US heavily subsidize their dairy exports. Developments in WTO and on the India – EU free trade agreement front can seriously jeopardize the growth of our indigenous capabilities.

Q 3 Answer the following in about 200 words each.

5 x 10 = 50 marks

Q 3.a Discuss the cropping patterns in the northern parts of India.

10 marks

Major cropping patterns are:

- Wheat: It is grown in Punjab, Haryana, western Rajasthan and western parts of UP.
- Rice: It is grown in irrigated parts of Punjab, Haryana and UP.
- Sugarcane: It is grown mostly in UP.
- Mustard: Rajasthan is the dominant producer specially in its eastern part.
- Cotton: It is grown in western parts of UP.
- Pulses and grams: Rajasthan is the major producer. Other cropping region is western UP.
- Maize: This is grown mainly in UP.
- Fruits: Kashmir and Himachal Pradesh are major growers.
- Flowers: Himachal Pradesh is major grower.

Discuss under Punjab, Rajasthan and Himachal Pradesh headings ??

Q 3.b "Transportation plays an important role in agricultural efficiency and production". Elaborate its importance in agricultural sector. 10 marks

Following is the important role played by transport in increasing agricultural efficiency and production:

- Good transport facilities prevent farmer exploitation. If the village is connected to the nearby mandi, he can take his produce there and sell instead of depending upon the *village merchant* who can exploit him by the virtue of his monopoly. If the facilities are even better, he can take his produce to other mandis where he may get better realization.
- Good transport enables faster movement of produce and thus reducing wastage. This is specially so in the case of perishables.
- Good transport connectivity to the urban areas would enable farmers even farther off to cultivate fruits and vegetables which carry higher value. Farmer will thus be able to respond to the market signals thereby increased efficiency.
- Good transport will integrate the regional markets, enhance choices to both producers and consumers, and thus remove many market distortions. It will foster competition, reduce the intermediaries in the supply chain as competition increases and enable higher value realization for the farmer and thus higher production.
- Better flow of information to the farmers.
- He can buy better inputs like seeds, fertilizers, farm equipment in a more competitive market.

Give some examples

Q 3.c Discuss the measures taken by the Department of Science and Technology for the aid of Indian farmers. 10 marks

DoS&T has undertaken following measures:

- It has taken steps to provide space based information to the farmers. This information includes weather related, disaster related, climate related, cropping pattern related, soil conditions, pests, locusts related information. Towards this purpose many satellites have been launched and ground stations established.
- ICT based applications are also used to relay information to the farmers. Gram Panchayats are being connected to NoFN. Kiosks are being opened up in villages. Programmes like e-Choupals are encouraged.

Q 3.d Discuss the measures taken by the Department of Science and Technology for the aid of Indian farmers. 10 marks

Fiscal Implications

- Higher MSPs lead to higher procurement at a higher price and thus increase the fiscal burden.
- Higher MSPs for particular crops (or effective MSPs for particular crops only) incentivise farmers to switch from other crops to these crops. This increases the production further. Because this will tend to push market prices down, government has to intervene in the market and procure even more at the MSP. This increases fiscal burden further.

- Once so much has been procured, government is under pressure to distribute it. But such a large distribution cannot take place at high prices, so distribution prices have to be lowered resulting into higher fiscal burden.

Welfare Implications

- Indian agriculture is in distress. Lakhs of farmer suicides tell us the bare story. Indian farmer already faces so many risks and if on top of it, he produces a bumper crop, the market prices plummet. This is because (a) all the output comes at the same time in the market while the demand is sparse out through the year. (b) The market is dominated by cartels of grain traders who exploit the farmers. Farmer being poor has no choice but to accept whatever he is given. MSPs give the farmer an assurance that this is the minimum price he will get and thus de-risk him.

- Most vulnerable farmers are the small and marginal farmers belonging to the vulnerable groups. They are immensely benefited.

- With growing trend of male migration to cities, agriculture is being feminized. So MSPs also benefit the females increasingly.

Q 3.e List out the recently introduced initiatives by the government to strengthen the co-operative movements in India. 10 marks

Government has brought a constitutional amendment bill in the parliament for better functioning of the cooperatives. This bill learns from the various issues faced by cooperatives over the years. It provides for elections within 6 months if a cooperative is dissolved / suspended by the state government. Earlier state governments used to supersede the cooperatives for petty political considerations. But the immediate election provision will reduce such incentives. Then the Bill also enables cooperatives to include technical and professionals in itself. The cooperatives will now have to maintain accounts on modern lines and will be audited. Reservation provisions have been made in the cooperatives for SCs/STs and women. Cooperatives have been given greater authority in deciding their issues. Outside interference is minimized.

Another step is tough negotiating posture on the India - EU free trade agreement where government is reluctant in opening up the dairy sector to subsidized EU imports.

Q 4 Answer the following in about 50 words each.

5 x 5 = 25 marks

Q 4.a Amber Box Subsidies

5 marks

These are the trade distorting domestic subsidies under WTO in agriculture. They have to be reduced by 36% in 6 years by developed countries and 21% in 10 years by developing countries subject to the de minimis clause which gives an exemption if the AMS < 10% to developing countries.

Q 4.b Mega Food Parks

5 marks

Mega Food Parks are food processing parks established by the government to create clusters of food processing. They will receive subsidies, taxation benefits and infrastructure support for development. Market and credit linkages will be developed. Skill development will take place. One such park has come up in Madhya Pradesh under the scheme.

Q 4.c Agromet Advisory Services**5 marks**

Under this service, information relating to weather, climate and other agriculture related activities like soil testing, market conditions will be given to farmers using ICT based infrastructure.

Q 4.d National Horticulture Mission**5 marks**

This is to promote cultivation of horticulture crops in India. It includes a cluster based approach, demonstration, integration with markets, creation of cold storages, running horticulture trains and improving farm practices. It also includes setting up of processing centers.

Q 4.e Intercropping**5 marks**

Intercropping is the practice where 2 or more crops are grown together, generally one row of one crop coming in between one or more rows of the other crops. The idea is to utilize the nutrient complementarities between the crops. One may fix the atmospheric nitrogen while other can use such fixed nitrates.

* Please submit a handwritten answers next time. This is very impoerare attempt.

* Need more indepth analyses, interlinkage of concepts and examples.

* Key terms should be very well cleared.