Bdst 2 topic 6: agriculture – the Importance of Agriculture to Bangladesh

Factors affecting agricultural production

- Availability of water
- Temperatures
- availability of land - land scarcity
- fertilizer
- HY seeds
- machinery or equipment
- money or credit for buying equipment, etc.
- effects of typhoons
- difficulty in getting to market due to poor infrastructure
- law and order issues

Problems faced by farmers in rural areas

- Remote from market
- Lack of transport
- Drought
- Flood
- Lack of machinery / technology
- Pests
- Lack of land / lack fragmentation
- Soil fertility
- Poverty / lack of money / investment
- Lack of training

Challenges faced by agriculture in Bangladesh

- Growing population
- Shortage of arable land
- Changing climate
- Need to diversify agriculture

The topography (physical features) of Bangladesh is very beneficial for the farmers

- variety of features
- flat land/flood plains
- alluvium/silt
- fertile soil
- hills for tea
- hills give different climatic conditions

The topography (physical features) of Bangladesh presents many problems for the farmers

- flooding
- from rivers
- from sea
- low elevation/low lying is a problem with climate change and rising sea levels

Explain why each of upland areas and deltas are less suitable for agriculture

upland area:

1. forested
2. away from main river valleys
3. cultivation could cause soil erosion
4. difficult to provide water all year
5. very heavy rainfall

part of delta:

1. flooding with saltwater
2. forested or sunderbans
3. very difficult communications
4. frequent damage from typhoons

Describe the distribution of land most suitable for agriculture

1. valley or either side of Jamuna also its tributary Tista
2. south east of Mehgna and or Padma
3. area to west of Padma delta/area to north of Dhaka
4. narrow strip along coast in east

Benefits of floods

- alluvium/silt deposited fertile soil
- high yields
- moist soils
- water for irrigation/crops
- financial benefit

Negatives of floods

- crops ruined/washed away
- livestock lost
- homes lost
- death/injury
- lack of food
- fertilisers washed away

What is meant by the term Green Revolution

- Dramatic change in agriculture
- Increase in yield / productivity / production
- Due to new HYVs / chemical fertilisers / pesticides / irrigation / modern technology / scientific techniques

Name and describe two methods of irrigation

Shallow and tube wells

- dug deep enough to access groundwater
- water needs to be raised
- named methods of raising e.g. motor or mechanical, treadle, diaphragm etc.

Using surface water in channels from river:

- may be dam to create storage
- raising of water still needed but easier because shorter rise needed
- sluice gates avoid need to lift

Explain the importance of the production of fertilisers to farmers and to the economy of Bangladesh

Farmers:

- add nutrients to soil
- enable double cropping
- increase/high yield/increase production
- can grow HYV seeds
- increase farmers' earnings

Economy:

- reduce imports
- export earnings (of fertilisers or crops)

Increase in the use of fertilisers

- Green Revolution
- Improving yields / quality / quantity of crops
- Government subsiding costs / loans
- Increasing production of cash crops
- Varying fertility of land requires fertiliser
- More education / training / awareness
- More availability

Decline in the use of fertilisers

- Not all farmers can afford
- Issues with use of fertilisers e.g. damages soil

Explain how the green revolution led to higher yields/The Green Revolution is key to Bangladesh increasing its food supply/Modern techniques are needed in agriculture to increase food production

- new varieties of seeds which give higher yields examples of HY varieties e.g. Maxipak, Irri 6
- improved irrigation/continuous supply of water
- increased use of fertilisers add nutrients to the soil for higher yield
- allow multi-cropping
- consolidation of land
- use of pesticides prevents loss of crops to pests
- mechanisation/machinery – less wastage/more productivity

- education/training of new techniques
- co-operatives
- loans
- population increase needs more food/prevent malnutrition

Explain how the green revolution can give rise to problems

- monoculture and use of HYVs can lead to reduction in genetic variety can lead to crop disease giving rise to unhealthy plants and outbreak of pests
- debt
- expense –not all farmers can afford causing greater gap between rich and poor farmer
- HYVs extract large quantities of nutrients from soil
- too much fertiliser use can ruin soil
- eutrophication
- too much use of pesticides can affect quality of food
- and kill off natural predators
- pests become resistant to pesticides
- pesticides cause water pollution
- mechanisation causes unemployment and air pollution
- irrigation causes arsenic contamination of water
- water-logging
- salinisation
- soil erosion
- causes problems for illiterate farmers to adopt new techniques

The green revolution has been of great benefit to Bangladesh

- increased food production to meet needs of growing population
- would have been hunger/malnutrition
- large population in small land area needs high yields

Explain how each of the following limits the spread of the Green Revolution

- the very small size of many farms in Bangladesh fields too small for tractors
- difficult to irrigate small / fragmented small land
- difficult to achieve economies of scale
- rural poverty
- subsistence farmers have very little or no in one

- HYVs / chemical fertiliser / irrigation pumps expensive
- risk aversion
- lack of education / illiteracy / lack of skills / training to adopt new ideas / methods

Bangladesh must develop more sustainable forms of agriculture

- yields will start to decline
- use of chemicals affecting water/people's health
- soil fertilisers,pesticides, mechanisation, etc expensive
- land scarce but population growing
- GM crops
- roof top gardens

Explain how the farmers can grow crops in the infertile sand

- small hole/pit dug
- line with jute/sack
- fill with compost
- provide nitrates, phosphates, minerals
- plant seeds
- harvest/reap/pick crops

Wheat

- winter crop
- flat/plain land well drained
- alluvial, sandy loamy soil
- temperature 16°C - 22°C/warm
- 400 mm – 1000 mm rainfall/moderate
- Tangail/Dinajpur/Khulna/Jessore/Kushtia/Pabna/ Rajshahi/Bogra/Rangpur/Faridpur/Dhaka

Give reasons why wheat is a major crop in these areas

- drier parts of the country/400–1100 mm rainfall less reliable rainfall
- grown during dry season when unsuitable for rice inadequate rainfall for rice growing
- sandy, loamy soils

Explain how technological advances, such as the Green Revolution, may have caused the

changes in wheat production

HYVs:

- to increase yield/double cropping
- disease resistant
- genetically engineered to cope with climatic conditions

Fertilisers:

- improves quality of soil
- maintains fertility – no fallow period
- faster production

Pesticides:

- to protect from loss of crop (by insect attack)

Herbicides:

- to prevent growth of weeds/taking nutrients from crop

Irrigation:

- stabilise water requirements
- healthier growth

Machinery:

- save time
- less wastage

Rice:

- Abundant sunshine
- 20–27 °C
- Wet soil / irrigated / flooded conditions
- Clayey loam soil / fertile, alluvial soil
- Low lying flat land
- Temperature: 16-27° C approximately
- Rainfall: min 1000 mm / 1000–2500 mm
- Soil Condition: Alluvial, loamy
- Places: Dinajpur, Rangpur, Mymensingh, Barisal

Types:

- Aus- Planted in April, Harvested in July
- Aman- Planted in August and harvested in December
- Boro- Planted in December and harvested in May/ June.

Describe the natural inputs necessary for growing Aman rice

- fertile, alluvial soil
- high temperatures – over 21°C all year
- flat land
- flood plain/low lying
- high rainfall – 1000–2500 mm
- **dry/sunny for harvesting**

Explain why rice is the main crop in many parts of Bangladesh

- high rainfall/1000–3000 mm
- water from rivers for irrigation
- warm temperatures–need25 C/16°C–27°C
- high yields possible
- flat land/plain (easy to irrigate)
- fertile soil/alluvium
- water retaining soil
- plenty of labour for cultivation

Describe the processes involved in traditional rice cultivation

- planting in nursery
- ploughed soil
- bunds built/repaired
- transplanting
- fields flooded before planting
- fields drained when rice ripe
- harvesting

Explain how this pattern of rainfall affects the subsistence farmers in the area

- Great variations in availability of water affects what can be grown and when
- floods during and after monsoon may make cultivation impossible
- after flooding water is valuable for growing rice
- Aman rice planted in August
- but may not be possible due to excessive floods
- need access to irrigation during dry season
- other crops can be grown during dry season
- HY boro rice can be planted in December
- if irrigation is available
- harvested before monsoon

Explain how farmers can increase rice production

- mechanisation – tillers, ploughs, threshers
- larger plots of land/merging smaller fields
- HYV seeds – miracle rice/Irri 6
- fertilisers
- pesticides

Explain why rice production increased overall from 1988 to 2005

- Increased demand due to growing population
- use of high yielding varieties
- especially boro rice
- use of fertilisers
- price of fertilisers is subsidised by government
- better irrigation
- training of farmers to increase productivity of their land/
- use of machinery such as water pumps
- ‘Machinery’ on its own not to credited. ‘Green revolution’ needs development to gain credit.

The introduction of Green Revolution technology has particularly increased the cultivation of Boro rice. Describe the methods used and explain how effective these have been

- Irrigation introduced
- HYV seeds
- chemical fertilisers

- pesticides
- mechanisation

- salinity
- soil damaged
- training necessary
- small farms not ideal water supplies – reliability
- arsenic poisoning depends on wealth of farmer
- increased growth of weeds

– Allow development, examples and negative and positive comments on effectiveness

Oilseeds:

- Temperature: 15-20° C
- Rainfall: up to 1000 mm
- Soil Condition: well filled soil with sandy, loamy Places: Mymensingh, Faridpur
- Season:- Planted in August/ September and Harvested in December/ January

Describe the uses of oilseeds

– cooking oil, perfumes, candles, soap, etc.

Name two pulses grown as foodcrops

– lentils, mungbean, chick pea/gram, black gram, masur, khesari, pigeon pea, mashkalai

Why are pulses an important food crop

- Nutritious / healthy
- Protein rich
- Rich in iron
- Roughage / fibre
- Cheap
- Easy to grow
- Very productive

Increasing food production for the people of Bangladeshis is the most important use of agricultural land

- need food to survive
- increasing population needs more food/no food scarcity
- reduce cost of importing food

Different ways that Bangladesh has increased its food production

- Green revolution
- HYVs
- Insecticides / pesticides Fertilisers
- Irrigation
- Machinery / tractors
- **Government subsidies**
- **More tube wells / lift pumps**
- **Polyculture**
- Education / training / advice

The most important use of land in Bangladesh is for growing food

- Limited amount of land in Bangladesh
- growing population needs food
- better to grow food than import it
- same conditions that are good for jute are also good for other crops like rice

Suggest three ways that food production could be increased

- Increasing area of land that is irrigated
- consolidation of land holdings
- sharing of equipment
- facilities for loans to buy machinery
- farmers trained to apply correct amounts of fertilisers at right time

Why is it important to grow cash crops?

- export
- earn foreign exchange/increase GDP
- raw materials for industry
- source of employment

Why are cash crops important for Bangladesh's economy

- can be sold
- creating wealth to be spent on other goods and services
- can be exported so earning foreign exchange
- Bangladesh needs forex for development
- raw material for industry
- can be processed thus adding value

What difficulties are there in trying to increase the production of cash crops in Bangladesh

- shortage of land
- lack of capital
- problems in getting finance etc.
- lack of good transport links to get products to market
- shortage of machinery
- price varies
- growing population requires increased food production

Why is it difficult to increase the production of cash crops

- Lack of capital / problems getting finance / need large investment Lack of suitable land / need large land
- Lack of good transport links
- Price variation / decrease demand for jute
- Lack of machinery
- Lack of education / training Increasing demand for food crops Land ownership

More cash crops need to be grown for industry and export

- increase GDP/foreign exchange if more industry and export/profit/earnings
- increase employment if more industry results
- jute important to Bangladesh's economy

What is the difference between subsistence farming and commercial farming

- Subsistence is to provide food for our family / farmers / locals / for our own use / consumption

- Commercial is for profit / for sale / for export

Jute:

- alluvial, loamy, sandy soil
- temperature 20°C - 26°C
- 2000 mm - 2500 mm rainfall
- waterlogged conditions sometimes
- places: Faridpur, Narayanganj
- season: Planted in February/March, Harvested in June /August
- Sacks/rope/fabrics/yarn/packaging

Explain the importance of jute to Bangladesh's economy

- main cash crop
- contributes to GDP
- main world producer
- 85% exported
- 18% of export earnings
- employment in industry and fields
- Allow elaboration

Suggest two advantages of using jute rather than oil

- Sustainable
- grows well in Bangladesh
- cheap to grow
- recyclable
- not finite like oil
- Bangladesh can grow jute, does not have much oil
- jute is more environmentally friendly

Production of jute in Bangladesh should be increased

- Valuable exports
- demand will increase as oil runs out
- gets more expensive
- provides jobs for landless labourers

- helps to counter rural poverty
- can avoid people having to move to cities
- Bangladesh has good conditions for growth

Sugarcane:

- alluvial, loamy, sandy soil
- temperature 24°C - 27°C
- 1000 mm - 1500 mm rainfall
- places: Faridpur, Mymensingh

explain the importance of the sugarcane to Bangladesh's economy

- third most important cash crop
- raw material for industry
- employment
- own use
- Allow elaboration

Explain why it is difficult to increase the production of cash crops such as jute and sugar cane

- demand/need for food crops
- more profitable to grow food
- low investment/no subsidies/e.g. of lack of investment (irrigation, land, fertiliser, etc.)
- low world demand for jute
- scarcity of land/pressure on land
- low world prices/low profit
- competition from other countries

Tea:

- Temperature: 16-27° C
- Rainfall: 1500-2500 mm
- Soil Condition: high land , sandy, loamy
- Places: Sylhet (Naturally), Panchagar, Dinaipur- artificially
- Season- Planted in December and harvested in April/ May, 6 Years cycle

Continuing to increase crop yield and type of crop (diversity) is key to
the future economic development of Bangladesh

- To meet growing demand for food
- Increased exports, which increases GDP and means more foreign exchange
- Decreases need for food imports, makes Bangladesh more self-sufficient
- The country needs to invest more in research on non-rice crops, livestock, and fishery as well as infrastructure to support the shift towards high-value agriculture

The best future for Bangladesh is to have fewer but larger farms

- Better use could be made of machinery
- more capital available for investment
- larger scale production could reduce costs
- small farmers traditionally very cautious about new ideas
- could attract foreign investment

Supporting the small farmers is the key to Bangladesh's future

- Availability of labour is not a problem
- people work best when they have a stake in harvest
- many small farmers can make very efficient use of land
- support from govt or NGOs with equipment – seeds etc. would lead to bigger harvests
- larger farms would drive many off land and increase landlessness and migration to towns
- most farms are small

Floating gardens could bring many benefits both to subsistence farmers and to the Bangladesh economy

- Easy to construct
- cheap to construct
- flooding is a major issue so could be widely used
- creates more space for growing crops
- can be transplanted after floods finish
- enables surplus food to be grown so some can be sold
- increase food production for Bangladesh
- benefits economy because more food is grown or less imports needed
- not reliant on government for help, etc.
- other farmers can quickly copy the idea
- farmers do not suffer or go hungry because of floods

Floating gardens could **not** bring many benefits both to subsistence farmers and to the Bangladesh economy

- Small scale and would not provide much food
- could be damaged by excess of water
- waterways used for transport so could be clashes
- subsistence farmers may
- not have money for bamboo etc.
- may help farmers but not economy as produce
- unlikely to be available for selling
- idea introduced by an NGO so will not be resources to introduce it everywhere.

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