Lyallpur Tour

April 9, 1956:

By 0900 all of us were seated in the Lyallpur Agricultural College Chemistry lecture room. The Principal in his brief lecture after welcoming us, gave a brief outline of the history of this college. It was founded in 1906 and uptill its affiliation with the Punjab University, it used to give the diploma of LAD spread over three years. After 1917, many new courses of study were introduced. Besides B.Sc. and M.Sc. classes in agriculture, facilities for research work were also made available to the students and uptill now, 6 candidates have been awarded Ph.D, 241 M.Sc. and 1502 B.Sc. degrees. There are students from abroad as well for instance from Iran, Afghanistan, Egypt, Holland etc. The principal informed us that a batch of German students also wanted to come here but they wanted to earn in their spare time while learning, which was a difficult proposition for the college authorities to cope with, hence the Germans didn't come.

I was glad to learn that this is an exclusively residential institution and day scholars are allowed only in special cases. In our country, we badly need a good residential university. Instead of these five or six examining bodies which have come into existence since partition, I wish government and people would have concentrated on one good residential institution. The principal told us that the stress in this college is more on practical side than in theory. After each one hour theory period, two hours duration of practical period follows. Students are given plots to sow, nourish and harvest the crops. The second year students this year not only grew enough vegetables for their own use but sold the remainder at Rs. 270. In third year, students learn Dairy and Poultry farming. They are given training in veterinary science as well to enable them to treat minor ailments. In fourth year, the students revise whatever they have read in just three years and also about land management i.e. survey etc. The courses of study at this college vary from 7 days to 9 years duration. There is a vernacular course of 1 year's duration specially for "farmer's sons". The via media for this course is Urdu and great stress is laid on the practical side. There is one year Mali Class as well. There is a fruit preservation service also which sends its staff to different places to train persons interested in fruit preservation. Last year it trained 25,000 persons, of which 7,000 were ladies. Such courses are certainly very beneficial and should be extended to other fields as well. A 10 days confectionary course is also included in the curriculum.

The Principal gave us a pretty big list of courses being taught at the college e.g. bee-keeping; tractor driving; blacksmithy; estate managers; refining and scenting of oil; fruit and vegetable preservation; cooperative societies etc., etc. The college aims not only a teaching institution but is a research institute also. Research is being done on commodity basis. There is a farm also which ascertains the water requirements of

crops. There is a mechanical cultivation farm of 1000 acres also. In this farm, mechanical cultivation is coupled with cultivation with bullocks. The Principal was of the opinion that we can't switch on to mechanical cultivation in toto unless and until we have nice service stations and quite a good supply of spare parts, which is only possible if these things are manufactured in the country itself. I think he was right in saying so because at Layyah I saw that how big an organisation is needed to keep these machines in order. Even with that big AMO workshop, those people wholly depended for the spare parts on foreign firms. The Principal also said that we can't do away with bullocks because we need manure. I don't think this was a very convincing argument. Most of our farmers burn instead of using it as manure and if on a 25 acre holding, there are 8 to 10 animals (which usually is the case), they can hardly give manure sufficient for 3-1/2 acres. Another argument which he extended against mechanical cultivation was that because of the great weight of the machines slowly and slowly the soil gets packed and compact at the ridges and thus renders it less porous and consequently less fertile. This he said is quite a new theory being advanced in America. It is still to be seen that how far it is true.

After the Principal's introductory remarks, we heard a lecture on crop statistics by Mr. Qureshi. The statistical section, he told us, is fairly new in the college because it is hardly 12 year old and hence is small as compared to other sections. Its main objects are a) to plan and design experiments; 2) to analyse results statistically; 3) teaching in degree class and 4) research on crops statistics and how to effect improvements. There are two trends of crop statistics; 1) area statistics and 2) production statistics. Mr. Qureshi thought the area statistics system as unique and in his opinion the figures given by Patwaris were fairly accurate. He thought that if supervisory staff is increased and other multifarious duties are taken away from the Patwaris, a very accurate table of area statistics could be obtained through the agency of the Patwaris. One important thing which he pointed out was that yield per acre of mixed crops is not equal to that of a fine crop. Thus wheat mixed with gram cultivated gives only 71% of pure wheat sown; and 75% of un-irrigated or barrani wheat sown. This is because of competition between the two crops. Thus the official figures which make no differentiation in their account err in this respect. Besides the area sown under mixed seeds for each crop does not always remain the same. In one year it might be in the ratio of 50:50, next year it might change to some thing like 85/15 or 73/27 which usually is the case, but the official records only take notice of the original ratio. Mr. Qureshi advocated that one Patwari should only have 5000 khasras under him. At present he looks after something like 10,000 to 15,000 khasras. In Bengal as there is no Patwari system hence the statistics are very weak.

As regards production statistics, Mr. Qureshi thought that the official system is highly subjective. There is a lot of personal estimation, there is no experimentation and there is lot of inaccuracy because no upper or lower limit is fixed e.g. no standard of error is attached to it. In place of this Mr. Qureshi advocated the Random Sampling Technique for crop estimation which was applied by Hubback in Bihar in 1923. Deshmukh (the

present finance minister in the Indian Union) applied it to Raipur in C.P. during 1928-30. Pant was the one in giving the idea that this system could be used on provincial basis. Sabbathani during 1944-47, worked it on full provincial scale. This technique eliminates the subjective element and is totally objective. There have been 8 surveys in the last 5 years. 2% villages of the Punjab were sampled are random about 300 to 350 villages. 3 fields in each village are selected by a special technique. I must say this technique is pretty complicated and does need very careful instructions. After the crop cutting (each cut being 1/20 of an acre in area) the yield is weighed and figures sent to Lyallpur, who work out the statistics after taking a mean and standard error. In 1951, the official estimates of wheat was 12% less according to this method. In 1953 again it was 12% less which caused a psychological scare in the country. According to Mr. Qureshi, official estimates are always less in normal years and higher in abnormal years. The reason is a psychological one. The Patwari does not want to deviate much from the standard out turn figures which he has got in normal years. In abnormal years again because of the suspension and remission of revenue he always errs in favour of the government. Mr. Qureshi told us that this method has been adopted in India and must be adopted here as well. I think that the system is quite sensible one and only if it is made a bit more easy and tangible. In Bengal, Mr. Qureshi told us, that he has been able to find out the statistics of the area and production with regard to jute with the aid of this system, but there the work is very difficult because there is no Patwari system, which is capable of giving very accurate statistics.

Mr. Wahab gave us a very nice talk on the role of chemistry in agriculture. He said that it is the necessity of the knowledge about soil in agriculture which brings in chemistry. In his opinion soil knowledge in our country is very inadequate. He tackled the question of water logging and salinity quite in detail. In 1882 the water level in Lyallpur was 60 feet below now it is only 20 to30 feet. As this region is in the shape of cup hence there is lot of accumulation of rain water also. I think he made a very apt remark when he said that most of our energy is being wasted on finding the origin of the problem than on devising ways and means to tackle the problem. The salinity problem is more acute and is becoming more serious day by day. Even by irrigation water salt is being added to the surface. It is essential that so much water should be given to crops so as to get the maximum yield without adding water to the water-table and also keeping the salt percentage down less than .1%, does not affect the soil but .2% and more is detrimental to the crop. The so-called rice areas of the Punjab are not actually fit and most suitable for rice. It is only because rice requires more water which in these regions is badly needed to leach down salt, this is why rice is being grown in these areas.

Fertility of our land is also much below the average. The yield per acre in our country is 7 mds of cotton while in Egypt it is 22 maunds. This is mainly because of the fact that we go on taking crop after crop without adding anything to the soil. The college

authorities are experimenting to get the maximum benefit out of the fertilizers. By experiments they have found out that although ammonium sulphate is not washed away by water but 40 to 50% of it evaporates away. This could be avoided by putting the ammonium two inches deep in the soil. Too much light in our country also effects the fertilizers. Krilinium is the wonder drug for soil found in USA but it is at present sold at 2 dollars an lb which means one will have to spend as 5,000 to bring in 1 acre of land under cultivation. Anyway such a thing has been found which proves effective within few hours and a day will come when it will be sold much cheaper than now.

Next lecture was on the principles of plant improvement and their application. Mr. Misbahuddin, Plant Expert told us that there were different methods of plant improvement, one category is that of conventional method which includes improvement by a) manure; b) better cultivation; c) better irrigation facilities and d) supply of good seeds. But there is a limit to these and the law of diminishing return applies to them. Another method of improvement is by plant breeding which includes acclimatization. It is not always successful but mostly good results are obtained through this method. In Pakistan, American Cotton 4F and LSS) has been very successfully acclimatized. Another crop which has successfully been acclimatized is Berseem (green fodder) it was imported from Egypt and it gives six cuttings. This has solved the winter fodder problem of the peasants. Tomato and guava were imported about a hundred years back; b) selection among self fertile crops e.g. wheat, one quality is adopted and made popular. In mass selection there is cross pollination, ------ of such crops are oil seed crops, grasses, barley etc. There is no scope for selection in the existing circumstances so far as wheat, cotton etc., are concerned. It is not a very easy process. After we make a cross between two flowers having red and white colours. The result is subsequent growth as far as colour goes will be as follows:

Red	+	White	
	Red		
Red	Red	Red	White

It all depends on the number of chromosomes in each breed. Chromosomes have the capacity to create their alikes. In case of cotton, they have been able to achieve a lot by resorting to this method. First they made a cross between local and the Chinese variety, then between this and wild variety. Fine quality used to give 6400 yards of thread from 1 lb while the output in latter case increased to 12800 yards per lb. Besides successes in cases of Sudan grass, jawar, makai with Mexican makai, bajra have almost revolutionized the wheat crop by the processes 591C is being used all over Punjab. Another process is method by which Dr. Kibra in Japan has been able to get seedless fruits.

After lunch Ch. Sultan Ali, Entomologist gave his lecture on plant protection service. He said that the struggle for existence is most acute in the insect world, the insects are struggling for their existence. He described one by one the plant pests and the measures to meet the menace a) rice borer while damaged almost 90% of the crop in D.G. Khan last year, this year it has taken a big toll in Gujranwala district; b) sugarcane pest which destroys 10% of the crop every year. It also does damage to cotton, citrus, mangoes; c) citrus white fly; d) mango harpers; e) codling moth; f) save Jose scale; g) apple defoliator. These are of foreign origin and there is a continuous flows of these insects in our country because of inadequate quarantine arrangements. Locust is the most bitter enemy. It can't be eradicated because of its size and shape, the pace at which it multiplies itself and its adoptability to any food or climate. As regards mammal rats, flying foxes, pigs, porcupines are very dangerous and do a lot of damage to crops. 5.5% of the total production is lost due to these pests in the world. 10% in store and 5% in cutting stored grain pest is rampant in Pakistan.

The entomologist was of the opinion that the plant protection service is very inadequate particularly in the units.

	Staff			**Organisation**		
	Gazetted Officers	Sub-Divl Officers	Vehicles	Power Machines	Hand Machines	Helicopters
Centre	40	421	126	78	1616	8
West Pak	4	18	12	145	3000	0
East Bengal	4	8	12	Not available		

Centre has only to tackle the locust problem while the unit had not only to tackle with that problem but also with others as enumerated above.

As for locusts DDT has proved a great success with them. The infestation of rice borer had been reduced to 5% with the help of DDT and BHC mixture in the ratio of 1:4. 800,000 maunds of wheat has so far been treated with this mixture. In Sind there is a new pest which is not found in other regions, the black-headed insect which is damaging wheat and cotton there. It affected 2000 sq. miles last year. By using pesticides, they have able to save 10 to 20 lac maunds of food grain.

The following chart shows the amount of work done:

	No. of Plants	No. of rat treated	Mds of food grain	Rice borers	average of other crops Treated	Seed disease treatmt.
Punjab	396,185	224,025	64,659	194,141	5,308	8,012
NWFP	698,000	5,800	-	-	57,700	-

Sindh (Khairpun &	5,731 Mango	-	-	-	27,300 (against cricket)	115,583
East Bengal	-	-	-	-	6,000	4,835

Mr. Sultan Ali recommended one technical man at district level to tackle the problem. He also suggested the encouragement of private individuals and firms so far as the manufacturing of insecticides was concerned. At present we import most of them. He also advocated some sort of a legislation to compel every farmer to do his bit in suppressing the insects. I think we certainly can improve the plant protection service by accepting the above suggestions.

After hearing the lecture on plant protection service, we went to attend the lecture on plant diseases and their control by Dr. Abdul Ghani Arif, Plant Pathologist. He gave us a resume of his lecture as well. He told us about different methods of curing plant diseases. First of all he gave us a list of plant diseases while he said could be divided in parasitic and non-parasitic categories. Then he told us about different type of diseases like yellow rust, leaf rust, black rust, loose smut, grain blight, cotton root rot, citrus wither-tip, grain hunt, long smut and others.

April 10, 1956

This morning first we went to see the Cotton Research Section. There are about nine varieties of cotton which are at presently being grown in West Pakistan, seven of them are Pak-American and two are Desi. About 3,200,000 acres is under cotton cultivation. The total production is 1,600,000 bales. Multan zone is the most fertile for cotton and about 600,000 acres is under cotton cultivation there where they grow 124F and 199F, the finest and the best of varieties. In Montgomery zone, the variety sown is 289F/43 – about 300,000 acres. LSs, 4F and other varieties are grown in the districts of Shahpur, Lyallpur, Jhang and Gujranwala. Foreign varieties i.e. Pak-American, are capable of giving much more yarn than the desi ones because of their fine fibre, but the desi cotton is more in demand in foreign countries because of its rough and short fibre which is easy to mix with wool. 231R is the best quality desi cotton. The acreage under cotton cultivation in various parts of West Pakistan, is as follows:

Area	**Percentage**	**Production %age**
Multan	36.42%	32.28
Hyderabad	22.32%	28.34
Bahawalpur	17.94%	16.66
Rawalpindi	8.23%	2.93%
Khairpur	6.13%	8.54%

Lahore	8.13%	5.59%
Others	0.60%	0.22

The yield per acre in Multan and Khairpur has been the best, where the average yields is about 40 maunds per acre. 124F is the most common variety in Multan out of 6 lac acres under cotton cultivation. 5 lacs is under this variety. The following table shows the area under different crops.

Wheat	7,945,320	acres
Fodder	2,683,435	
Millets	2,104,513	
Cotton	2,707,260	
Grains	1,622,229	
Rice	702,356	
Pulses	578,146	
Oilseed	464,356	
Sugarcane	320,429	
Vegetables	207,763	
Barley	251,059	
Fruits	58,755	

From the Cotton research Section, we passed on to the Insectary Section. First we were shown the locusts – with which we will have to deal in future. The expert told us that locusts come once every five or six years and they don't breed in Pakistan for that they require soft sandy areas. 4 oz of Adriane mixed with water is sufficient to kill as much locusts as there could be in one acre if the solution is sprayed over the area. Then we saw the Lac insect and the process of manufacturing Lac. It is the product of this sub-continent. There are five farms in West Pakistan and there are about 1500 big trees. White ant is one of the cosmopolitan pests Adriane is effective in this case also. Rice borer was a great pest till recently but now the damage done by it has been brought down to 1.5% of what it previously was. This has mainly been due to new medicine, which is a mixture of BHC and DDT.

On enquiring I came to know that the damage done to stored grain in storage bins in 1953 was not due to rains, as was given out in press but it was owing to the fact that grain was put in the bins before they had dried up hence a coating of six inches around the walls was damaged. The Honey Section in the insectary section seemed to be doing very well. I was glad to see in one of the charts that Swat honey has been recognized by this section as standard honey. They have succeeded in demonstrating apis indicia, and now they are trying to domestic apis Dorsata, which according to the entomologist will give tons of honey.

From the Insectary Section we went to Vegetable Section where we saw what they have achieved with regard to vegetables. Their achievement in the sphere of potato growing was great. They are now growing their own seeds which they used to import previously from India.

From the Vegetable Section we headed towards Cereals Section. We were given quite an exhaustive type written note by the expert concerned. We went to see their confectionary section, as well as to their experimental farm. We did taste some of their confectionary as well which certainly was fairly good. From the Cereals Section, we passed on the Oilseeds Section. Here again we were handed a brief note on the work of the Oilseeds Section. This section, incidentally, is under the Principal Mr. Zafar Alam himself. They are trying to grow soyabean and have succeeded to a great extent but still it is at and experimental stage.

After lunch we attended a lecture on the importance of fruit growing and scope of fruit preservation delivered by Mr. Phillips, fruit expert. Research work on fruits was started as late as 1925 when a fruit expert was appointed by the government whose job was to survey the acreage under garden. Round about this period Mr. Mitchell got a lease of land at Renala Khurd for growing a vine garden. This venture proved to be an utter failure and after 2 years of experiments and terrific amount of loss, he switched on to citrus which proved a great success. Fruit gardening is unique and very difficult because it is a long term investment and unlike crop husbandry, you can't change it from year to year to get good variety. The fruit specialist appointed in 1925 found that the orchards were very poorly laid up, varieties of fruits were very sickly, income from the orchard was not even enough to meet the expenses. Malis were untrained. A plan was chalked out to educate the Malis and fruit growers to get better yields. Staff for giving advice was also to be trained first of all. The expert recommended that the quickest way to make improvements was to import good varieties of fruits from foreign countries. The famous Nan Murrabba Garden at Lyallpur was planted which still is the nucleus of fruit plantation. By 1935, 30,000 acres of land was under fruit plantation in the whole of Punjab, now the area has risen to 70,000 acres in West Punjab only. We are growing best varieties of citrus, dates and some of the mangoes in the world. Besides Malta, Musami, Valencia late, jafa, ruby and pineapples, they are also trying to grow the Washington Naval seedless orange. They have succeeded in growing this variety to some extent in the salt range and the Soon Valley. They are also growing some good varieties of mangoes, where as at the time of partition, we wholly depended on India. They have laid a beautiful date garden near Jhang city. They have not so far succeeded with bananas but are tying hard. Banana hates extreme climate and wind. They are trying to find a suitable location for its plantation, at present they have experimental banana farms at a dozen places.

Fruit plantation has reached an acute stage now because in 1936, it was agreed that 1% of the canal water on the main lines was to be allotted to orchards. This limit has already been reached. The canal authorities are not much concerned on this account because they simply say that they cant' help it. Hence there are now two ways open either to stop fruit plantation or to encourage tubewell irrigation. The latter is a better system of irrigation than canals so far as fruits go because time factor is quite important in fruit cultivation and loss of one time means waste of not one season's labour but of many. In our country, on an average acre fruit garden is meant for 300 people and we consume 25.7 lbs of fruits per annum per person as compared to 225 lbs per person per annum in foreign countries. This shows that our fruit supply is very inadequate and we can't afford to put a stop to fruit cultivation. We can also increase the yield fourfold by giving right type of manure or water at night time and by laying down nice orchards. We are not producing enough at present. A citrus tree which should give 2000 fruits is hardly giving 500 maltas. The price of fruits is high because of the defective selling machinery. The fruit crop is sold before it is ripened. The contractor later sells the fruits to the wholesale dealers who sells it to the retailers, thus four people get profit out of the consumer. An attempt was made in 1936 to give impetus to fruit gardening by establishing Fruit Development Board, which has done some good work since then. It publishes a journal also. There is an extension service also which gives free service.

Next we went to the workshop to hear a lecture by Mr. Majid Hasan. He talked about tube-wells mainly. I think Rs. 40,000 for a tubewell of 3 to 4 cusecs discharge is pretty expensive. The cheapest is of ¼ cusecs discharge of which one can get installed for Rs. 8,000. Mr. Majid also showed a Persian wheel being run by a diesel engine which gives twice the amount of water at half the expenditure as compared to the ordinary Persian wheels drawn by animal power. I asked Mr. Majid why doesn't he make this thing popular, because the motor costs only Rs. 700. His answer was that first there was no adequate arrangement to take the message of research workers to the fields, secondly these motors were not available. This was really a sad state of affairs. We saw some improved indigenous ploughs as well. There is a fleet of tractors as well in the workshop which they give to the cultivators on hire but as the charges are Rs. 10 per hour including transport charges hence people are not very keen to make use of this service. Besides they haven't got suitable implements and the ones which they have got are meant for heavy duty. In Peshawar, these charges are only Rs. 5 per hour, hence this service is quite popular. I don't know why there is such a difference between the two places. Mr. Majid himself didn't know the cause.

April 11, 1956

First of all we attended a lecture on crop husbandry delivered by Prof. Gill. In his opinion the cause of low yields in our country is mainly because the farmers do not use fertlliser in good quantity. We give only lbs of manure to an acre which in Japan it

is 60 lbs and in western countries it is as high as 300 lbs per acre. There are other factors as well as for instance control of insect pests, good seeds, rotation of crops system. In western countries they have increased the production per acre by about 40% and still there is as much scope left, this shows that there is lot of scope in our country as well to increase production, which can be an answer to the greatly increasing population. Prof. Gill emphasized the importance of crop husbandry and compared it with other branches of agriculture like horticulture, animal husbandry, dairy farming, poultry farming, forestry, fish farming etc. In his opinion all of these are less profitable than crop husbandry and in many cases they can't be taken up on commercial basis independent of crop husbandry. Horticulture he said requires a lot of investment and you get return after years of labour hence poor people can't afford it. Poultry farming is only profitable when you have got birds of foreign breed who give more eggs and eat less. Animal farming is very costly unless you have got waste land to feed the animals on them. Stall feeding is very dear and uneconomical. In the case of fruits or vegetables, you need a ready market because they are perishable. He recommended these to be take up as subsidiary farming and not independent of crop husbandry. Some of his arguments were fairly convincing but I don't think that all these farmings are always uneconomical if taken independently of crop husbandry. Fruit cultivations are very paying, so is dairy farming and vegetables plots. There is no doubt that in their case, places do make a lot of difference. Near big towns the demand is always very high and they fetch very good profits which they don't in villages or small cities. Anyway we can't give up farming these things – fruits, vegetables, fish, dairy etc – whether commercial or uneconomical because they are as essential for us as wheat, rice, sugarcane or other things are. I must say that Prof. Gill's attitude towards these things was rather stepmotherly.

He told us something about the facts which play a part in the growth of plants such as soil, air, light, heat and moisture. Some regions are arid and they are suitable for growing bajra, jawar, barley, grain etc. Regions which are humid are good for bananas and for plants with broad leaves. In normal regions we grow wheat, cotton, sugarcane, maize etc. etc. The topography of the area does also play a big part in the growth of plants and the suitability of crops. Economic factors are also given the selection of crops – the "inertia of establishment". In the same way human factors also count i.e. availability of skilled labour type of population, size of holding, availability of capital and intervention by government does also play their part in the selection, growth and yield of crops. The system of farming involves three factors a) structure of enterprise; b) farm practices and cv) disposal of farm produce.

He told us something about the type of tenures as well. A lot of it was repetition for us like things about direct farming, batai farming, rent farming, contract system of farming and partnership farming. He also advocated mechanized farming only for those areas which are lying waste for years and centuries like Thal, otherwise he thought that with the small holdings which we have got it, is not profitable. He also

gave us a list of systems as regards organisation of farms e.g. a) individual farming – a family affair; b) cooperative farming; c) joint management when different owners pool their land as well as animals etc., in one of the profits are distributed according to the ratio of land and animals pooled and d) collective farming. As regards supply of water for irrigation purposes, it is obtained through various means and from that point of view, cultivation could be categorized as follows:

a) Dry farming where rainfall is less than 25" per annum;
b) canal irrigation;
c) well irrigation;
d) humid farming when rainfall is about 40 to 45" per year and
e) tubewell farming etc. As regards systems of farming from the point of view of scale of production, there are a) special farming – mostly are crop ; b) diversified farming i.e. crops, vegetables, poultry, dairy etc., at one farm and c) famous for experimental purposes to supply good seeds and also to give demonstration.

After their lecture, we were supposed to hear something about fish farming but in its place we went to see the Village AID Training Institute. Before going there, we went to see the Sugarcane Research Farm. The expert there told us that their main research work is focused on finding out better varieties of sugarcane for which purpose they had to flower sugarcane which ordinarily does not in this region. It is only the cuttings which are sown. He showed us the sugarcane which has at last flowered mainly by giving it more and more water but the flowers so got became sterile unless artificial light is not given to them, hence we saw 4100 bulbs hanging over the stems. The quality of sugarcane which is common these days, is No. 213 which was found in 1935 and gives 80 to 100 maunds of Gur per acre. Prior to it No. 205 used to give 30 to 40 maunds. Now they have found out a new variety L 44 will give 100 to 110 maunds of gur per acre and will also mature early. This is the variety which is now going to replace No. 213. We saw many under trial varieties also in the farm.

India comes first in the production of sugarcane in the world with 5100 tons per year, while Pakistan is sixth with 1000 tons. In India 1,700,000 hectares (about 2.1 acres) are under sugarcane cultivation while in Pakistan only 35,000 hectares are under sugarcane plantation. Thus the yield in our country is higher than that of India. In Hawai the yield is 60 tons of sugarcane per acre, while their highest yield have been 4000 maunds. In Pakistan it is 18 tons and the highest yield have been 2000 maunds. This shows that with proper manuring, we can easily compete with Hawai. In Hawai they are spending 12/ per acre per research while we spend only -/2/3. In India they are spending 2/0/-

<u>Area under sugarcane (in acre)</u>

Pakistan	7,370,000

Punjab	344,000
East Bengal	227,000
Sindh	15,000
NWFP	110,000
Punjab	41,000

Consumption of sugarcane per capita

Punjab	35 lbs
Bengal	29 lbs
Sindh	26 lbs
Frontier	19 lbs
Denmark	125 lbs.

I was rather surprised to see the figures of sugar consumption in the Frontier because wherever I met them, took so much sugar in tea that I was under the impression that they take a lot of it. The expert told me that these are old figures and now the per capita consumption has gone up. Anyway when we compare it with Denmark, which is no doubt the highest in the world, it is simply negligible.

From the sugarcane farm, we went to the Village AID Training Institute. The campus was certainly very neat and clean and the buildings have been planned well. The principal in his short talk informed us that this institution was founded only in March 1955 and only one batch has passed out till now. There are about 60 trainees at present including women. 70% of their training consists of practical work, which I think is a sensible thing to do. As I have already seen the V-AID centre at Sargodha, hence it was nice to see this institution which presented things in a new perspective. We went round the institution and met some of trainees as well. All of them had a label on their shirts bearing their names. That gave them a touch of the prison rather. I personally didn't like this idea. The building is lavishly furnished. In the main gallery I saw three ceiling fans fitted within a distance of 20 feet, which is rather too lavish. The Principal told us some of the difficulties which they were facing particularly in connection with girl trainees. But slowly and slowly they are succeeding in their objects. After they pass out each trainee is given 3 villages under his charge. We returned at 12.15 pm. After lunch we went to play a cricket match against the Agricultural College Staff Team. It was a thrilling finish. We lost by one run because three of our batsmen couldn't make 2 runs to win. In the evening we had given a tea party to some members of the Agriculture College staff which lasted upto 7.00 pm.

April 12, 1956

This morning Mr. Abdul Rashid, Vegetable Botanist, in his lecture pointed out that it is the selection of pure types from a mixture of crops and it propagation which leads to

the improvement of crop cultivation. The advancement of agriculture in any country can easily be judged by the percentage of acreage under pure crops. Prior to 1910, the whole of the land in India was under a mixture of crops. There were no less than 25 varieties of wheat only. At present so far as wheat goes 95% is under pure crop. But it took more than 45 years to achieve this. This was mainly due to the ignorance of the cultivators who took to change very reluctantly and slowly. But it was heartening to know that now the cultivators are taking to these changes very readily and in Mr. Rashid's opinion with a little bit of government help, this can be pushed upto a great extent.

As regards the breeding of vegetable methods a) a sexually reproduced, when the vegetative parts themselves produce new varieties. There is no degeneration in such a breeding and good results are obtained by sowing seeds; b) self-pollinated – when the flowers are perfect and the male and female had no dislike for each other. But here again if we leave it to the natural course, then a mixed variety breeds up which is not always good, hence to obtain good results, artificial insemination is headed; c) Monecious Vegetables: In this case o obtain a fine crop of good quality crossing between different males and females is resorted to. This is has been achieved after years of experiments and d) cross-pollinated vegetables where males are not accepted by females. By resorting to these methods, yield can be increased from 20 to 25%. Another system is that of hybridization by which yield could be increased by 60%. Great success has been achieved by this process with regard to wheat. Another new system of breeding has been evolved in the West and America by which yield has been increased by 100 to 200%. This is done by taking good qualities of wild growth and combining them in one e.g. in South America, 300 varieties of wild potatoes are found. Mr. Rashid laid great stress on the plantation of potatoes which he maintained, could easily replace cereals at least in part. I think there was a lot of sense in this suggestion. Prior to plantation, they used to import potato seed from India but now they are growing better variety of seeds than what they used to get from India. The area under potato cultivation has also increased. In Bengal the area under potato cultivation is ten times more than that in West Pakistan but their main headache is seed. They import seed from India to the tune of six to ten crores. They can't grow it themselves because there are no hilly regions. The people here are thinking of sending seeds from West Pakistan. Mr. Rashid complained that government is not paying much attention to this. He was right in his remark but perhaps he didn't realize that government has to do a lot of other things as well which require more and immediate attention.

From this place, we went to see the Lyallpur Cotton Mills. Perhaps the management had received no intimation of our visit, hence there was no body to show us round. At last we got hold of a gentleman who took us round the mill and showed different sections starting from the place where cotton is processed and then converted into

thread and then to the place where actual cloth is made. The quality of bed covers and curtain cloth was pretty good.

After lunch we went to see the College Dairy Farm. This was nothing as compared to the Rakh Ghulaman Dairy Farm which we saw in Thal. This farm was started as early as 1914. Perhaps its progress has been slow because it is not being run on commercial lines but only to serve as a nucleus for students of education. There are 21 cows, 11 buffalos, 8 bullocks, 7 sheep and 7 goats in this farm. The overall average for cows is 16 lbs per day while that of buffalos is 13 lbs per day. At present they are getting 330 lbs of cow's milk and 75 lbs of buffalos milk. Most of buffalos are dry these days. Out of 100 lbs of buffalo milk, they get 8 lbs of butter while 100 lbs of cow milk gives only 6 lbs of butter. Surplus better is converted into ghee which is sold at the rate of 2/4/- an lb. Butter is sold at 4 as an oz. Cow's milk is sold at 3 as an lb while that of buffalo at 3-1/2 as an lbs. They make cheese also and are able to get 10 lbs of cheese out of 100 lbs of milk. I wanted to taste it but there wasn't any because the students were busy with their exams and hence had not come for practicals for a long time. From the churning room, we passed on to the cream separation room. They get 10 lbs of cream out of 100 lbs. Then we went to the dung lines to see the animals. One of the cows there had yielded as much as 66 lbs. in one day.

From the dairy farm we went to Chemistry lecture room where after a group photograph, we took part in a general discussion. Everybody thought and agreed that the extension service for imparting agricultural knowledge is very defective. Each worker had to deal with 100 villages which is too large a circle for him. I wanted to know what the agriculture department is doing to popularize the new things being achieved at agricultural college Our main shortcoming is that there is nobody to take the new things achieved in the laboratories to the fields. The Assistant Director of Agriculture who was also present there informed us that agriculture department is encouraging and giving every help in establishing model farms on private account. I think if the agriculture department itself takes up this thing, it would bear much more and also better fruits. In the discussion somehow Village Aid programme also came up for discussion which one of the agricultural college professor bitterly criticized because he though that the workers were not sufficiently well versed in agricultural education. His main bias was, so far as I understood it, that how can this department achieve anything which we have not been able to do through our workers who are better trained. Actually there was hidden bitterness and jealousy against the new department, which unfortunately is very common in our country. We must try to root out this type of jealousy from among the departments. Some of the agriculturists complained that they get too little a share in the government budget although agriculture is the most important factor in our country as 80% of our population depends on it. I think they are certainly right here and something must be done in this connection.

Started for Lahore soon after the discussion at about 4.30 pm. There was nothing new to see on the way. Reached Lahore at 7.30 pm.