

1: Asia-Pacific Feeding Systems Market GEA Group, Delaval Holding

Farm-level animal feeding systems in Asia and the Pacific: report of APO Seminar, 23rd July-3rd August, , Tokyo, Japan.

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2: [Forage plan and integration of grazing and fodder conservation at farm level]. [Spanish]

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In Indonesia , the use of brackish water ponds, called tambaks, can be traced back as far as the 15th century. They used small scale ponds for monoculture or polycultured with other species, such as milkfish , or in rotation with rice , using the rice paddies for shrimp cultures during the dry season, when no rice could be grown. Mangrove areas were favored because of their abundant natural shrimp. By the s, a small industry had developed in Japan. Technological advances led to more intensive forms of farming, and growing market demand led to worldwide proliferation of shrimp farms, concentrated in tropical and subtropical regions. Growing consumer demand in the early s coincided with faltering wild catches, creating a booming industry. Taiwan was an early adopter and a major producer in the s; its production collapsed beginning in due to poor management practices and disease. Industrial farming at first followed traditional methods, with so-called "extensive" farms, compensating for low density with increased pond sizes; instead of ponds of just a few hectares , ponds of sizes up to hectares 1. Technological advances made more intensive practices possible that increase yield per area, helping reduce pressure to convert more land. Semi-intensive and intensive farms appeared, where the shrimp were reared on artificial feeds and ponds were actively managed. Although many extensive farms remain, new farms typically are of the semi-intensive kind. Postlarvae fishing became an important economic sector in many countries. To counteract the depletion of fishing grounds and to ensure a steady supply of young shrimp, the industry started breeding shrimp in hatcheries. Life cycle[edit] A nauplius of a shrimp Shrimp mature and breed only in a marine habitat. The females lay , to , eggs, which hatch after some 24 hours into tiny nauplii. Shrimp in this second larval stage feed in the wild on algae , and after a few days, morph again into mysis larvae. The mysis larvae or mysids look akin to tiny shrimp, and feed on algae and zooplankton. After another three to four days, they metamorphose a final time into postlarvae: In the wild, postlarvae then migrate into estuaries , which are rich in nutrients and low in salinity. They migrate back into open waters when they mature. The reasons to do so include more intensive farming, improved size control resulting in more uniformly sized shrimp, and better predator control, but also the ability to accelerate growth and maturation by controlling the climate especially in farms in the temperate zones, using greenhouses. There are three different stages: Hatcheries breed shrimp and produce nauplii or even postlarvae, which they sell to farms. Large shrimp farms maintain their own hatcheries and sell nauplii or postlarvae to smaller farms in the region. Nurseries grow postlarvae and accustom them to the marine conditions in the grow-out ponds. In the grow-out ponds the shrimp are grown from juveniles to marketable size, which takes between three and six months. Most farms produce one to two harvests a year; in tropical climates, even three are possible. Because of the need for salt water, shrimp farms are located on or near a coast. Inland shrimp farms have also been tried in some regions, but the need to ship salt water and competition for land with agricultural users led to problems. Thailand banned inland shrimp farms in Often run as family businesses and using a low-technology approach, they use small tanks less than ten tons and often low animal densities. To feed the shrimp larvae, an algal bloom is induced in the tanks. The diet of later stages also includes fresh or freeze-dried animal protein, for example krill. Nutrition and medication such as antibiotics fed to the brine shrimp nauplii are passed on to the shrimp that eat them. A raceway is a rectangular, long, shallow tank through which water flows continuously. They are fed on a high- protein diet for at most three weeks before they are moved to the grow-out ponds. At that time, they weigh between one and two grams. The water salinity is adjusted gradually to that of the grow-out ponds. Farmers refer to postlarvae as "PLs", with the number of days suffixed i. They are ready to be transferred to the grow-out ponds after their gills have branched, which occurs around PL to PL about 25 days after hatching. Nursing is not absolutely necessary, but is favoured by many farms because it makes for better food utilization, improves the size uniformity, helps use the infrastructure better, and can be done in a controlled environment to increase the harvest. The main disadvantage of nurseries is that some of the postlarval shrimp die upon the transfer to the grow-out pond.

Over the course of a few days, the water in these tanks is changed gradually to match that of the grow-out ponds. The pond is in an early stage of cultivation; plankton has been seeded and grown whence the greenish color of the water ; shrimp postlarvae are to be released next. A one- horsepower paddlewheel aerator. The splashing may increase the evaporation rate of the water and thus increase the salinity of the pond. The intake of a two-horsepower "turbo aerator", which paddles one meter below the water surface. To avoid stirring up pond sediments, the water depth should be at least 1. Grow-out[edit] In the grow-out phase, the shrimp are grown to maturity. The postlarvae are transferred to ponds where they are fed until they reach marketable size, which takes about another three to six months. Harvesting the shrimp is done by fishing them from the ponds using nets or by draining the ponds. Pond sizes and the level of technical infrastructure vary. Extensive shrimp farms using traditional low-density methods are invariably located on a coast and often in mangrove areas. In some areas, farmers even grow wild shrimp by just opening the gates and impounding wild larvae. They can therefore be built above the high tide line. At such densities, artificial feeding using industrially prepared shrimp feeds and fertilizing the pond to stimulate the growth of naturally occurring organisms become a necessity. With densities above 15 animals per square meter, aeration is often required to prevent oxygen depletion. Productivity varies depending upon water temperature, thus it is common to have larger sized shrimp in some seasons than in others. Intensive farms use even smaller ponds 0. The ponds are actively managed: Estimates on the production characteristics of shrimp farms vary. Regional variation is high, though, and Tacon reports wide discrepancies in the percentages claimed for individual countries by different studies. Eyestalk ablation Eyestalk ablation is the removal of one unilateral or both bilateral eyestalks from a crustacean. It is routinely practiced on female shrimps or prawns in almost every marine shrimp maturation or reproduction facility in the world, both research and commercial. The aim of ablation under these circumstances is to stimulate the female shrimp to develop mature ovaries and spawn. Even in conditions where a given species will develop ovaries and spawn in captivity, use of eyestalk ablation increases total egg production and increases the percentage of females in a given population that will participate in reproduction. Once females have been subjected to eyestalk ablation, complete ovarian development often ensues within as little as 3 to 10 days. Feeding[edit] While extensive farms mainly rely on the natural productivity of the ponds, more intensively managed farms rely on artificial shrimp feeds, either exclusively or as a supplement to the organisms that naturally occur in a pond. A food chain is established in the ponds, based on the growth of phytoplankton. Fertilizers and mineral conditioners are used to boost the growth of the phytoplankton to accelerate the growth of the shrimp. Waste from the artificial food pellets and shrimp excrement can lead to the eutrophication of the ponds. Artificial feeds come in the form of specially formulated, granulated pellets that disintegrate quickly. The feed conversion rate FCR , i. For a farm to be profitable, a feed conversion rate below 2. Farmed species[edit] Global aquaculture of shrimp and prawn species in million tonnes, "â€", as reported by the FAO [17] Although there are many species of shrimp and prawn, only a few of the larger ones are actually cultivated, all of which belong to the family of penaeids family Penaeidae , [18] and within it to the genus Penaeus. The two species dominating the market are: Pacific white shrimp *Litopenaeus vannamei*, also called "whiteleg shrimp" is the main species cultivated in western countries. It is easy to breed in captivity, but succumbs to the Taura disease. Giant tiger prawn *P. Because of its susceptibility to whitespot disease and the difficulty of breeding it in captivity, it is gradually being replaced by L. Marsupenaeus japonicus kuruma shrimp in an aquaculture observation tank in Taiwan Western blue shrimp P. A few stocks survived and became resistant against this virus. When it was discovered that some of these were also resistant against the Taura virus, some farms again bred P. Chinese white shrimp P. Once a major factor on the world market, it is today used almost exclusively for the Chinese domestic market after a disease wiped out nearly all the stocks in Indian white shrimp P. It can be grown at high densities. Several other species of *Penaeus* play only a very minor role in shrimp farming. Some other kinds of shrimp also can be farmed, e. Their total production from aquaculture is of the order of only about 25, tonnes per year, small in comparison to that of the penaeids. Diseases[edit] There are a variety of lethal viral diseases that affect shrimp. A major transfer vector of many of these viruses is the water itself; and thus any virus outbreak also carries the danger of decimating shrimp living in the wild. Yellowhead disease , called Hua leung in Thai , affects *P. The disease is**

highly contagious and leads to mass mortality within 2 to 4 days. The cephalothorax of an infected shrimp turns yellow after a period of unusually high feeding activity ending abruptly, and the then moribund shrimp congregate near the surface of their pond before dying. The strains are not harmful to humans, but are economically devastating for shrimp farmers. The spread of the bacteria is more prevalent in warmer and saltier ocean waters. First reported in from Japanese P. Symptoms include white spots on the carapace and a red hepatopancreas.

3: Protein Plants Bolster Animal Feed in Cuba | Inter Press Service

Farm-level animal feeding systems: Philippines, p. In Farm-Level Feeding Systems in Asia and the Pacific. Asian Productivity Organization, Tokyo, Japan, p.

But still sales could be maintained on the growing confidence of the farmers with regard to its sustained quality and continued year round supply. In early stages it thrived as a government subsidized venture but, subsequently, the government subsidies were removed and as a result feed prices went up by almost percent. It is now being run purely on a commercial and competitive basis by both sectors. But with the advent of a few well organized private sector firms, this situation changed. Further in the Ceylon Grain Elevators limited CGE a multi-national company entered the area of animal feed business and managed to catch the market very soon. The government also gave its backing to this firm in the form of tax concessions duty-free imports, etc. At present the control of the major share of the formula feed industry has shifted from the hands of the public sector in favour of the private sector in the proportion of It was reported that the CGE is holding a solid 35 percent of the feed market, which may now be even higher at around 38 percent. Next come three private companies, namely; Farm House which attempted to spread its business island-wide, with a market share of about 9 percent; New Bernards holds a share of about 6 percent and Moosagees Ltd. In earlier years up to about the British Ceylon Corporation BCC , presently government-owned, was a leading feed supplier and holding a share of 8â€”10 percent of the feed market. There is also quite a good number of small-scale as well as a few large-scale poultry farmers who buy feed ingredients from the open market and make their own mixtures according to different formulae. There are 11 feed mills operating in the country of which four belong to the state and seven owned by the private sector. Among these, two mills are with a capacity of around 10, mt per month. The milling capacity is shared on the basis of However, the industry as a whole is run well below the maximum capacity. Even by working only one eight hour shift per day with 25 days per month, mills can produce over 30, mt of animal feed. But at present the total production is around , mt which is only a 50 percent capacity. Even at a more realistic and practicable way by considering two eight-hour working shifts a day, the country can produce around 60, mt of feed annually, i. During the last 15 years formula feed production in the country has increased by about 3-fold. In the country produced around 50,, mt of feed. This has gone up to about , mt at present, an increase of percent in 15 years, excluding the production by private feed mixing plants. If the trend is calculated from to , the increase in feed production does not appear to be significant. In the year period it shows only an increase of around 40 percent 50,â€” 55, mt to about 75, mt. The animal feed supply has virtually doubled within a very short period of two years. When the production of private mixing plants are also taken into account, the present total animal feed production of the country may be around , mt. Almost 95 percent of the formula feed production consists of poultry feed and nearly 4 percent and 2 percent are cattle and swine feed, respectively. The demand for cattle feed has shown a declining trend over the years. For example, BCC produced over 1, mt of cattle feed in This has been reduced to almost 1, mt in Even in the period of seven years prior to there was an annual average production of 6, mt of cattle feed. Of course, there was no steady demand for swine feed. For the full capacity utilization of mills, the industry should be further expanded and the supply of raw materials must be assured. In a country like Sri Lanka, where seasonal fluctuations in the supply of raw materials, especially soya beans, maize and even coconut poonac are common, it is not advisable to stick to a particular formula but to adopt formulae depending on circumstances. Since the cost factor is the main consideration, any adjustment in formulae should be based on locally available feed materials. Improvements in formulae can be made by concentrating on producing and supplying quality raw materials. The main problem of the feed industry is the regular supply of quality raw materials in sufficient quantities at constant prices. The supply base, therefore, has to be expanded and strengthened. When the volume of imports of fish meal increased about times during the period to its unit cost increased by about 9-fold in the same period resulting in an outflow of a considerable amount of foreign exchange from the country. The main importing country is Denmark. Soya bean meal which has been imported since has shown an 8-fold increase both in volume and value at present. Soya bean meal is

imported mainly from India and on a few occasions from the Republic of China. Sweetened forage and plant residues residue from chocolate and sugar manufacture are also imported. The volume of imports has fluctuated very mildly around mt a year. The value, of course, has increased about 4-fold. Another item of import is veterinary drugs and feed additives. This item has cost Rs. Despite the local production, maize is being imported during period of local crop failure. Rice bran has been exported from to Scandinavian countries. The highest volume was recorded in 21, mt. It has gradually come down to a mere 10 mt in . Obviously the income also has dwindled from Rs. Two reasons may be attributed to this situation: Exporting of oil cake has taken place over the years and an increase in the quantity exported is been seen, especially in . In the export volume of oil cake has come down to 13, mt. Small quantities of plant residues and fodder is also included in the export schedule. Other items that are presently being exported could be utilized locally and some of the imports which involve foreign exchange could be reduced. Even local fish meal prices have gone up by percent during this period from Rs. The gap between imported and local fish meal prices today is about Rs. The protein content in local fish meal is about percent while imported meal has a protein content of as high as 70%–72 percent. Imported maize prices seem to be lower than the local prices. This may increase up to about Rs. But quite surprisingly, imported, clean, and better quality maize is available at Rs. Perhaps, this may be due to the availability of duty-free imports in the market. The price of day-old chicks has gone up by percent between and , and by 92 percent for the 5-year period from to . A few private franchise agents are almost controlling the entire day-old chick market without any regulatory interference from the authorities. The import duty applicable to cereals and leguminous vegetables for use in the feed industry is 5 percent per kg. This has been put as a protection from external competition to encourage local producers to produce more. Grass Fodder Livestock in Sri Lanka obtain a considerable amount of dietary requirements through grazing. In the present context, the dairy sector, in particular, cannot depend heavily on concentrate feed unlike in some other tropical countries. Despite occasional irregular behaviour, Sri Lanka is fortunate enough to have an evenly distributed rainfall to help green pastures and tree fodders grow undisturbed. The total land area under cultivation or the agricultural area is about 2 million ha of which . The agricultural area of the country is 31 percent of the total land area . Tea, rubber and coconut which are the major plantation crops account for . Paddy dominates food grain production and approximately 74 percent of the arable land is under paddy. Pasture and the total land under agricultural holdings, respectively, Census of Agriculture, . Earlier studies have estimated the total area available for grass fodder at 1. It is difficult to make an accurate estimation on the availability of pasture and even the above estimates must have changed considerably during the last few years. With the completion of the on-going major irrigation schemes, new land settlement programmes will follow. The Mahaweli River Development Scheme alone will embrace over 0. In addition, crop diversification programmes, inter-cropping programmes, re-forestation campaigns, housing development schemes, etc. Taking all these efforts into account it may be safer to estimate the future availability of grass lands for grazing at around 0. As a result, the grass fodder availability may be substantially reduced in the future causing adverse effects on the traditional cattle farming system free grazing type in Sri Lanka. A subsidy scheme for growing pasture introduced in has since been in existence. However the progress has not been at all that satisfactory during the year period of its operation. An average of about ha per year were added to pasture land. The total area of cultivation of pastures is around 18, ha. Tree Fodder In rural area, farmers feed their animals with tree fodders, especially leguminous types, to supplement low quality roughages such as rice straw. A large number of varieties of three leaves have been used as feed unintentionally rather than intentionally when cattle and buffaloes are sent to shrub jungles for free grazing. The value of those as regular feed materials is yet to be established. Other freely available fodder trees are the rain tree *Pithecolobium saman* , wild sun flower *Thitona diversifolia* and Dadap *Erythrina* sp. The government has launched a campaign to popularize *Ipil ipil* cultivation with moderate success. Most of these trees are not grown but let to be grown. If such fodders are found to be important in terms of their nutritive value and also if farmers are convinced, both availability and usage will increase gradually. Crop Residue Rice straw is the largest agricultural residue available in Sri Lanka which accounts for about 76 percent of the available fibrous crop residues. It has been estimated that around 2 million mt of rice straw can be expected annually. But quite

surprisingly only about 2 percent is utilized as animal feed, at present. Other main crop residues that can be used more effectively as animal feed are maize, millet, cowpea, sugarcane, soya bean, green gram, ground nut, cassava and sweet potatoes. At present the usages is not at all systematic, regular or deliberate. Concentrates provide an important part of the total diet of animals which provide energy and thereby increase overall productivity.

4: What Animals Live in the Pacific Ocean? - www.enganchecubano.com

Asia Pacific is a decisive component in the global food chain. Asia's large and growing population and rising incomes will continue to drive demand for food, agricultural commodities and resources.

What Animals Live in the Pacific Ocean? The Pacific Ocean is home to many fascinating animal species. The Pacific Ocean is the largest ocean in the world and occupies an area of Due to its enormous size, the Pacific Ocean is home to a wide array of marine creatures, some of which are found nowhere else on earth. Penguins An African penguin in South Africa. These penguins vary in size with the smallest being 2. Dugong The dugong feeds primarily on sea grass. The Dugong is a marine mammal which closely resembles the manatee. Dugongs are strictly herbivores and spend most of their time feeding on sea grass found on the sea floor. Adult dugongs grow to attain a weight of pounds and a length of 9. These large marine mammals are found in the warm regions of the Western Pacific. Killer whale A killer whale on the west coast of Canada. Also known as orca, the killer whale is a member of the dolphin family and is the largest of them all. Killer whales exhibit sexual dimorphism with males being significantly larger than females. Adult males grow to attain a body length of 26 feet and a weight of 6. However, the largest specimen in history had a recorded weight of 11 short tons and a body length of 32 feet. The highest density of orcas in the Pacific Ocean is found in the northern Pacific near the Aleutian Islands. Humpback whale A humpback whale calf. The Humpback Whale is another marine mammal found in the Pacific Ocean, mostly in large concentrations in the North Pacific. The humpback whale is a baleen whale and as such feeds primarily on krill. Female humpback whales are significantly larger than their male counterparts with adult females growing to an average weight range of between 28 short tons and 33 short tons and an average body length of 52 feet. The humpback whale has distinctly large pectoral fins. These whales are migratory mammals and can cover 16, miles annually in their migrations. Fur seal The fur seal has an underbelly which helps to keep them warm. These seals have a characteristic dense underfur from where they get their name. The fur seal is closely related to the sea lion, and the two share several characteristics including the fact that both have external ears. Fur seals grow to attain a weight of pounds and a body length of 79 inches. However, some individuals develop to reach a maximum weight of pounds. Fur seals are exclusively found in the northern hemisphere. Elephant seal The elephant seal is the biggest seal species found in the Pacific. The Elephant Seal is the biggest seal species in the Pacific and exists in two types the northern elephant seal and the southern elephant seal. The Northern elephant seal is found in the northern Pacific along the North American coast. This enormous marine mammal exhibits sexual dimorphism with adult males being far bigger than females. An adult elephant seal has an average weight of pounds with few bulls growing to be as big as 6, pounds. Manta ray Manta rays prefer to inhabit areas around coral reefs. The Northern Pacific is home to the largest of all rays, the Manta Ray. The manta ray is found around coral reefs where it hunts small fish and tiny crustaceans. Adult manta rays grow to attain a body length of The ray is a solitary animal and is surprisingly docile despite its immense size. It is preyed on by big sharks and killer whales. Sea otter A sea otter found near Alaska. The sea otter is a popular resident of the northern Pacific Ocean with high populations found in northern and eastern Pacific coast. The sea otter has a relatively small size compared to other marine mammals with adults having a maximum weight of pounds and a body length of 59 inches. Sea turtle A sea turtle off the Hawaiian coast. Sea turtle is the collective term used to describe seven species of aquatic shelled reptiles. The leatherback turtle is the largest of all sea turtles with adults attaining an average weight of 1, pounds. The sea turtles are found in the tropical regions of the Pacific, but individual turtles lay their eggs in the same breeding grounds located on beaches throughout their lives. Sea slug Sea slugs are often colorful in appearance. Sea slug is the term used to refer to marine invertebrates known as nudibranchs as well as few gastropods which closely resemble terrestrial slugs. These sea slugs are primarily found on coral reefs and exist in different forms and sizes, but most are partially translucent. Most sea slugs have feather-like structures on their backs which are used as gills. Sea slugs are carnivores, and they prey on jellyfish, plankton, and anemones. Octopus The octopus has a complex nervous system. The octopus is one of the most abundant cephalopods in the Pacific Ocean with different species being found in various

parts of the ocean. The octopus has one of the largest brain-to-body ratios in all invertebrates, and it also has an extensive and complex nervous system. The octopi species vary in size with the largest being the Giant Pacific Octopus which can grow to attain a body weight of pounds. Giant squid A giant squid near Japan. The giant squid is the name given to members of the family Architeuthidae. The giant squid is one of the most elusive of all Pacific marine creatures with extremely few live specimens being caught. The giant squid is one of the largest invertebrates in the world second to the larger colossal squid with adults growing to be as long as 43 feet with females being relatively larger than males. Giant squids are found in the Northern Pacific near Japan. Pacific White sided dolphin Pacific white sided dolphin showing their playful side in the Pacific Ocean near Canada. The Pacific white-sided dolphin is a dolphin found in the Northern Pacific. The Pacific white-sided dolphin has a gray back and a creamy white belly and neck. Adult males grow to pounds in weight and 8. These dolphins are quite agile and are only preyed on by killer whales. Stellar sea lion A stellar sea lion basks in the sun. The Stellar sea lion is the largest member of the Otariidae family with males growing to attain an adult weight of 1, pounds and an average body length of 9. The species exhibits sexual dimorphism with males being larger than females. Male stellar sea lions have a robust neck which is covered by a mane resembling that of male lions. These marine mammals are found in the Northern Pacific Ocean. Hammerhead shark The hammerhead shark has a distinctive appearance. The hammerhead shark is one of the most common marine creatures of the Pacific Ocean. These sharks are easily identifiable due to the shape of their heads which resemble a hammer. This distinct shape of their heads enables the shark to have a degree vision. Adult sharks grow to reach a weight of 1, pounds and a body length of This page was last updated on August 7,

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Limited arable land, inadequate water and poor resource management, low farm yields, environmental and soil degradation and infrastructure inadequacy are limiting production. Asia has achieved significant production improvements over the last 50 years but produces lower yields compared to most other regions, with depleting resources including water, deteriorating soil quality, inadequate logistics and inefficient farming practices and land usage. These issues are beginning to be challenged and addressed through market-oriented approaches and corporate farming to satisfy a growing population featuring rising income levels, urbanisation, demand for higher food quality and environmental concerns. FAO but the consumption pattern is in transition As often observed, during the initial stages of economic growth an improvement in average income leads to an increase in cereal consumption. However as income continues to rise, food consumption gradually shifts from staples to protein and other high value food items like dairy and fruit and vegetables. With economic prosperity likely to continue to improve in the region, we can expect dramatic shifts in both the shape and the composition of the Asian food basket. China is a prime example of this shift in consumption habits. As average income started to improve in the early s for Chinese consumers, consumption of cereals increased. In emerging Asia as a whole, between and , the share of fruit, vegetables, meat and fish in the consumption basket grew faster than the share of staple foods. Total demand for grains is on the rise, as the increasing share of meat intake is leading to strong growth in demand for animal feed. Furthermore, as the modern trade share of overall groceries increases, consumption will shift from unprocessed and unbranded to branded and packaged food. This presents an interesting dichotomy in that whilst overall cereal consumption growth in Asia will mirror steady growth in population, the branded cereals category may continue to see robust growth for several years. This emerging Asian consumer is characterised by adoption of a western lifestyle, a high level of familiarity with the latest consumer technology and increased awareness of health and wellness issues and brand consciousness. This is exhibited nowhere more clearly than in China, which has seen the emergence of a new, young middle class with attitudes and aspiration akin to western consumers. Other countries in the region are no exception to this pattern, with the trend towards westernisation and modernisation of lifestyles. Therefore, as the rest of Asia develops further, it will follow the route taken by China and South Korea, with a consequent impact on consumption and purchasing behaviour. Asia is a production giant as well, just not big enough Global production rankings for agricultural commodities find China and India leading the league tables for many soft commodities of significance. In cereals, China and India rank number 1 and 2 respectively for wheat and rice; for maize, China is the second largest producer. Asian countries are also leading producers of cash crops, with China and India taking the top two slots in that order for cotton and tea. India is second only to Brazil amongst the top sugar producers in the world. Vietnam holds the second spot among global coffee producers, with Indonesia and India also in the top five. Natural rubber is also dominated by Asian countries, led by Thailand, Indonesia, Vietnam and India in that order. Absolute growth in area harvested and crop production Source: The implication clearly is that expansion of arable land area has played a less important part in increasing output than crop intensification and yield enhancement. However, these trends are not uniform across the regions. Thus, most of the production growth in land-scarce regions of Asia is due to yield gains and crop intensification. A brief history of the rapid growth in Asian agriculture Asian economies emerged from the post-war, post-colonial period with poverty alleviation as the immediate priority. With over four-fifths of the population living in rural areas, agriculture naturally received the main thrust of poverty alleviation programmes. Underpinning this initiative was a basket of agricultural practices “ high-yielding seed varieties, access to irrigation, fertilisers, and pesticides ” that together dramatically increased crop production between and Consequently, wheat and rice yields have dramatically increased in Asia, which has led to a decrease of rural poverty and a build-up of a food surplus in the region within 25 years, despite minimal increases in land acreage. Indicators of success of agricultural improvements Source: Consolidation

of farmland and better water management have the potential to boost production. At the same time, conflicting demands in land usage and water pollution act as constraints. Given a growing population and increasing demand for cereals for both food and feed, sustained increases in yields are required in Asia. However, factors such as changes in cropping patterns and diminishing returns on modern seed varieties have led to a stagnation of production growth in the last two decades. Increased use of fertilisers as farmers try to maintain productivity is also progressively degrading soil quality in many places. Increased usage of chemical pesticides has further compounded the issue of soil quality and environmental pollution. Growth in cereal production and yield in selected Asian countries Source: This is further accentuated by the degree of fragmentation of holdings, averaging 3. Given the large incidence of low productivity and low value-added subsistence farming, primary agricultural production in large parts of Asia is well below its inherent potential. Land reform that would facilitate farm land consolidation to achieve economies of scale, mechanization and technology adoption has only been incremental due to political and social sensitivities, and archaic laws and restrictive regulations. Underground water has been heavily relied on, which has resulted in a severe decline in water levels while the efficiency of irrigation is also low. Industrialisation and over-fertilisation have also heavily polluted water sources. Likewise in India, the water table has been depleted due to excess consumption for food production. Most water sources have also been contaminated by sewage and agricultural run-off. This was also necessitated by the nature of consumption with rice and pulses dominating the food basket. A self-sufficiency policy aims to have all food consumed domestically produced and controls trade as a mechanism to achieve this goal. Farming improvements that followed substantially improved rural living conditions and also impacted food consumption patterns. Regional governments however continue to desire food security and support food self-sufficiency policies. Many of these programmes, which consist of either minimum purchase price floors or import quotas, have distorted local markets and caused overcapacities and distress and strained national budgets. Rising rural wages Most Asian countries are in transition in terms of the contribution of agriculture to GDP. Commensurate to this transition was the acceleration in urbanisation led by China, Indonesia and Malaysia. The rapid growth of manufacturing growth across the region since the mids drew workers away from rural areas, resulting in a dwindling rural work force, except in a few economies. The resultant increase in rural wages is pushing up the cost of production in agriculture in Asian economies. The higher food prices that have resulted could undermine food security plans in the region, forcing governments to seek alternative origins for sourcing. Impact of climate change The threat of climate change, which is happening mainly in the tropical regions, is looming large over agricultural production in Asia. One study Piao et al. Yields are expected to decline in tropical regions such as South and Southeast Asia through at least Climate factors would accentuate the already declining growth in cereal production. Maintaining this commitment is essential, especially in light of the growing pressure on resources and the population and economic transformations taking place across Asia and the Pacific. Is food production or the food supply system the real issue in Asia? While the developed world incurs losses largely at the downstream consumption level, losses in South and South East Asia are mainly at the upstream production, handling and storage levels. Investment in physical infrastructure roads, ports, railway terminals Whilst agricultural production has increased, in general the market supply network remains a laggard. Recent investment has however been targeting supply chain and logistics systems and addressing the shift in consumption towards high value foods and increasing consumption of proteins. Regional disparities in physical infrastructure are critical barriers to higher efficiencies in the regional agriculture value chain. Whilst countries such as China and Malaysia have made tremendous improvements in intra-country transport facilities, regional transport infrastructure is patchy, inefficient, or non-existent. On the one hand, this increases the costs of logistics and on the other, it is an important cause of higher transit loss in agriculture output, and thus reduces supply to the market. There is an acute need for investment in improving transport infrastructure. Firstly, they can reduce food loss and wastage in the upstream value chain. For example, grain storage in India is under severe pressure owing to the fact that buffer stocks with Food Corporation of India FCI have been, on average, double the national stocking norms. In China meanwhile, cold chain networks are suffering from poor operational control and unsophisticated technology, leading to frequent food safety incidents. Secondly, the currently inefficient food trade

distribution could be standardised and streamlined by reducing the numerous layers of wholesalers and suppliers in Asia. Technology investment to improve farm productivity and farm-business connectivity. Another important way of bolstering existing food supply is by increasing technological intervention at farm level. Whilst enhancing yield rates via conventional options such as hybrid seeds, integrated pest management programmes or better farming practices remain the primary drivers in this regard, other interventions like mechanisation adapted for small holding sizes, efficient water management systems and data management could increasingly find a place in Asian farms. High penetration levels of mobile communication technology could help the dissemination of frequent information on weather conditions, dedicated advice on nutrient and water management and the sharing of best practices in farming via mobile apps entrenching agribusiness connectivity. Another prominent intra-Asian flow is that of aquaculture products from China and Thailand to the mature market of Japan. China is also the largest importer of milk powder primarily from New Zealand and now has an influential role in global dairy, with significant impact on the milk supplying regions. As food consumption continues to evolve and Asian countries become better integrated in global agri-trade, the agribusiness approach is likely to become more dominant in the Asian farm landscape, with leading farms becoming more integrated into the food value chain instead of subsistence and low value supply points. From a market perspective, the direction of growth in Asian agriculture towards an agribusiness approach is almost inevitable. Firstly, limitations in increasing land for farming and stagnating yield growth potential from existing farmland are natural barriers to any substantial increase in agriculture production and creating the pull towards greater integration in world trade flows. Secondly, emerging Asian businesses and food demand from urbanised Asians are also pushing the regional agriculture practice in this direction. Emerging concerns regarding food safety and quality are pushing the sector towards full traceability in the food chain and thus also pushing the market towards the integrated agribusiness approach and supply chain alignments. This trend is most visible among Asian producers catering to some of the niche developed markets. Along with the urbanisation process, soaring labour costs owing to the increasing shortage of labour in the agricultural sector, environmental degradation and growing concern over food safety, Chinese agriculture is on the way to a transition which will involve rationalisation of the use of agrochemicals and fertilisers and increased mechanisation in production and harvesting. An immediately related issue is the system of land ownership in China. Farmland is owned collectively by the village, but individual farmers are entitled to use small patches of land. This makes it difficult to engage modern farming machinery. Consequently, China will have to deepen its reform of the land system and allow consolidation of land by large operators to facilitate the modernisation of agricultural production. Domestic demand for agricultural products and quality processed food products is growing, driven by income growth and urbanisation. However, limited land and water resources, a large population base, relatively low production efficiency, high production costs and consumer concerns over food safety have prompted China to further increase the share of imports in total food in recent years. China has been a net importer of food-related agricultural and processed products over the past five years. In 2017, China recorded an international trade deficit of USD 38 billion in primary and processed food products, almost a four-fold increase on the USD 8 billion deficit back in 2012. While the trend is unlikely to reverse, a slower growing China in its New Normal will nevertheless have a profound impact on global agricultural commodities markets. With its rising dependency on imports for agricultural and food products, it is becoming ever more challenging for the government to cope with food price inflation against the backdrop of a more volatile currency. This implies that gross value added per agriculture worker at current exchange rates was USD 1,000 compared with USD 5,000 for non-agricultural workers. This low gross value added in agriculture is a reflection of low average farm size. With the average farmer earning just above the poverty line, this underlines the story of farming in India and underpins government policy in agriculture. At USD 26 billion, agriculture constitutes about 8% of India's GDP.

6: Asia-Pacific: agricultural perspectives - RaboResearch

To this end APHCA convened an international workshop on feeds and feeding of livestock and poultry and feed composition, data documentation and feeding systems in Asia, the Far East and South-West Pacific.

Even in industrialized countries such as the United States, zoonotic diseases such as leptospirosis are frequently mistaken for influenza. Symptoms are non-specific, making diagnosis difficult, a characteristic of many zoonoses. Prevention of zoonotic diseases consists of a combination of disease eradication, animal vaccinations, human vaccinations, work environment sanitation, cleaning and protecting open wounds, appropriate food handling and preparation techniques such as pasteurization of milk and thorough cooking of meat, use of personal protection equipment such as boots in rice fields and prudent use of antibiotics to reduce the growth of resistant strains. Control technologies and preventive behaviours should be conceptualized in terms of pathways, agents and hosts and specifically targeted to the four routes of transmission.

Respiratory Diseases Given the variety and extent of exposures related to livestock production, respiratory diseases may be the major health problem. The kinds of work most commonly associated with respiratory problems include grain production and handling and working in animal confinement units and dairy farming. Agricultural respiratory diseases may result from exposures to a variety of dusts, gases, agricultural chemicals and infectious agents. Dust exposures may be divided into those primarily consisting of organic components and those consisting mainly of inorganic components. Field dust is the primary source of inorganic dust exposures. Organic dust is the major respiratory exposure to agricultural production workers. Disease results from periodic short-term exposures to agricultural organic dust containing large numbers of microbes. ODS is the acute flu-like illness seen following periodic short-term exposure to high concentrations of dust. Donham Bronchitis affecting agricultural workers has both an acute and chronic form. Rylander Asthma, as defined by reversible airway obstruction associated with airway inflammation, can also be caused by agricultural exposures. In most cases this type of asthma is related to chronic inflammation of the airways rather than a specific allergy. A second common exposure pattern is daily exposure to a lower level of organic dust. Examples of such exposures include work in a swine confinement unit, a dairy barn or a poultry-growing facility. Usual symptoms seen with these exposures include those of acute and chronic bronchitis, an asthma-like syndrome and symptoms of mucous membrane irritation. Gases play an important role in causing lung disorders in the agricultural setting. In swine confinement buildings and in poultry facilities, ammonia levels often contribute to respiratory problems. Exposure to the fertilizer anhydrous ammonia has both acute and long-term effects on the respiratory tract. Acute poisoning from hydrogen sulphide gas released from manure storage facilities in dairy barns and swine confinement units can cause fatalities. Inhalation of insecticidal fumigants can also lead to death. Prevention of respiratory illnesses may be aided by controlling the source of dusts and other agents. In livestock buildings, this includes managing a correctly designed ventilation system and frequent cleaning to prevent build-up of dust. However, engineering controls alone are likely insufficient. Correct selection and use of a dust respirator is also needed. Alternatives to confinement operations can also be considered, including pasture-based and partially enclosed production arrangements, which can be as profitable as confined operations, particularly when occupational health costs are considered.

Skin Problems Skin problems can be categorized as contact dermatitis, sun-related, infectious or insect-induced. Estimates indicate that agricultural workers are at highest occupational risk for certain dermatoses. Mathias There are three types of contact dermatoses: The most common form is irritant contact dermatitis, while allergic contact dermatitis is less common and photocontact reactions are rare. Zuehlke, Mutel and Donham Common sources of contact dermatitis on the farm include fertilizers, plants and pesticides. Of particular note is dermatitis from contact with livestock feed. Feeds containing additives such as antibiotics may result in allergic dermatitis. Light-complexioned farmers in developing areas of the world are at particular risk for chronic sun-induced skin problems, including wrinkling, actinic keratoses, scaly non-cancerous lesions and skin cancer. The two most common types of skin cancer are squamous and basal cell carcinomas. Epidemiological work in Canada indicates that farmers are at higher risk for squamous cell

carcinoma than non-farmers Hogan and Lane Squamous cell carcinomas often arise from actinic keratoses. Approximately 2 out of squamous cell carcinomas metastasize, and they are most common on the lips. Basal cell carcinomas are more common and occur on the face and ears. While locally destructive, basal cell carcinomas rarely metastasize. Ringworm infections are superficial skin infections that appear as red scaling lesions that result from contact with infected livestock, particularly dairy cattle. Orf, by contrast, is a pox virus usually contracted from infected sheep or goats. The result is typically lesions on the backs of hands or fingers which usually disappear with some scarring in about 6 weeks. These lesions appear similar to those of orf, though they are more often multiple. Insect-induced dermatoses result primarily from bites and stings. Infections from mites that parasitize livestock or contaminate grains is particularly notable among livestock handlers. Chigger bites and scabies are typical skin problems from mites that result in various forms of reddened irritations that usually heal spontaneously. More serious are bites and stings from various insects such as bees, wasps, hornets or ants that result in anaphylactic reactions. Anaphylactic shock is a rare hypersensitivity reaction that occurs with an overproduction of chemicals emitted from white blood cells that result in constriction of the airways and can lead to cardiac arrest. All of these skin problems are largely preventable. Contact dermatitis can be prevented by reducing exposures through use of protective clothing, gloves and appropriate personal hygiene. Additionally, insect-related problems can be prevented by wearing light-coloured and nonflowery clothing and by avoiding scented skin applications. The risk of skin cancer can be dramatically reduced by using appropriate clothing to minimize exposure, such as a wide-brimmed hat. Use of appropriate sunscreen lotions can also be helpful, but should not be relied upon. Conclusion The number of livestock worldwide has grown apace with the increase in human population. There are approximately 4 billion cattle, pigs, sheep, goats, horses, buffalo and camels in the world Durning and Brough However, there is a notable lack of data on livestock-related human health problems in developing areas of the world such as China and India, where much of the livestock currently reside and where future growth is likely to occur. However, given the emergence of industrialized agriculture worldwide, it can be anticipated that many of the health problems documented in North American and European livestock production will likely accompany the emergence of industrialized livestock production elsewhere. It is also anticipated that health services in these areas will be inadequate to deal with the health and safety consequences of industrialized livestock production generally described here. The worldwide emergence of industrialized livestock production with its attendant human health consequences will accompany fundamental changes in the social, economic and political order comparable to those that followed from the domestication of animals over 10,000 years ago. Preventing human health problems will require broad understanding and appropriate engagement of these new forms of human adaptation and the place of livestock production within them. Bees, ants, wasps and scorpions sting and inject venom; mosquitoes and ticks suck blood and transmit diseases; and the scales and hairs from insect bodies can irritate the eyes and skin, as well as tissues in the nose, mouth and respiratory system. Most stings in humans are from social bees bumble bees, honey bees. Other stings are from paper wasps, yellow jackets, hornets and ants. Arthropods can be a health hazard in the workplace see table Rather, exposure to arthropods in the workplace depends on geographic location, local conditions and the time of year. For all arthropod hazards, the first line of defence is avoidance or exclusion of the offending agent. Donald Barnard Table Occupation Arthropods Construction personnel, environmentalists, farmers, fishers, foresters, fish and wildlife workers, naturalists, transportation workers, park rangers, utility workers Ants, bees, biting flies, caterpillars, chiggers, centipedes, caddisflies, fly maggots, mayflies, scorpions, spiders, ticks, wasps Cosmetics manufacturers, dock workers, dye makers, factory workers, food processors, grainery workers, homemakers, millers, restaurant workers Ants; beetles; bean, grain and pea weevils; mites; scale insects; spiders Beekeepers Ants, bumble bees, honey bees, wasps Insect production workers, laboratory and field biologists, museum curators Over 100 species of arthropods are reared in the laboratory. Ants, beetles, mites, moths, spiders and ticks are especially important. Hospital and other health care workers, school administrators, teachers Ants, beetles, biting flies, caterpillars, cockroaches, mites Silk producers Table

7: Chapter 70 - Livestock Rearing

Report on International Workshop on Inventory of Livestock Resources in Asia - held in Manila, Philippines from January - The Regional Animal Production and Health Commission for Asia, the Far East and the South-West Pacific.

The Executive Committee provides guidance and assistance in the timely implementation of programmes that have been approved by the Commission. APHCA is mainly funded from annual membership fees paid by its member countries. These fees are fixed according to the country categories that are broadly related to Gross National Product. Furthermore, some countries established National Currency Funds NCFs to promote technical cooperation among developing member countries, these funds being available only for use in the country that provides them. The establishment of NCF was made a formal part of the Agreement for the Establishment of the Commission as a result of an amendment passed in at its 4th Annual Session. NCFs are administered by the members concerned. These funds were used to support specific programmes, including regional and national training courses, TCDC activities, foot-and-mouth disease FMD control, and rinderpest eradication in the region. IGO Relations Links with: Based on the available funds, the Commission prepares a work programme at its annual session intended to support sustainable improvements in rural livestock agriculture and resource use by means of disease control, improved services and inputs, enhanced organizational efficiency, diversification of farm production, value-chain development, and other initiatives. Control and eradication of major diseases, which hamper livestock and poultry production in the Region. Development of the rural economy through increased milk production by small-scale farmers. Increase efficiency of livestock feed resource use through better utilization of farm by-products, recycling of crop and animal wastes and by development of new sources of feeds which reduce dependence on human foodstuffs. To this end APHCA convened an international workshop on feeds and feeding of livestock and poultry and feed composition, data documentation and feeding systems in Asia, the Far East and South-West Pacific. The implementation of these programmes is based on an exchange of experience, expertise, technology and information, common discussion through seminars and workshops to identify problems and find solutions, and inter-country training and visits to stimulate development activities at national levels. In addition to reaching practical goals, APHCA has built a fund of good will and a reputation for performance with the other United Nations agencies and international organizations, developed countries and development actors which seek to support programmes for rural development based on small farmer livestock production. He served the Commission as its first Secretary until January Pillai passed away in Colombo on 2nd March Soni is keeping well in Bangalore, India. Denis Hoffmann Australia [- November] - Dr. He took early retirement from the Organization in November but occasionally serves FAO as consultant, mainly in animal health issues. Wagner retired from FAO in He holds a Ph. His professional interests include sustainable livestock development and value chain development for livestock products. He has written extensively on a broad range of topics including collective action and livestock-livelihood linkages. In , she became the Senior Office-Veterinary Public Health dealing with diseases that are transmitted between humans and animals and became a keen advocate for the implementation of the One Health concept and the elimination of human rabies transmitted by domestic animals.

8: ANIMAL FEED RESOURCES IN ASIA AND THE PACIFIC

All titles: " Plan forrajero e integracion de pastoreo y conservacion de forraje a nivel predial. " " [Forage plan and integration of grazing and fodder conservation at farm level].

9: Vietnam: Better Food Safety and Production Efficiency with Good Animal Husbandry Practices

Geographically, the market is classified in North America, Europe, Asia-Pacific, the Middle East, Africa and Latin America. The Asia-Pacific region is expected to show equitable growth during the forecast period.

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