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Brazil Minister's visit fosters closer ties

During his first visit to Singapore, Brazil's Minister of Agriculture, HE Luis Carlos Guedes Pinto made a visit to the Agri-Food and Veterinary Authority (AVA) on 19 March 2007.

Accompanying the Minister were Mr Odilson Ribeiro (Director of the Department of Sanitary and Phytosanitary Affairs), Mr Guiherme Marques (Director of the Department of Animal Health) and Ms Denise Euclides (Coordinator for America, Asia, Africa and Oceania). Brazil's Ambassador to Singapore, Mr Paulo Alberto da Silveira and three other officials from the Brazil Embassy in Singapore were also present. Held at AVA's Veterinary and Plant Health Centre (VPHC), the meeting was attended by AVA's CEO, Dr Chua Sin Bin, directors and senior officers.

Currently Brazil is an important trade partner to Singapore, being a major supplier of frozen chicken, beef and pork. The Brazilian government views Singapore as an important market and partner particularly, in the food sector. At the meeting, the Brazil delegation conveyed Brazilian producers' interest to conduct missions to Singapore and build contacts with our importers. They were confident that Singapore would be an ideal food hub and distribution centre to facilitate the access of Brazilian products to the region, given our renowned reputation as a stringent food safety authority.

The meeting discussed the fostering of close cooperation between AVA and Brazil and the establishment of an agreed framework to allow fast track approval of Brazilian establishments for export to Singapore, and ended with a tour of VPHC's state-of-the-art laboratory facilities.



AVA officers briefing the Brazilian delegation on VPHC's range of analytical monitoring capabilities



Forging closer Singapore-Brazil relations

Commemorating AVA's 25 years of support towards Singapore Polytechnic's Industrial Training Programme

Over the past 25 years, the Agri-Food and Veterinary Authority's (AVA's), Veterinary Public Health Laboratory has been supporting Singapore Polytechnic's (SP's) Industrial Training Programme by offering countless undergraduates first-hand experience to work in a laboratory setting. To commemorate AVA's past support towards the programme, AVA was presented the Participation Award by Dr Teo Ho Pin, Mayor of North West District and Member of Parliament, Holland-Bukit Panjang GRC during the SP's Industrial Training Programme Participation Award Presentation Ceremony on 27 April 2007.



Man at AVA's Helm receives CASE Platinum Award

Congratulations to Dr Chua Sin Bin, CEO, Agri-Food and Veterinary Authority (AVA) for receiving the Volunteer - Platinum Award from the Consumer Association of Singapore (CASE) in March 2007. This award gives special recognition to long-serving volunteers who have contributed to the organisation for more than 20 years.



Dr Chua's involvement as a member of the Central Committee, the governing committee for the association dates back to 1979. He served as its Vice-President from 1986 to 1997. From 1986 to 1998, Dr Chua also chaired the Milk for Children Advisory Council (MCAC) which aimed to promote milk drinking habit among toddlers, pre-school and primary school children. A pioneer in the CASE Testing Committee, Dr Chua's expertise in food products and regulations proved to be an invaluable asset to the committee where he sat as a member from 1999 to 2000. In 2000, Dr Chua took on a new portfolio in the Business Affairs, Standards and Testing Committee which promotes product safety for consumers and carries out surveys to safeguard consumers' interest. Dr Chua has served 27 years with unwavering commitment towards the cause of consumerism.

A testament of competence and capabilities, AVA laboratories receive SINGLAS Accreditation

The Agri-Food and Veterinary Authority's (AVA's) Veterinary Public Health Laboratory (VPHL) and the Marine Fisheries Research Department's (MFRD's) Chemistry Laboratory continued to receive accreditation under the Singapore Accreditation Council-Singapore Laboratory Accreditation Scheme (SAC-SINGLAS) during the first half of 2007.

VPHL upgraded its international ISO accreditation under the SAC-SINGLAS in March 2007. A total of 17 new tests on the detection of genetically modified organism (GMO) in raw and processed food products and 4 new tests on the meat species identification in processed meat and meat products were accredited during the audit.

The laboratory, which received its first accreditation in July 2000, continues to improve its management and quality systems by participating in inter-laboratory proficiency programs and keeping abreast of new testing capability to detect harmful chemical and biological residues in our food chain.

MFRD's Chemistry Laboratory received the SAC-SINGLAS accreditation of ISO/IEC 17025:1999 in the field of Chemical and Biological Testing for five tests namely, total mercury, total arsenic, total cadmium, total lead and moisture on 16 July 2002. The accreditation was upgraded from ISO 17025:1999 to ISO 17025:2005 on 30 May 2006.

On 11 April 2007, MFRD was granted continued accreditation for the 5 tests together with two other new tests, Surimi Gel Strength and Whiteness Test.



AVA's VPHL successfully upgraded its internationally ISO accreditation in March '07

In 2006, MFRD participated in 4 Inter-Laboratory Proficiency (ILP) testing programmes organised by the Food Analysis Performance Accreditation Scheme (FAPAS), UK and the Hong Kong Government Laboratory Proficiency Testing Programme and received satisfactory results.

The continued accreditation of VPHL and MFRD is a recognition of the technical skills and capabilities of staff in the tests and services provided to our customers. AVA will continue to improve and update our laboratory management and quality systems to maintain the ISO/IEC 17025 accreditation status.

Benzene in beverages poses no health risk



An independent testing conducted in 2006 by some overseas food safety authorities uncovered traces of benzene in several beverages. Not added during the manufacturing process, benzene was formed when Vitamin C (or ascorbic acid) and benzoate salts (e.g., sodium benzoate and potassium benzoate) in the beverages reacted together.

Understanding benzene

Benzene is a volatile organic compound ubiquitously found in the environment. Its major sources include: exhaust from motor vehicles, industrial emissions, cigarette smoking and vapours of consumer products that contain benzene such as glues, paints, furniture wax and detergents. Since plants and animals can absorb benzene from the environment, our food 'naturally' contains traces of benzene without the presence of vitamin C and benzoates.

Humans are exposed to a small amount of benzene everyday both in the outdoor environment and workplace. Classified as a human carcinogen by the US Environmental Protection Agency, long-term exposure to benzene has been linked to leukemia and other blood diseases.

How benzene is formed in some beverages

Vitamin C and benzoates can react to produce a small amount of benzene. Benzoates are common food preservatives added to prevent food spoilage and ensure the microbiological safety of the food. It is a chemical preservative that has been permitted for use in an extensive range of foods, including beverages. Vitamin C occurs naturally in fruits and fruit juices or may be added to beverages as an additional nutrient or to serve as an antioxidant. The presence of vitamin C and benzoates alone does not lead to the formation of benzene as additional factors such as heat, light and metallic ions are required for the formation of trace levels of benzene. Hence, a beverage containing both vitamin C and benzoates will not necessarily contain detectable levels of benzene.

Health risk associated with benzene in beverages

There is no international statutory limit for benzene in beverages. Most overseas food safety authorities have applied the World Health Organization's guideline of 10 ppb for benzene in drinking-water for benzene in beverages as well. Most of the beverage samples analysed by overseas food safety authorities were below 10 ppb. AVA has also sampled beverages that contained both benzoate salts and vitamin C to test for benzene. Results indicate that the benzene levels in the beverages sampled to date were either non-detectable or less than 10 ppb.

The major exposure of humans to benzene is from the environment and to a minor extent from food. According to the UK Food Standards Agency, humans would need to drink more than 20 litres of beverages containing 10 ppb of benzene per day to equal to the amount of benzene an individual would inhale from air in a day. Therefore, exposure to benzene from beverages represents only a minor contribution compared to the overall benzene exposure and hence the health risk associated with benzene in beverages is minimal. Other food safety authorities such as the New Zealand Food Safety Authority, Food Standards Australia New Zealand, Health Canada and the US Food and Drug Administration have also expressed that trace levels of benzene in beverages do not suggest a safety concern.

What AVA is doing to minimise benzene in beverages

Taking a vigilant stance in food safety matters, AVA has conducted dialogue sessions with our local manufacturers and advised them to continue taking quality control measures to ensure that their beverages do not contain more than 10 ppb of benzene and that processing conditions are established to reduce or eliminate benzene formation.

Strengthening Singapore's pork supply resilience with frozen pork

The Agri-Food and Veterinary Authority (AVA) facilitates a stable supply of meat and meat products, fish and fish products and fresh fruits and vegetables for the nation.

Currently, Singapore's pork supply sources are mainly live pigs from Pulau Bulan (Indonesia), chilled pork from Australia and frozen pork from countries such as Brazil, Netherlands and France. Slaughtered locally, live pigs are sold as chilled pork.

The retail prices of chilled pork have risen considerably over the last 10 years. This resulted in food manufacturers and food service outlets switching to frozen pork. However, chilled pork continues to be the preferred choice among consumers and their acceptance of frozen pork remains low.

To ensure that our consumers continue to enjoy good quality pork at more affordable prices and reduce the market's over-reliance on its current supply of chilled pork, AVA will be embarking on a public education programme to promote the consumption of frozen pork in 2007.

Frozen pork, a good alternative to chilled pork, is currently available in consumer packs on the shelves of major supermarket chains.

To effectively promote frozen pork consumption, AVA will embark on a consumer perception survey to determine the consumers' current perception of frozen pork and the reasons for low usage before the rollout of its public education programme.



AVA heightens import requirements for salted and preserved eggs

The Agri-Food and Veterinary Authority (AVA) stays vigilant in ensuring that Singapore's food supply is safe and wholesome through its comprehensive testing and monitoring programmes.

Following the recent spate of detections of prohibited colourings, such as Sudan red, in salted and preserved eggs, AVA has made it mandatory for all countries interested to export salted and preserved eggs to submit information on their export processing establishments and provide accompanying health certificates for each consignment of eggs. Carcinogenic in nature, Sudan red dye is not approved for food use and poses a risk to consumers' health. To mitigate risk to consumers, starting 13 July 2007, AVA will only allow import of salted and preserved eggs from approved establishments.

Other new regulations include: health certificates to confirm that the products are free from Sudan red dyes and proper labeling to facilitate traceability of product sources. AVA will continue to hold and test all imported consignments of salted and preserved eggs on arrival, to ensure that they are not contaminated with Sudan red.



AVA equips Singapore's research community on the care and use of animals through IACUC Courses



Trainees learning first-hand from professionals in the field

Singapore has seen a rapid growth in biomedical research activities involving animals in recent years. Enacted by the Agri-Food and Veterinary Authority (AVA) in November 2004, the Animals and Birds (Care and Use of Animals for Scientific Purposes) Rules require any research facility in Singapore keeping or using animals for scientific purposes to be licensed by AVA and comply with the conditions of licensing and National Advisory Committee on Laboratory Animal Research (NACLAR) Guidelines.

A key component in the Guidelines is the requirement to establish an Institution Animal Care and Use Committee (IACUC) in a facility that uses animals. The Guidelines also require at least 50% of the IACUC members to undergo formal training on IACUC functions and duties.

Supported by AVA and jointly organised by the Agrifood Technologies Pte Ltd (ATP) and the Singapore Association for Laboratory Science (SALAS), IACUC courses have been offered to the research community since 2005. To date, 238 participants have been trained at the 4 Basic IACUC and 2 Advanced IACUC Courses previously held. The most recent IACUC Basic and Advanced Courses successfully conducted on 26 and 27 April saw participants from the region as well as members of the local research community.

Basic IACUC Course

Designed on the guidelines developed by NACLAR, the Basic IACUC Course offers participants the necessary formal training on the functions and duties of an IACUC. A basic, yet comprehensive and practical overview of the guidelines on the use and care of laboratory animals with a special focus on IACUC management and administration is provided at this course. Participants can also expect to interact with IACUC experts such as local faculty professionals and government representatives who have been instrumental in setting up the NACLAR Guidelines, as well as an overseas representative from the Association for Assessment and Accreditation of Laboratory Animal Care (AAALAC International) and undergo hands-on sessions at the course. Extensive resource materials including copies of



Guest Speaker for IACUC Basic Course, Dr Kathryn Bayne, Senior Director and Director of Pacific Rim Activities for the Association for Assessment and Accreditation of Laboratory Animal Care International

relevant laws, regulations, policies, and guidelines are also distributed.

Advanced IACUC Course

Designed to help address challenges, provide guidance and training to enhance the efficiency and effectiveness of IACUC, this advanced course allows participants to have a more in-depth examination on the roles and responsibilities of an IACUC. Here, participants share and discuss the situations they face and the methods of managing them. IACUC protocols are also evaluated and discussed through interactive hands-on sessions.



(Far left, left & bottom left)
AVA provides regular training for Kepri's animal health officers

(Bottom)
AVA assisted Batam in setting up a laboratory with capability to carry out rapid confirmatory testing for H5 Avian Influenza through PCR

AVA's Collaboration Programme for Bird Flu Control in Kepri

The H5N1 strain of Avian Influenza or Bird Flu continues to be a problem in many parts of the world, particularly in Asia. Indonesia has reported the highest number of human deaths due to Bird Flu in the world.

Kepri (Kepulauan Riau or the Riau Islands), comprising Batam, Bintan and many other islands such as Karimun, Natuna and Lingga, has reported Bird Flu outbreaks since late 2005. Given our close proximity and linkages with Kepri, any uncontrolled outbreaks there could potentially affect Singapore.

As part of the Agri-Food and Veterinary Authority's (AVA's) multi-layered control strategy against Bird Flu, AVA aims to lower the risk of spread of Bird Flu to Singapore, by collaborating with Kepri in its fight against Bird Flu.

To help keep Bird Flu in check, AVA provided Kepri with the necessary equipment to carry out vaccination, disinfection and culling of poultry. Efforts were also made to build Kepri's diagnostic capabilities for rapid and accurate diagnosis of Bird Flu. Besides the provision of laboratory equipment and rapid test kits, AVA also assisted Kepri to set up its first PCR testing capability for Bird Flu. To support Kepri in its public education efforts on Bird Flu, AVA provided educational materials, resources and equipment for the village awareness talks. Workshops on epidemiology and Bird Flu diagnosis were also organised to equip officers from Indonesia.

Moving forward, AVA will lend Kepri greater assistance in its public education efforts. Believing that the control of Bird Flu has to be a community effort, AVA and Kepri hope to reach out to villagers, farmers and school children, through the production of billboards, banners, posters, pamphlets and booklets.

AVA will continue to share our expertise on Bird Flu with Kepri and plans to conduct an advanced epidemiology workshop and laboratory attachments for Kepri officials in 2007.

It is heartening to note that Kepri has been able to keep Bird Flu outbreaks under control. Having undergone the public education programme, Kepri villagers are now more willing to vaccinate their poultry, report Bird Flu outbreaks to local vet authorities and surrender their sick poultry for culling. They are also more supportive of the need for proper decontamination and are aware of the need to maintain hygienic practices when handling sick poultry. All these have contributed to keeping Bird Flu outbreaks under control in Kepri.

The assistance programme has deepened the bond of friendship and trust between AVA and Kepri. By providing Kepri with the skills and equipment needed in their fight against Bird Flu, AVA receives, in return, timely updates on outbreaks in Kepri and first hand field-experience in tackling Bird Flu.

AVA hosts 2nd ASEAN Training Workshop on Plant Pest Risk Analysis



The 2nd ASEAN Plant Pest Risk Analysis Workshop was jointly organised by the Agri-Food and Veterinary Authority (AVA) and Commonwealth Agriculture Bureaux International (CABI) Southeast and East Asia Regional Centre in Singapore at the RELC International Hotel from 19 to 24 March 2007.

The Training Workshop in Singapore was part of a series of on-going activities designed and implemented by the office of the Sanitary and Phytosanitary Capacity Building Programme of the Department of Agriculture, Fisheries & Forestry, Australia to enhance the plant health capacity of ASEAN countries to meet the international standards consistent with the WTO Agreement on the application of Sanitary and Phytosanitary Measures (WTO-SPS Agreement). The workshop was attended by 20 participants comprising plant health scientists and risk managers from respective Phytosanitary agencies from 8 ASEAN countries.

Three technical experts from Australia and the ASEAN region provided detailed training in Pest Risk Analysis following the International Plant Protection Convention (IPPC) and Biosecurity Australia models. The workshop was designed to provide introductory training in pest risk analysis for plant pests, diseases and weeds. The 6-day workshop was packed with numerous exercises where participants acquired the knowledge of gathering scientific evidence and relevant economic factors to analyse risks involved in allowing a particular commodity to enter a country. The programme also included a visit to Animal and Plant Health Centre's Plant Health Laboratories and the Sungei Buloh Nature Reserve to learn about the management strategies on invasive pest/weed species.

The workshop also provided an opportunity for technical officers to network. Participants were also treated to a welcome dinner at Royal Plaza on Scotts and a walking tour by our in-house tour guides, of famous sights in the Civic district, the Esplanade and the Merlion Park.



Singapore plays host to AQUARAMA 2007

Set to be the world's largest event dedicated to ornamental fish and supported by the Agri-Food and Veterinary Authority (AVA), AQUARAMA 2007, was officially opened by the Minister of State for National Development, Ms Grace Fu, on 24 May 2007.

Launched since 1989, the show has grown from strength to strength. Now in its tenth year, the event attracted more than 200 exhibitors from 26 countries and saw more pavilions and higher government agency participation from countries such as Sri Lanka, India, Indonesia, Malaysia, Thailand, Myanmar, Colombia, and Singapore. Ornamental Fish International (OFI), an association representing the interest of ornamental fish stakeholders worldwide was also represented at the show.

The International Fish Competition, held during the show, saw no less than 1500 tanks and received particularly overwhelming responses for the Guppy, Goldfish, Bettas and Dragon Fish categories. The new fish categories: Cichlid and Plecos (Sucker fish) further exemplified the expanding frontiers of the ornamental fish trade. The newly launched Plant and Furnished Aquarium Tank Competition attracted a total of 12 tank exhibits from countries far and near (viz. India, Israel, Poland, Taiwan, Thailand, Hong Kong, Malaysia, Sri Lanka and Singapore).

AQUARAMA has aptly anchored its show here as Singapore is the world's largest ornamental fish exporting country. The Ornamental Fish Business Cluster, initiated by AVA, has been instrumental in enhancing Singapore's leading position in the ornamental fish export area through the continuous upgrading of skills of the industry, advancing through research and development, as well as identifying and addressing the critical issues faced by the industry. AVA also actively facilitates the development of the ornamental fish trade and industry in Singapore through its quality assurance schemes and technology support services.

Singapore is one of the world's largest producers of farm-bred fish. With a global reach of 82 countries, Singapore recorded \$98.63 million worth of export value for ornamental fish, an increase of 8.6% over the previous year. The United Kingdom, United States of America and Germany account for 61.6 % of its export value. Increase in exports to Russia, Eastern Europe and the Middle East were also seen last year.

AQUARAMA 2007 was a 'splashing' success as it attracted scores of fish lovers, hobbyists, breeders and traders over the 4 days. The AVA booth drew crowds with its Arowana eggs and video display. Here, visitors were shown the various stages of the life-cycle of Arowana and how the young fish were harvested from the mouth of the parent. To enrich the public's insight into the vibrant ornamental fish world, trade seminars, public seminars and farm visit were conducted during the show.

Fish enthusiasts, mark your calendars for AQUARAMA 2009, set to take place in Suntec City Singapore, 28 to 31 May 2009!



Ms Grace Fu, Minister of State at the ribbon cutting ceremony



MOS visiting the exhibition booths with accompanying officers



AVA officer briefing MOS at the AVA booth



Fish taking centre stage at AQUARAMA 2007

AVA's live-fish transportation technology closes "gap" between fish hatchery and farms



Closed System - fish fry in sealed bags for air freighting to Brunei Darussalam



Open System setup on boat transporting fish fry from MAC to local floating fish farms

Recent R&D efforts by the Agri-Food and Veterinary Authority's (AVA's) Marine Aquaculture Centre (MAC) in the development of live-fish transportation technology has allowed AVA's commercial-scale Pilot Hatchery to successfully distribute large quantity of fish fry to fish farms in the region.

Transportation of fish fry from hatchery to fish farms

As large-scale industry farming develops in Singapore and the region, the demand for quality fish fry makes it important to have a more efficient and productive way of transporting fish fry from hatchery to farm. MAC's recent R&D breakthroughs in fish transportation technology has made distributing large quantity of fish fry to fish farms in the region possible.

With close to tens of thousands of fish fry transported each time, the transportation of fish fry to grow-out farms is often seen as the finale in hatchery production, after a painstaking 60-90 days of intensive-care culture to raise the fry from fertilized eggs. If this process is not performed well, unnecessary fish death resulting from extreme transportation stress and handling injuries, would translate to huge economical losses.

To achieve a successful fish transfer of 100% survival post-stocking or "zero percent" dead on arrival, comprehensive planning was conducted to ensure that the following criteria were met: good water quality, healthy fish, pre-conditioning, proper loading density, good harvesting and handling methods.

MAC's R&D efforts in closing the technology gap

Aimed at ensuring that the fish remain healthy after transportation and stocking so that the potential economical gains in fish farming can be realised, MAC initiated R&D on large-scale live-fish fry transportation technology and developed various methods of live-fish transportation to suit the variable requirements in fish transfer from hatchery to fish farm.

The two basic transport systems for live fish are the Closed System and the Open System. The Closed System is a sealed container in which all the requirements for survival are self-contained. The simplest of these is a sealed plastic bag partly filled with water and oxygen. The Open System consists of water-filled containers in which the requirements for survival are supplied continuously from external sources.

MAC's R&D team reviewed these systems, in relation to the problems of fish preparation for transport, types of vehicles and equipment available, water quality at the time of transportation and changes in water quality during transport; and chemical aids used during fish transport. Following months of laboratory and field trials, a set of transportation methods suitable for each situation was devised.

The Open System was developed for transporting large quantities of fish fry to floating sea farms as its very efficient



Fry checked before transfer to a fish farm off Batam, Indonesia



Fry transfer to a floating fish farm

oxygenation system allows high loading capacity thus allowing more fish to be transported per consignment. On the other hand, the Closed System was developed for transporting smaller fish fry in sealed bags when the shipment had to be airfreighted to distant farms. The fish fry packed under special conditions could be released in any culture environment (e.g. freshwater, brackish water or marine) at the destination farm without the need for lengthy acclimatisation.

Transfer and commercial application of transportation technology

The different types of fish transportation methods developed by MAC were subsequently transferred and incorporated into our commercial-scale Pilot Hatchery operating procedures for fish fry transfer to both local and overseas farms.

The efficient and economical Open System with its high loading densities and high post-stocking (14-days) survival rates of more than 95% made it possible for the pilot hatchery to supply fish fry to local and neighbouring fish farms. As a note of confidence, a large-scale coastal fish farm in Batam, Indonesia that has been getting seabass fry on a regular basis from the Pilot Hatchery, signed an MOU with AgriFood Technologies Pte Ltd (ATP) in January 2007 to procure up to 200,000 seabass fry per month.

Not lagging behind, the Closed System has also generated interest in some private farms in Brunei following the

successful shipment of 20,000 seabass fry to the Fisheries Department of Brunei by air freight. Packed under carefully adjusted conditions, the fry were robust, healthy and having good post-stocking survival at their arrival.

The Pilot Hatchery has successfully demonstrated the commercial application of the Live-fish transportation and Seabass Hatchery technology developed by MAC. Both technologies are now ready for transfer to interested commercial parties for the development of intensive and large-scale fish hatcheries in Singapore and the region. Increase in fish fry availability will translate into resilient supply of quality food fish for Singapore.

This is one of our targeted areas of co-operation with the industry towards securing fish supply for Singapore. Other areas of co-operation are in marine foodfish fry/fingerlings production, marine foodfish grow-out and technical consultancy services in hatchery development & operational support facilities to the farm.



Singapore's Ornamental Fish Industry stays ahead of competition with continuous training



Supported by the Agri-Food and Veterinary Authority (AVA) and organised in close collaboration with the Ornamental Fish Business Cluster, Agrifood Technologies Pte Ltd (ATP) rolled out its 2nd Ornamental Fish Culture & Export Training Course on 5 April 2007.

Aimed at upgrading the skills and competencies of Singapore's ornamental fish industry workers, this 15-week long course covered the various aspects of fish culture and equipped trainees with knowledge on essential trade issues.

Following the success of its first course held in early 2006, ATP decided to hold a second course in response to the strong demand from the industry.

Dr Kenny Yap, Chairman of the Ornamental Fish Business Cluster, commented in his speech during the opening of the course that in the face of keen competition from emerging countries like Malaysia, Czech Republic, Spain, Indonesia and Japan, upgrading the industry's workforce skills is a critical component to help Singapore maintain its position as the world's leading exporter of ornamental fish.

The continuous demand and good response to such upgrading courses are an indication of the industry's acute awareness of the competition and the proactive stance that they are taking to stay ahead of the game.

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