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## Can aquaponics be profitable

Why isn't Aquaponics a Bigger Industry? This question was posed recently by a customer. It is a valid question that deserves a thorough answer. Although the aquaculture industry has been around for over a hundred years and the hydroponics industry 50-60 years, the combination of the two is fairly new. Research on recirculating aquaculture systems (RAS) began about 30 years ago. The benefit of recirculating aquaculture is that you produce a lot of fish in a small body of water. The energy inputs are high as are the risk factors. In a RAS, there is a large volume of fish waste that needs to be disposed of to keep the system water safe and clean for the fish. In the research of RAS, plants were introduced to help clean the water and this led to the introduction of aquaponics as an integrated food production system. Early on, aquaponics was really an off-shoot of research into more efficient RAS. These early aquaponic designs at the research level were not commercially viable. However, what it has evolved into is a very efficient, natural, integrated system that produces both vegetables, which is the majority of the production and profit, along with fish. John Pade and I were involved in hydroponics (soilless plant culture) and controlled environment agriculture when aquaponics was first emerging. We looked at this "new technology" as a means to provide a natural fertilizer source for organic crop production. As entrepreneurs and individuals with a great deal of understanding what it took to efficiency and profitable grow plants in a soilless system, we embarked on a journey to take aquaponics from the research and "science project" phase to a commercially viable industry. And we have done that. However, we did so very conservatively because we wanted to see it become a successful industry, not a series of failed experiments. Ten years ago we standardized our system designs, operating procedures, training programs and support protocols. We minimized the risks by adding control and redundancy. During this time period, we were also developing our ZDEP (Zero Discharge/Extra Production) systems, which we were granted our first patent on In 2014. The increased production from the ZDEP combined with our methods and procedures dramatically increased profitability beyond the early research models. In the 1990's and early 2000's, an aquaponic grower was lucky if they produced 2 lbs. of vegetables for each lb. of fish. We currently can produce about 12-14 lbs. of vegetables for every 1 lb. of fish with the same feed input. We are definitely past the "science project" phase and well into the commercial application phase. So, why aren't there aquaponic farms in every town and community? Three reasons: We are still a young industry. But that is changing quickly. Our growth at this point is exponential as more and more people learn about aquaponics. The commercial viability has really just been in place for about 10 years. If you look at the growth during that time period, it is quite impressive. Ten years ago, we were building and shipping systems that covered 2,000-10,000 sq. ft. Today we are shipping systems that cover multiple acres. Regulation. As I am sure you have experience in your ventures, doing business in the US is highly regulated. Regulations are hurdles for new ventures and new technologies. Funding. Since aquaponics is a new technology, banks are not eager to fund projects. This is beginning to change. This past year both the USDA and FSA have specifically mentioned aquaponics as a sustainable method of food production that they will provide funding for. This recognition and new funding source is trickling down to banks and investors, all of which help to increase the number of new aquaponic farms starting each year. All of that said, we are well on our way as an industry. If the growth curve from the past 10 years is applied to the next 10 years, we will see aquaponics providing significant amounts of food at all levels. Interested in more related information, check out my Changing the Food System Blog. Have you ever wondered if there is a profitable business model that is sustainable and provides fresh, healthy food to people? There is! And it is called aquaponics... from Nelson and Pade, Inc.® Aquaponics, when combined with a controlled environment, can be done anywhere. It allows you to profitably grow large volumes of fresh vegetables and fish nearly anywhere in the world. You don't need much space (1/4 acre will get you started), there is a reasonable ROI and it is a business you will feel good about because you contribute to better health and well-being for others. Why aquaponics? Aquaponics is the combination of aquaculture (the fastest growing sector of agriculture) and hydroponics (soilless plant culture). Aquaponics can be done anywhere, meeting the growing demand for fresh, local vegetables and fish. Aquaponics is sustainable and profitable. Crops are grown with less water and less labor, no pesticides, no herbicides and no chemical fertilizers. Aquaponics is the farming of the future...NOW! Why Nelson and Pade, Inc.®? Nelson and Pade, Inc.®, the Most Trusted Name in Aquaponics®, has more experience and more aquaponics systems around the world than any other company. Plus, we offer a complete package to get you started and growing successfully: project planning, comprehensive training, proven system designs, engineered greenhouses and long-term grower support. Why Now? With rising fuel prices, water shortages, food safety issues and an agriculture system gone astray, it is not just prudent, it is essential that new, sustainable methods of year 'round food production are embraced and implemented. Imagine, growing fresh vegetables and fish all year long, delivering to local markets, schools and restaurants; providing products that people want and will pay a premium price for. It is an enjoyable and rewarding business and lifestyle. What is involved? Working in an aquaponics greenhouse is wonderful, with year 'round comfortable temperatures, natural sunlight and an abundance of oxygen generated by green plants. Every day, you feed the fish, maintain the filter tanks and keep the facility clean. Plus, you seed, transplant and harvest the vegetables, monitor water quality and sell what you grow. Who is doing it? People from all walks of life are operating aquaponics businesses, growing and selling fresh food year 'round. Nelson and Pade, Inc.® has many customers who left the rat race and careers as professionals (architects, engineers, doctors, contractors, teachers, etc) to become aquaponic entrepreneurs. Is experience required? No. Nelson and Pade, Inc.® provides comprehensive training, detailed manuals, standard operating procedures and long-term grower support. If you don't have experience in business or marketing, you'll want to brush up on these areas. Is it a franchise? No, what Nelson and Pade, Inc.® offers is not a franchise. It is better! We offer the tools you need (planning, training, proven system designs and methods, long-term support) to get started and become successful in commercial aquaponics. But, we don't charge a franchise fee! This is a common question that circulates in forums, and for good reason. Aquaponics is a more environmentally sustainable method of growing than conventional agriculture, but if it's not financially sustainable as well, it is not a viable venture for most growers. Before we evaluate data on this question, two caveats. First, growers' expected financial returns vary greatly. Some operations are non-profits, just trying to break even. Others want to be large-scale agricultural businesses with significant returns. As a first step, it's important to identify your goals when evaluating profitability. We explain this more in Planning a Commercial Aquaponics Greenhouse. The second caveat is that every operation is different. No one can make definitive claims about whether an individual aquaponics greenhouse will be profitable. As one member noted in the forum, Year-Round Greenhouse Growers, asking whether an aquaponics greenhouse business will be profitable is just like asking if a car dealership will be profitable — it depends. To plan for your business specifically, we recommend taking a course or using the many available resources to help you plan for your unique commercial aquaponics venture. Most growers understand this intuitive point. Rather than asking about a specific operation, they want to know about the industry overall. Is commercial aquaponics a safe industry to go into? Are other aquaponics greenhouses profitable, and, where do those businesses look like? In regards to these questions, a 2014 study from Johns Hopkins University can shed some light. The study surveyed 257 commercial aquaponics growers, most located in the US. It tallied many metrics about their operation and some metrics on financial success. Some key findings: Most operations use an aquaponics greenhouse, often in addition to another structure. The average size of the operations is .03 acres (1,307 sq. ft.). About 40% of operations are located at the growers home; the remainder were on commercial or agricultural zoned land. Most growers used a combination of two or more aquaponics systems (media beds, wicking beds, rafts, nutrient film technique, and vertical towers), with rafts and media beds being the most common. The median year that respondents had begun practicing aquaponics was 2010. 31% of respondents were profitable in the past year. 55% expected to be profitable within the next 12 months and most growers (75%) expected to be profitable in the next 36 months. For 70% of respondents, their commercial aquaponics operation was not the primary source of income. The takeaways above shed some light on whether commercial aquaponics industry in the US is profitable overall. With only about 1/3 of growers stating that their operation is profitable, it's clear that commercial aquaponics is not an assuredly profitable industry. However, it's important to put this number in context. Most operations are still in the start-up phase, with an average time in business of about 4 years at the time of the study. Furthermore, the study did not ask about growers' intention/goals. One can deduce from the majority of growers who do not make aquaponics their primary profession that the survey includes some commercial growers who probably don't need or want to make significant profits. Profitability statistics would likely change if it evaluated only those who made a living from their commercial aquaponics greenhouse. Contact Us Today It's also important to note there are many things a grower can do to increase the chances of success. The Johns Hopkins Study noted that several traits related to profitability. Sell a variety of products. The study notes that a commercial aquaponics operation was more likely to be profitable if it sold other products and services in addition to plants and fish. The study did not specify these auxiliary services, but examples likely include other agricultural products or services like consulting and courses. The study confirms a fairly obvious idea that growers who have a strong knowledge of aquaponics are more likely to be profitable. For this reason, we often recommend growers start out with an introductory business planning and/or growing course in commercial aquaponics, like the 4-day Flourish Farm Aquaponics Course hosted by The Aquaponic Source. There is also a great deal of free or low-cost resources you can take advantage of, listed here. The study also found a correlation between those who made aquaponics their primary profession and profitability. "Statistical results suggest that people whose aquaponics-related job was their primary source of income were over five times more likely to make a profit than people who indicated that aquaponics was not their primary source of personal income." In addition to evaluating the macro trends, prospective aquaponics growers may want to evaluate individual case studies to evaluate financial success. The Sustainable Agriculture Research & Education (SARE) organization put together a few case studies of successful outdoor commercial aquaponics operations. In one SARE case study, the authors concluded that any producers interested in commercial aquaponics should start with a small system before expanding to a large-scale commercial operation. Also, producers should perform a thorough cash-flow analysis before breaking ground in order to avoid financial devastation. Successful aquaponic operations often have emergency funds to fall back on when unforeseeable events negatively affect production. Taking at least one course or seeking extensive aquaponic training is advised before exerting all your production efforts into this system. On one aquaponics forum, the owner of the first USDA organic-certified profitable commercial aquaponics farm had these important things to say to farmers wanting to start their own profitable aquaponics operation: It is possible to run 2,500-3,000 sq ft of aquaponics system, in a low-cost maintenance, efficient, and organic way of producing food. Aquaponics has grown and developed not just for the hobbyist or backyard gardening but, most importantly, for commercial purposes to sustain the high demand for organic food by the growing population in urban areas. Commercial Aquaponics can be profitable when done on a monetary loss with a smaller system should it fail. Make sure you have some business experience before you start your aquaponics BUSINESS. Profit not only comes from a functioning system, but a smart business plan as well. Be careful when using technology that has not proven to be profitable. Many businesses have failed because farmers were eager to try new systems that they thought would make them the big bucks. \*We recommend consulting with our partners at The Aquaponics Source for information on tried and true aquaponics technology. We also feature examples of successful commercial aquaponics greenhouses in our book The Year-Round Solar Greenhouse. The Johns Hopkins study is one early study in this emerging and rapidly growing industry. The USDA added aquaponics to its census of aquaculture starting in 2013, only 4 years ago. Thus, though the study sheds some light on the current industry and its commercial success, most operations are still in the start-up phase, and thus the clearest take-away is that is largely still too early to tell whether, or how, a commercial aquaponics greenhouse can be profitable. Contact us to learn more Aquaponics is a form of agriculture that has been around for many years but is resurfacing in today's modern world and attracting many people because of its benefits and profitability. Recent studies have shown the increasing demand for the aquaponics market globally because of the rising population, lack of farming land, and high demand for organic food worldwide. Aquaponics is a recirculating method of farming that combines aquaculture and hydroponics, leading to the raising of fish and growing of plants together in a symbiotic environment with the help of beneficial bacteria. It converts wastes produced by the fish into nitrates, which become plants' food, and in return, the plant roots filter and clean the water for the fish. Today, aquaponics is becoming more popular and attracting many people as a way of growing food because of its sustainability and benefits such as eco-friendly, less use of water, low-cost maintenance, efficient, and organic way of producing food. Aquaponics has grown and developed not just for the hobbyist or backyard gardening but, most importantly, for commercial purposes to sustain the high demand for organic food by the growing population in urban areas. Commercial Aquaponics can be profitable when done on a specific scale. Startup cost can be a challenge, but because it is a low maintenance and cost efficient system that provides fresh organic yield much faster than any other farming method, makes it an ideal investment. As with any business, starting a commercial aquaponics system requires careful and extensive planning, commitment, a capable team, and a business plan to build and operate. Essential Things to Consider Before Starting Your Commercial Aquaponics Business Before developing and starting your commercial aquaponics business, think of the main reasons why you want this kind of business. These will help you focus on the business plan and identify the issues, resources, and expertise needed to develop your business plan. Consider these questions: Do you have a farm or crop growing experience that will help your farm operations, or do you need to seek that expertise elsewhere? Do you have a property, or are you in the process of choosing a location? Are you developing an aquaponic farm for-profit and source of income? Who will be part of your planning team? Do you have the knowledge or expertise in developing marketing, operating, and financial strategies necessary for the business plan or to help start the business? Do you need expertise in addressing environmental and clean up issues that may be associated with the public property you intend to use? Because of the growing interest in commercial aquaponics, we developed this Aquaponics Business Plan. To provide an outline and guidance for developing an operating strategy for those who are interested in starting their commercial aquaponics farm. This aquaponics business plan is divided into five sections: 1. Overview: This section provides the vision statement, mission, and goals of your commercial aquaponics farm. 2. Management and Organization: This section describes the business ownership structure and how it will be managed and organized. 3. Marketing Strategy: This section identifies the products to be produced, how it will be marketed, and the potential competitors. This section will also describe the packaging, distributing, and promoting approaches for the product. 4. Operating Strategy: This section describes the approach for product management, farm size, physical and human resources, and regulatory requirements. 5. Financial Strategy: This section provides income and expense estimates, expected profit and loss, sources of funds, and potential business risks to its success. Overview Your business plan overview provides your vision and mission statement. It also summarizes your goals for your commercial aquaponics farm. The overview is divided into Introduction, Vision, Mission Statement, and Goals. Introduction: Describe the purpose and key issues to be addressed by the business plan. It provides an understanding of what information is contained in the business plan. Vision Statement: Your vision statement describes your vision of your commercial aquaponics farm's future, and how you incorporate your values into your farm. It provides clear decision-making criteria and answers what economic, environmental, or community values are important to the farm. What products or services do you intend to offer, and how the community will benefit from these products or services. Mission Statement: This is a set of guiding principles that describe your commercial aquaponics farm's overall goals. A mission statement tells the fundamental purpose and expectations for the farm to its customers. It also provides an understanding of the goals of the farm. Goals: The goals describe what is to be achieved by the farm. Goals can be short-term goals or long-term goals. Short-term goals may be focused on the farm's startup and achieving a certain level of production income. Long-term goals can be the plans for farm growth. Goals are reflections of what you want to achieve and when you like to achieve them. Management and Organization Management and organization describe the commercial aquaponics farm's ownership status and how it will be managed and organized. How you register your farm will depend on your business structure (corporation, sole proprietorship, non-profit). Check with your local or state requirements before registering your commercial aquaponics farm. In making the management and organization structure of your farm, consider answering these questions: What will be the legal structure of your business? Will it be a sole proprietorship, partnership, non-profit, or corporation? How will the farm be organized and managed? Who will be the key managers who will run the farm? What skills do these managers bring to the farm, and what will be their duties and responsibilities? Will there be a board of directors? How these managers, board members, will be compensated? Marketing Strategy Before starting your commercial aquaponics farm, defining the strategy for marketing and sales is very important. These are also the most important part of your business plan. The development of your marketing strategy requires understanding the market, demands of your product, potential customers, and potential competitors. In this section, you need to convince yourself and your reader that there is a viable market for your commercial aquaponics farm. The marketing strategy is divided into these sections: 1. Introduction: The introduction section of the marketing strategy shows the reader the following: Market or potential customers of your commercial aquaponics farm. Products that the farm will produce and sell. Distribution process or how and where the products will be made available to the customers. 2. Market: This section analyzes the market to identify your potential customers or target markets. It would help if you had a general understanding of your farm's environment to identify your potential customers. It is important to describe the economic factors, such as inflation, employment rate, and income, that affect your potential customer's purchasing power and spending rate. This section describes the demographic, social, and cultural factors that describe your potential customer that will influence or affect your farm. Social and cultural factors refer to the basic values, perceptions, and behaviors of your potential customers. These include their preference for the type of crops to be grown. In discussing the market section, know the answer to these questions: Who are your potential customers, and where are they located? How likely are they to buy your product? Are you growing a crop that is not easily accessible to the consumers? 3. Product: Using the information you gathered from the market analysis about customer values, needs, and preferences, describe the product you're planning to offer and how they will compete in the market. Describe why your product is unique and how they differ from its competitors. 4. Distribution: Getting your product to the market will be critical to your marketing strategy, as the quality of crops and customer perception will depend on the freshness and quality of your product. This section discusses the handling of products from harvest to sell, including options for storing the product before selling. Discuss these questions: How will you sell your product? Will your product be distributed directly from the harvest to the customer? How will you maintain your product quality during storage and distribution? What will you do with the product that is not sold or delivered? What is your method of distribution? How will you price your product? 5. Competition: This section describes the competition of your market and how you will position your farm to compete in each market segment. Discuss your farm's advantages and disadvantages over your competitors and how you will differ from them. Discuss these questions: Who are your competitors? How does your product differ from your competitor's product? Are your competitors' established in the market? Do they offer a greater variety of products? Will your pricing be competitive? Operating Strategy Before developing your operating strategy, it is important that you have completed your market analysis and identified the type and volume of plants to grow and fish to raise. It divides the operating strategy into these sections: 1. Crop Management/Your approach in cultivating and harvesting plants and fish) Crop management involves managing the volume of fish and plant crops needed to meet your marketing strategy's objectives. These involved understanding the approach used that will raise the fish and plant the crops and the schedule of planting and harvesting. Discuss the specific method to be used, such as a raft system, media-based system, nutrient film technique (nft), or a combination of the three main systems of aquaponics. This section discusses the following questions: Since the relationship between the fish and the plants is interdependent, will the volume of your plant crops meet the market demand drive of the fish's volume needed to provide the necessary nutrients for the plant? Will the volume of the fish from the water be able to support the demand of the plants? Will the fish be marketed as a product of the farm or managed only to support crop production? Will plant crops start from seeds on the farm or seedlings purchased from suppliers? How will you manage water pH, ammonia, temperature, nitrates, nitrites dissolved oxygen? How will you cycle the system? How will planting be made to meet the required crop harvest of the marketing strategy? Are you going to plant and harvest year-round? 2. Size and Capacity(the estimated production capacity to the farm) Yield, you also need to discuss the estimated amount of plants and fish that can be repeatedly reproduced given from the crop management approach, operating size area, and resources available. Estimates output should be for the first five years of operation and should be consistent with the plans and growth of the business. 3. Physical Resources (the material resources needed to operate the farm) The physical resources include land, buildings (greenhouses), and the necessary equipment to produce and market your farm products to meet your marketing strategy's objective. Discuss the physical resources and the environmental factors (water, electricity, etc.) needed to run the farm and how to acquire them. Discuss also how these environmental factors may affect the farm and the environment. In discussing physical resources, you need to consider these questions: What type of buildings and structures are required within five years? Will your commercial aquaponics farm be located within the building? How much building area and land area are required? Within five years? Will you lease or acquire the land area? Has an environmental assessment been conducted on the property and are there any known or potential environmental issues on the property that will require cleanup or specific action? What resources will be needed for the farm (water, electricity, and waste disposal)? What equipment will be needed (vehicles, monitoring equipment, lighting, tanks, etc.) within five years? What tools will be needed initially and within five years? What supplies will be needed? How will these resources be acquired? The key issues needed to be considered in identifying physical resources are: In determining development needs of an aquaponics farm, keep in mind that commercial aquaponics typically exists in a controlled environment like greenhouses, or buildings. In determining the square footage needs, it should include sufficient space to access and work around the fish and tanks, space for offices, packaging, shipping, cold storage, material and equipment storage and growing area for the seedlings. Consideration should also be given for monitoring the system, such as water quality and temperature,pH, Ammonia, humidity,water pump,lightand other parameters that are important to the healthy growth of the fish and plants. Internet, telephone, and other communication requirements for remote monitoring. 4. Human Resources (the human resources needed to operate the farm) This section discusses the human resources required to operate your commercial aquaponics farm. Make an estimate of the number and types of workers needed by identifying the specific tasks required daily at the farm. These include the administrative and management responsibilities, farm labor, and the estimated number of hours per month for each task. Consider these questions in discussing human resources: What is the workforce needed for the first five years? What positions will be created for the farm, and how many workers will be needed for each position? Will you provide training for each position? How many workers will be compensated, and will there be full time, part-time, or volunteer workers? What are the ranges of salaries for each position? What are the employee benefits (vacation, medical coverage, etc.)? The key issues needed to be considered in discussing human resources are: Using monitoring systems with remote notification capabilities can reduce labor and provide notification of system problems even when the aquaponics farm is unattended. There may be a need for an additional workforce during harvest days. 5. Regulatory issues and requirements needed to start and operate the farm Every business needs to pass regulatory requirements to operate. Your commercial aquaponics farm also requires permits and license to operate. Depending on your state or country, make the necessary inquiries of the requirements you may need to operate because these could have a significant impact on your production, operating plans, and start-up costs. Identify the types of permits, licenses, regulations, and associated fees required to start-up your business. Your farm must operate within the governmental and regulatory requirements, like zoning, planning, building requirements, waste management requirements, taxes, and other requirements. Financial Strategy This section should describe the approach you are taking in developing a financial strategy. The financial strategy is divided into these sections. 1. Expenses (the expenses estimated for start-up and operation of the commercial aquaponics farm) Develop a five-year projection on the annual expenses for the commercial aquaponics farm. The expenses should include the marketing expenses, operating expenses, and human resource expenses discussed in the marketing, operating and human resources strategy section. Expenses should also cover administrative expenses like the initial operating expenses, start-up expenses, site preparations, and other expenses. 2. Income (projected income of the commercial aquaponics farm) Develop your five-year annual income projection for the farm. Income should include receipts from sales of products and less any loss associated with spoilage or products that cannot be sold. Income should also include donations, grants, and other sources that are anticipated to cover the farm's operating expenses. 3. Fixed Assets (anticipated fixed assets) Fixed assets include land, buildings, vehicles, furniture, office equipment, computers, fixtures and fittings, plant, and machinery. These items are depreciated over time for tax purposes. Develop your five-year projection of fixed assets. 4. Funding (a potential source of funds) Describe the source and amount of funds needed to purchase, install the fixed assets to start-up the farm, and achieve the business plan's goals. Discuss the following questions: How will you obtain these funds, and what are the sources or potential sources of funding? How much funding is needed? How will the funds impact the achievement of the business plan? Are there expenses needed in obtaining financing or funding, like insurance, filing fees, and others? 5. Risk Management ( potential risks to the successful operation of the farm) You also need to identify and evaluate the potential risks that can impact the business plan's success. These include the potential production risks related to crop failure or unexpected low yield, marketing risk related to competitors' actions, like lower pricing of the competitors, and what can be done to minimize these potential risks if they happen. Commercial aquaponics is a business. To be successful, you need business experience, or you may need to involve someone who has the experience and knowledge about aquaponics. Getting excited and carried away by the coolness and possible profitability of aquaponics does not guarantee success; knowledge, experience, and right business decisions do. Here are our tips on starting a commercial aquaponics farm. It is important to invest in aquaponics education and training before you invest in building your commercial aquaponics farm. Knowing how aquaponics operates, what to look for, and knowledge in the science of aquaponics is critical to the success of your farm. Reach out to your local aquaponics farmers to get ideas for the day-to-day tasks of running an aquaponics farm. The right people can help you get started on the right track, so consult professionals with experience in designing, building, and operating aquaponics facility with your design team. The money you invested in professional consulting will be an important factor in the success of your farm. You can research the local market to know which ones are in demand, priced highly, or low in competition. Research the latest trends, updates, and activities on aquaponics to gather information and knowledge on how to set up and manage an aquaponics system. No matter how well you research, only when you start your business that you'll get to know all the things involved and the profit margin. It is better to start small, as this will give you the experience and knowledge and the flexibility to adapt. Running a smaller aquaponics system is also more manageable, and if you're new to aquaponics, you'll need some learning to do to run it efficiently. When you're just starting, things sometimes go wrong and fixing a smaller system is easier than a massive aquaponics farm. So, start small, and once you gained the experiences and knowledge necessary, you can begin expanding your commercial aquaponics farm. Lastly, love what you are doing. Aquaponics can be a challenge and sometimes very labor-intensive. If you are thinking of getting into commercial aquaponics farming, you have to love aquaponics and everything it involves. Aquaponics farming is not an easy work. It requires hard work and effort to operate a successful aquaponics farm. So, if you don't love the concept of aquaponics and sustainable organic farming, you must reconsider your choice. Commercial aquaponics farming is very achievable and gratifying if it is approached with the right business planning, knowledge, and most importantly, the right mindset. Commercial Aquaponics Success Stories: Sources:







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