

TERRITORIES INVOLVED		PROJECT DESCRIPTION	RESULTS OBTAINED AND REPLICABILITY	PROJECT CONTINUATION
x	EUSKADI	<ul style="list-style-type: none"> <li>NEIKER is a Basque public technology centre dedicated to the primary sector (agriculture, livestock and forestry) with a vocation to serve the productive sector by generating knowledge and innovative solutions that are transferable (R&amp;D).</li> <li>In the framework of the ORHI project, SAIOLAN has spread the nanobubble (NB) generation technology identified in Japan and in this context introduced to NEIKER this technology and its potential in agricultural crops.</li> <li>NBs offer a solution to improve efficiency in systems where liquids and gases are in contact (e.g. hydroponics, fish farming, water purification, etc.).</li> <li>NEIKER is interested in this technology, purchases a Japanese equipment and incorporates it in its <b>hydroponics testing facilities on water layer</b>, in order to develop its own skills in the application of this technology and to be able to transfer it to the productive network of the Basque Country.</li> </ul>	<p>[information on experiences performed with NB by companies in Japan]</p> <ul style="list-style-type: none"> <li><b>Tomatoes:</b> multiple experiences with yield improvements between 5 and 35 %, depending on species and growing conditions.</li> <li>Increases water uptake by plants by 50%.</li> <li>In <b>strawberries</b> it improves the yield (bigger size, better taste, greener leaves).</li> <li>Better <b>use of fertilisers</b>.</li> <li><b>Prevents algae</b> growth in pipes. Filter cleaning is facilitated.</li> <li><b>More vigorous plants</b> to withstand frost.</li> <li>Applicable to a <b>variety of crops</b>: leafy vegetables (lettuce, chard), cabbage (broccoli, cauliflower), cucumbers (cucumber, pumpkin), root vegetables (radish, carrot), fruit vegetables (aubergine), bulb vegetables (garlic, onion), as well as fruit and aromatic plants.</li> </ul>	<ul style="list-style-type: none"> <li>So far, only first tests on <b>lettuce</b> have been carried out at NEIKER, which already show improvements in yield.</li> <li>Many more trials are planned, both with lettuce (to define the best working conditions and assess operating costs) and with more valuable vegetables (pepper, tomato).</li> <li>NEIKER will transfer its experience to the productive network of Euskadi</li> <li>We will continue to look for a company with experience in aeration systems, which is interested in this technology in order to launch a new activity with it or include it in its technic solutions portfolio.</li> </ul>
	LA RIOJA			
	NAVARRE			
	ATLANTIC PYRENEES			
	OCCITAINE			
OTHER TERRITORY(IES)				



Lettuce grows 30 % more



O<sub>2</sub> NB // Air NB // Air Std.

### PROJECT'S CONTRIBUTION TO THE FOLLOWING INDICATORS (data from previous experience in Japan)

INDICATOR	INITIAL VALUE (without applying Nanobubbles to the crop)	FINAL VALUE (applying Nanobubbles to the crop)
• Root length of lettuce at 45 days (cm)	40	62
• Lettuce leaf length (cm)	19	25
• Productivity (no. lettuces/ha and year)	435.000	522.000
• Time needed to grow lettuces of the same size (days)	45	37
• Hydroponic solution used (N, P, K, Ca) in ppm	Typical references: 175, 40, 200, 110	Typical references: 160, 30, 180, 100