

RAS - KAPALI DEVRE ÜRETİM VE YETİŞTİRİCİLİK SİSTEMLERİ

1. TÜRK SOMONU ÇALIŞTAYI
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SU ÜRÜNLERİ YETİŞTİRİCİLİĞİNDE TEMEL SÜREÇLER

Kaliteli
yumurta ve
yavru üretimi



Doğru yer seçimi



Doğru yem ve yemleme



Doğru yetiştiricilik
yönetimi



RAS - KAPALI DEVRE ÜRETİM VE YETİŞTİRİCİLİK SİSTEMİ

- DÜŞÜK SU KULLANIMI !
- TAM KONTROLLÜ ÜRETİM
- LOJİSTİK, ENERJİ, PAZARLAMA STRATEJİSİ, TÜR VE PAZAR TALEPLERİNE UYGUN DİZAYN
- OPTİMUM SU KALİTESİ, ANTİBİYOTİK VE KİMYASAL KULLANMADAN GERÇEKLEŞTİRİLEN GELİŞMİŞ PAZARLARDA TALEP GÖREN “KALİTELİ VE SAĞLIKLI” ÜRETİM TEKNOLOJİSİ
- YÜKSEK STOKLAMA İMKANI, ERKEN HASAT AVANTAJI
- DÜŞÜK İŞÇİLİK VE YEM MALİYETİ
- YÜKSEK YEM VERİMİ
- ÇEVREYLE DOST ÜRETİM VE YETİŞTİRİCİLİK SİSTEMİ !
- ATIKLARIN KONTROLLÜ OLARAK DEĞERLENDİRİLEBİLDİĞİ ÜRETİM SİSTEMİ...



RAS- KAPALI DEVRE YETİŐTİRİCİLİK SİSTEMLERİNİN KULLANIM ALANLARI

- Su ürünleri sektöründe endüstriyel üretim ve yetiŐtiricilik
- AKUAPONİK (bitki + balık) yetiŐtiriciliĐi ve ALG yetiŐtiriciliĐi
- Balıklandırma projelerinde kontrollü üretim amaçlı kullanım
- Bilimsel amaçlı çalıŐmalar , araŐtırmalar
- EĐitim faaliyetleri



TÜRKİYE İÇİN, BAŞARILI RAS – KAPALI DEVRE UYGULAMA MODELİ VE TÜRLER NE OLMALI ?

- KULUÇKAHANE
- ÖN BÜYÜTME
- HASAT BOYUNA KADAR KONTROLLÜ VE BELGELENDİRİLMİŞ ÜRETİM







T.C. Tarım ve Orman Bakanlığı, Bolu
Abant Alabalığı (*Salmo trutta abanticus*) Kapalı Devre (RAS) Kuluçkahane projesi, 2014



Enhancement, Early-rearing & Recirculation for Better Profits.

HATCHERY

Volume 16 Issue 3 MAY/JUNE 2015

INTERNATIONAL

RESTOCKING

Saving the Abant Trout

The operators of a new RAS hatchery in Turkey aim to save a rare and endangered species.



Abant trout broodstock transferred to circular tanks in RAS hatchery.

BY TÖRKER BODUR

Rainbow trout (*Oncorhynchus mykiss*) and brown trout (*Salmo trutta*) are two of the most common species used for freshwater aquaculture in Europe. However, the salmonidae family also includes many others, some of which are in the Red List of Threatened Species. Abant trout (*Salmo abantensis*) is one of them. The Abant trout is unique to Abant Lake in Bolu province, part of northern Turkey. It is under protection in its local habitat and therefore restocking has become an important issue for the future of this rare species. However, good news for the Abant trout came about at the beginning of this year when it was successfully produced in a new state hatchery founded by Turkey's

General Director of Nature Conservation and National Parks, using the latest RAS technology. The aim of the facility is to produce young fish which will be used to re-establish self-sustaining populations. This hatchery is also an important step for Turkish aquaculture production as it is the first freshwater RAS hatchery in the country. I had an opportunity to learn more about the facility from my friend Bilge Sendar Yıldırım, who is an aquaculture engineer and owner and general manager of Akasuma Co., which built the new Abant trout hatchery. Yıldırım said the project was initiated in 2013 and they chose a location near Abant Lake since the

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RESEARCH

Probiotic toxin fights coldwater disease in rainbow trout

BY REBECCA PHILLIPS

The rainbow trout is a week of art and diner's delight. But when the freshwater fish falls prey to coldwater disease, its colorful body erodes into ragged wounds and ulcers. The bacterial infection can kill up to 30% of hatchery stock and costs millions of dollars in economic loss. After 15 years of research, scientists at the University of Idaho and Washington State University have found a simple and effective method to combat the disease using some of the trout's own intestinal bacteria as health-giving probiotics.

They showed that the probiotics work by secreting a toxic protein that does not harm the fish but does kill the



Researchers Ken Cain, left, and Doug Call claim that their probiotic solution could go a long way toward reducing the effects of a bacterial infection that can kill up to 30% of hatchery stock and costs millions of dollars in economic loss. (Photo by Shelly Hanks, WSU Photo Services)

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SCOTLAND

State-of-the-art hatchery for Grieg in the Shetlands

As this issue of *HI* goes to press, Grieg Seafood Hjalund will have completed the construction of a new hi-tech salmon hatchery in the Girska area of the Shetland Islands. The £15 million facility will provide 14 jobs and allow Grieg to provide up to five million smolt (about 85% of what the company needs) for its 21 farms in Shetland. Until now the smolt have been transported from mainland Scotland.



Until now most smolt for Grieg's farms in the Shetland Islands have been transported from mainland Scotland. The £15 million facility will provide up to 85% of what the company needs for its 21 farms in the region.

Regional director Sigurd Petersen explained recently that the main hatchery building measures 109 metres by 40 metres wide, about three to four times larger than a tennis court.

The smolt department, which will produce four batches of fish a year for the farms contains 14 tanks, each 210 m³. The fry department has eight similar sized tanks and the fry department has 14 tanks, eleven at 34 km and five at 64 km.

The unit is fed by water from Girska Loch, a mile or so away. Petersen said that it treats and recirculates well over 90% of its water.

Interim hatchery manager Jon Widdon is quoted as saying, "It's a big step up. Previously the hatcheries there (at Girska) have been limited by the use of water, but with the recirculation technology that we have now, and that's becoming widespread in the industry, both in Scotland and in Norway, we are able to produce an awful lot more fish in an awful lot less water. It's a very efficient use of water."

The hatchery has three biofilter units. The fry department is the smallest, with a capacity of handling a daily feed rate up to 800 kg, while the parr department can take 2 t of feed per day and the smolt department 4.5 t. The intake water is first treated with ozone and then run through UV filters.

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T.C. Tarım ve Orman Bakanlığı Eğirdir Su Ürünleri Araştırma Enstitüsü, Eğirdir/ Isparta
Kapalı Devre Sistem (RAS) Kerevit ve Tatlı Su Balıkları Kuluçkahanesi 2014



RAS – KAPALI DEVRE SU ÜRÜNLERİ ÜRETİM VE YETİŞTİRİCİLİĞİNDE TASARIM

- DEĞİŞEBİLECEK GEREKSİNİMLERİ KARŞILAYACAK ŞEKİLDE TASARLANMALIDIR !
- YETİŞTİRİLECEK TÜR/TÜRLERLE İLGİLİ BİLGİ VE DENEYİM !
- ÜRETİM BİRİMLERİNİN TASARIMI
- DOĞRU SU KOŞULLARININ OLUŞTURULMASI, SU ÇEVİRİM MİKTARININ EMNİYETLİ TARAFTA KALACAK ŞEKİLDE HESAPLANMASI
- FARKLI ÜRETİM AŞAMALARI İÇİN DOĞRU YEMİN BELİRLENMESİ, SİSTEME VERECEĞİ YÜKLERİN HESAPLANMASI
- BALIK REFAHI ODAKLI YÜKSEK STOKLAMA ORANLARI, YÜKSEK VERİMLİ YETİŞTİRİCİLİK SİSTEMİ, KAR EDEN BİR İŞLETME TASARIMI
- RİSK YÖNETİMİ !
- ENERJİ TÜKETİMİ !
- ÜRETİM EKİBİNİN TEKNİK SEVİYESİ !

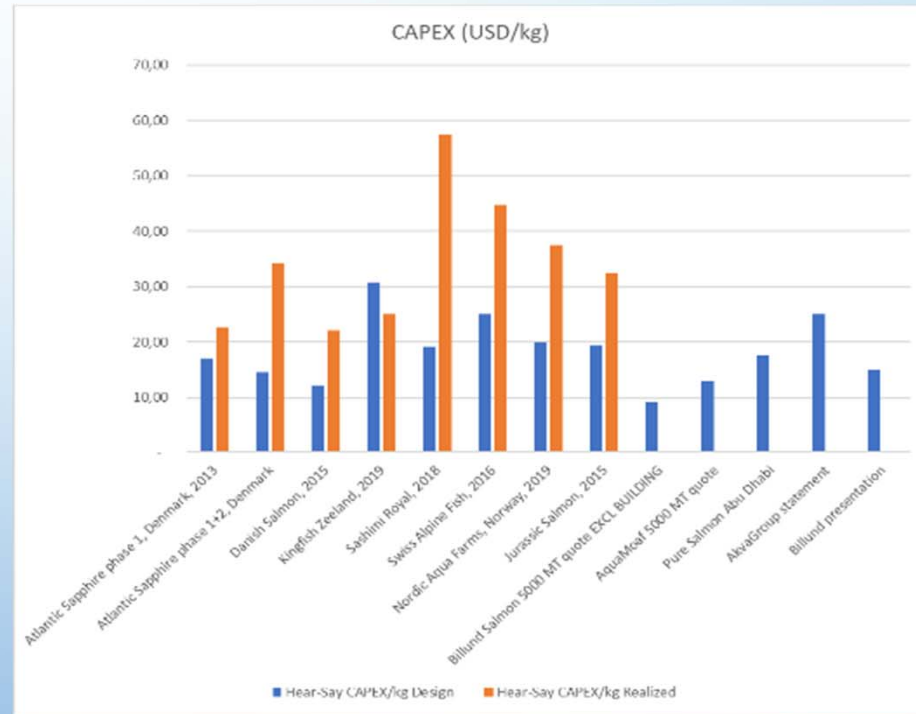
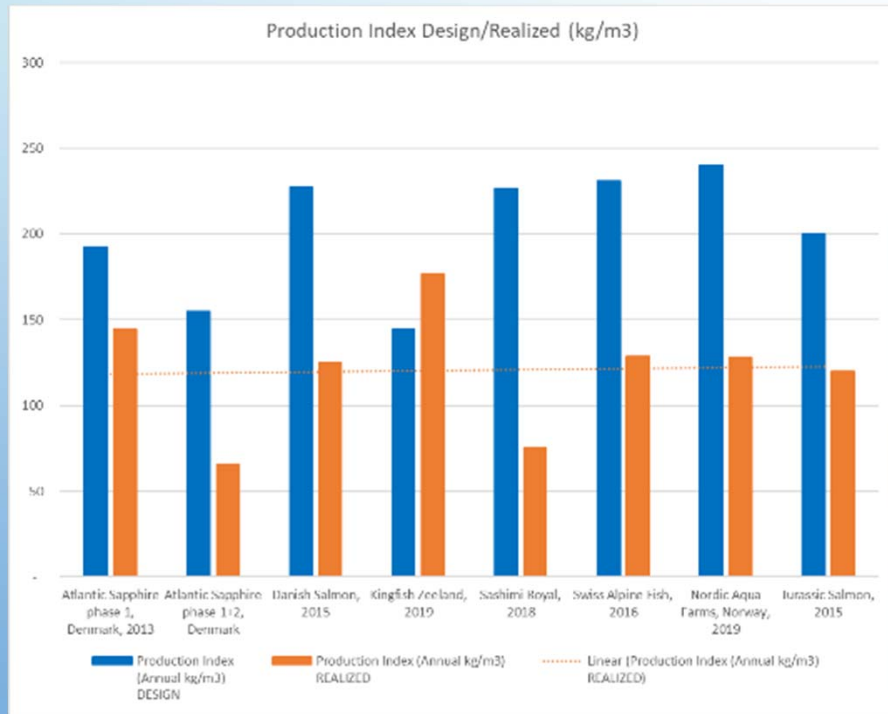


DÜNYA ÇAPINDA TASARLANAN HER TESİS, BAŞARI İLE ÇALIŞIYOR MU !

- TÜRÜN İHTİYAÇLARINI KARŞILAYAMAYAN TASARIM
- KALİTESİZ YUMURTA / YAVRU TEMİNİ
- HATALI BESLEME
- ÜRETİM DÖNGÜLERİNİ KAPSAYACAK ŞEKİLDE TASARLANMAMIŞ ÜNİTELER
- GERÇEKÇİ ÜRETİM PLANI İÇİN TASARLANMAMIŞ YETERSİZ TEKNOLOJİ
- BİYOGÜVENLİK RİSKLERİ
- TEKNOLOJİ , OTOMASYON VE TEKNİK ALTYAPININ YANLIŞ KULLANIMI (BOYLAMA-SAYMA-YEMLEME-AYDINLATMA-ISITMA & SOĞUTMA – SU ÇEVİRİMİ VB.)
- BAŞARISIZ RİSK YÖNETİMİ, OPERASYONEL TEKNİK PERSONEL EKSİKLİĞİ



TASARIM AŞAMASINDAKİ KAPASİTELER VE ÜRETİM DÖNEMİNDEKİ GERÇEK SONUÇLAR



TASARIM AŐAMASINDAKİ KAPASİTELER VE ÜRETİM DÖNEMİNDEKİ GERÇEK SONUÇLAR

İŐLETMEYE ALINAN KAPALI DEVRE TESİSLERİN , PLANLANDIKLARI KAPASİTENİN EN FAZLA %60 İNİ ÜRETEBİLDİĐİNİ GÖSTEREN BİR ÖNCEKİ KIYASLAMA ANALİZLERİ, YAKIN ZAMANDA TAMAMLANDI

KAPALI DEVRE SİSTEMLERDE EN ÖNEMLİ TEMEL UNSUR, GERÇEKÇİ BEKLENTİLERLE YAPILMIŐ GERÇEKÇİ BİR ÜRETİM PLANIDIR.

YENİ YATIRIM PROJELERİ İÇİN, BU SONUÇTAN KAÇINMAK, DOĐRU ÜRETİM PLANLAMASI YAPMAK, DOĐRUDAN ÜRETİM PLANIYLA BAĐLANTILI BİR FİNANSAL PLAN YAPMAK, GERÇEKÇİ VE DOĐRU HESAPLAMALARLA YAPILMIŐ TEKNİK FİZİBİLİTE ÇALIŐMASI YAPMAK İLE MÜMKÜN OLABİLECEKTİR.



DÜNYA ÇAPINDA ÇALIŞAN HER TESİS, EKONOMİK OLARAK SÜRDÜRÜLEBİLİR DURUMDA MI ?

- FİZİBİLİTE ! TÜR SEÇİMİ ! TÜRE ÖZEL FİZİBİLİTE !
- EKSİK ÇALIŞILAN FİZİBİLİTE ! BİRBİRİNİN KOPYASI OLAN HATALI ÖRNEK PROJE ANALİZ KULLANIMI !
- EKSİK ÇALIŞILAN PAZAR ARAŞTIRMALARI ! GERÇEKÇİ OLMAYAN FİZİBİLİTE VARSAYIMLARI VE TAHMİNLERİ , GELİR HESAPLAMALARI , ÜRETİM KAPASİTESİNİN TEORİK KULLANILMASI
- HATALI EKONOMİK ANALİZ !
- HATALI ENERJİ GİDERLERİ HESAPLAMASI !
- HATALI , YATIRIM MALİYETİ VE İŞLETME MALİYETİ HESAPLAMALARI

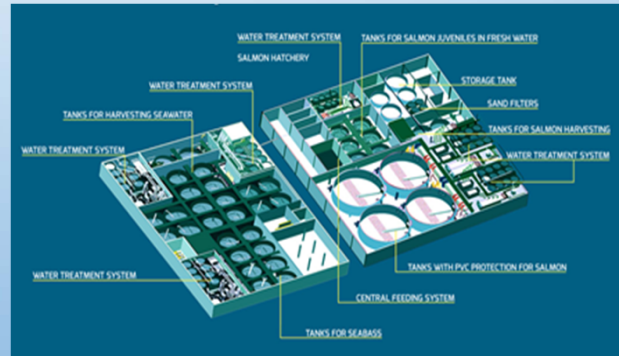


IDEAL FISH – WATERBURY – AMERİKA

- 2013 YILINDA KURULAN TESİS 150 TON/YIL KAPASİTELİ LEVREK YETİŞTİRİCİLİĞİ YAPIYOR.
- 2020 YILINDA SOMON VE ALABALIK İÇİN YENİ MODÜLLER DEVREYE GİRDİ



BİRLEŞİK ARAP EMİRLİKLERİ – DUBAI RAS SOMON TESİSİ



ATLANTIC SAPPHIRE BLUEHOUSE TM DANİMARKA

2011 YILINDA DANİMARKA DA TAMAMLANAN, HASATLIK BOYA KADAR 1.000 TON SOMON YETİŞTİREN İLK TESİS. 2021 İTİBARI İLE 2.400 TON KAPASİTEYE YÜKSELTİLDİ



**FİNLANDIYA – FIFAX
RAS ALABALIK TESİSİ 3.200 TON/YIL
2014 YILINDA DEVREYE ALINDI 2019 DA TAM KAPASİTEYE
ULAŞTI**



ŞİLİ – CAMANCHACA
RAŞ SOMON SMOLT TESİSİ
20 M / YIL SMOLT ÜRETİMİ



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- HASAT BOYUNA KADAR KONTROLLÜ VE BELGELENDİRİLMİŞ ÜRETİM



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