The intensive plant production industry

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The definition of intensive agriculture

Intensive agriculture is an agricultural production system characterized by the high inputs of capital or labour relative to land area (Wikipedia encyclopedia). It mainly focusing on high value products.
WA intensive agriculture

- Under WA environments, mostly based on irrigated production practice –
  - horticulture (fruits, vegetables, flowers, turf, nursery, etc.)
  - Forestry
  - irrigated high value crops (cotton, sugar cane, rice, forage, medicinal, some legumes, etc.).
The importance of intensive agriculture in the world

- **Fruits and vegetables** produced through IA are about 37% of the total agriculture production in the world.

FAO (2007)
The consumption of fruits and vegetables is about 23% of the total food consumed in households.

ABARE –2007
The WA intensive Agriculture industry is worth around $612 million per year (about 10% of the total WA agricultural production and 20% plant based production).

Three major areas of IA production – The Perth region the Carnarvon region and Ord River irrigation area.
Major achievements in WA
intensive agriculture - Viticulture

• Dr John Galdstone identified Margaret River as a suitable environment to grow wine grapes in 1960s.
  • 13,000 ha have been planted
  • 84,000 tonnes of wine grapes were produced in 2005/2006
  • Farm gate value of $110 million
  • Equivalent to $600 million wines at retail

• Drink less, drink better!
Mr John Cripps bred a series of high quality apple cultivars including ‘Pink Lady’ in 1970s.

- They have been grown worldwide.
- More than 30 million trees planted since 1984
- Royalty of about $1 per tree
- > $1,000,000 income each year from royalties
Major achievements in WA
intensive agriculture - wildflowers

Pearl Series
Ballerina series
Purple Jared
Pixy Red

• Prof. John Considine plant the first Geraldton Wax collection at Shenton park in 1994
  • A series of new cultivars were bred from that stock
  • The work stimulated several breeding projects working on Boronia, yellow bell, Leucadendron, etc.
• WA production is about $50 million
• WA exports 55% of national flowers
Major achievements in WA intensive agriculture - others

- Adaptation and application of drip/sprinkler irrigation systems
- Nutrient requirement of new crops
- New cultivars of new and established crops
- Integrated pest management
- In vitro soil (IVS) tissue culture system
- More
UWA strength in IA – turf

World class facility

Multiple approach: Water Use efficiency, Salt-tolerant breeding, Nutrient Management, Soil Amendment

Objectives: Improved irrigation and nutrient management for the turfgrass industry

Leaders: Tim Colmer, Louise Barton
UWA strength in intensive agriculture

- **Forestry**: Sandal wood, Eucalptus, Acacia – Plummer, Jones, Yan
- **Flowers**: Waxflowers, Boronias, Leucadendrons, Yellow bells and other proteaceous plants - Yan Plummer, Considine, Lambers, Finnegan, et al.
UWA strength in IA

- **Vegetables:** Carrots, Potatoes, Lettuce, Cauliflowers, Radish, Chinese Cabbage, Other Brassicas – Yan, Plummer, Barbetti, Turner, Cowling

- **Fruits:** Grapes (wine & fresh), Olives, Citrus, Bananas, Mangos, Apples, Kiwifruits, Stone fruits, Ziziphus – Yan, Plummer, Considine, Kailis, Turner

- **High value legumes** - Siddique
Potential future - research

- Intensive horticulture/viticulture
  - Integrated pest management
  - Nutraceutical/pharmaceutical (functional food)
  - Water use efficiency (new cultivars, irrigation efficiency)
  - Storage, transport, processing (value adding).

- Irrigated crops
  - Establish and develop production systems
  - Effective control of pests
  - New cultivars/crops to suit our special condition
    - BT cotton
Potential future - Teaching

- Review/redesign units specifically catering for students interested in intensive agriculture
  - Common units
    - Units for extensive agriculture → Degree in Agricultural 1 Sciences
    - Units for intensive agriculture → Degree in Agricultural 2 Sciences

- To make the intensive agriculture related degree viable – increase student numbers
  - Undergraduates - attract more international (Asian) students as well as local students
  - Postgraduates – International as well as local
    - Masters by course (publicity)
    - More MSc, PhD students by research
Potential future
- Service to the industry

- Suggestion: Staff and students working on intensive agriculture to have a trip to Kunanarra, Carnavon and other intensive agricultural areas to make contact with industry
  - Listen to industry needs
  - Build stronger partnerships with industry
  - Serve the industry by matching our strength with industry needs
Summary - challenges

- The existing intensive agricultural area around Perth is not sustainable – environment, \( \text{H}_2\text{O} \), economics, etc.
- Team up with DAFWA and other institutions to target the irrigated agriculture areas of Kimberley region
- Specifically:
  - Set long term goals as well as short term goals
  - Work as a group as well as an individual
  - Collaborate externally as well as internally
Many thanks!