

Table 3 List of transgenic lines produced in rice for drought tolerance

| Transgene | Source organism | Transformation method | Trait improved | Reference |
|---|---|-----------------------|---|------------------------------------|
| <i>HVA1</i> | Barley (<i>Hordeum vulgare</i> L.) | Particle gun | Transgenic plants showed improved tolerance to drought conditions | Xu et al., 1996; Babu et al., 2004 |
| <i>CBF3/DREB 1A</i> | <i>A. thaliana</i> | | Drought and salinity tolerance | Oh et al., 2005 |
| <i>SNAC 1</i> | <i>Oryza sativa</i> L. | <i>Agrobacterium</i> | Transgenic plants showed improved tolerance to drought conditions | Hu et al., 2006 |
| <i>HvCBF4</i> | <i>Hordeum vulgare</i> L. | <i>Agrobacterium</i> | Improved drought and salinity tolerance | Oh et al., 2007 |
| <i>Os LEA-3-1</i> | <i>Oryza sativa</i> L. | <i>Agrobacterium</i> | Transgenic plants showed increased growth under drought conditions | Xiao et al., 2007 |
| Transcription factor (AP37) encoding <i>Oryza sativa</i> cytochrome c gene (<i>OsCc1</i>) | <i>Oryza sativa</i> L. | | Transgenic plants showed increased growth under drought conditions | Oh et al., 2009 |
| Triticum aestivum salt tolerance-related gene (<i>TaSTRG</i>) | <i>Triticum aestivum</i> L. | | Transgenic rice plants over expressing <i>TaSTRG</i> gene showed higher salt and drought tolerance | Zhou et al., 2009 |
| Tomato ethylene response factor (ERF) protein <i>TSRF1</i> | Tomato (<i>Lycopersicon esculentum</i> L.) | <i>Agrobacterium</i> | <i>TSRF1</i> improved the osmotic and drought tolerance of rice seedlings without growth retardation | Quan et al., 2010 |
| Tomato ethylene response factor (ERF) protein <i>JERF1</i> | Tomato (<i>Lycopersicon esculentum</i> L.) | <i>Agrobacterium</i> | Over expression of <i>JERF1</i> significantly enhanced drought tolerance of transgenic rice | Zhang et al., 2010 |
| Tomato ethylene response factor (ERF) protein <i>JERF3</i> | Tomato (<i>Lycopersicon esculentum</i> L.) | <i>Agrobacterium</i> | Over expression of <i>JERF3</i> significantly enhanced drought tolerance of transgenic rice | Zhang et al., 2010 |
| Rice <i>OsDREB2A</i> gene with stress-inducible promoter (4ABRC) | Rice (<i>Oryza sativa</i> L.) | <i>Agrobacterium</i> | Over expression of <i>OsDREB2A</i> significantly enhanced drought and salt tolerance of transgenic rice | Cui et al., 2011 |
| Rice <i>OsDREB2A</i> gene with stress-inducible promoter rd29A | Rice (<i>Oryza sativa</i> L.) | <i>Agrobacterium</i> | Over expression of <i>OsDREB2A</i> significantly enhanced drought and salt tolerance of transgenic rice | Mallikarjuna et al., 2011 |
| Sorghum <i>SbDREB</i> gene with stress induced promoter CaMV35S or rd29A | <i>Sorghum bicolor</i> L. | <i>Agrobacterium</i> | Over expression of <i>SbDREB2</i> significantly enhanced drought tolerance and yield improvement in transgenic rice | Bihani et al., 2011 |
| Rice <i>OsSDIR1</i> gene | Rice (<i>Oryza sativa</i> L.) | <i>Agrobacterium</i> | Over expression of <i>OsSDIR1</i> gene significantly enhanced drought and salt tolerance | Gao et al., 2011 |